

In the Privy Council.

No. 21 of 1938.

ON APPEAL FROM THE SUPREME
COURT OF CANADA

BETWEEN

CANADIAN CELANESE LIMITED (Defendants) Appellants

AND

THE B. V. D. COMPANY LIMITED (Plaintiffs) Respondents.

RECORD OF PROCEEDINGS

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U1	Ditto <i>ditto</i>		
U2	Ditto <i>ditto</i>		
U3	Ditto <i>ditto</i>		
V1	Ditto <i>ditto</i>		
V2	Ditto <i>ditto</i>		
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Y1	Ditto <i>ditto</i>		
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In the Privy Council.

No. 21 of 1938.

ON APPEAL FROM THE SUPREME
COURT OF CANADA.

BETWEEN

CANADIAN CELANESE LIMITED (Defendants) Appellants

AND

THE B. V. D. COMPANY LIMITED (Plaintiffs) Respondents.

RECORD OF PROCEEDINGS.

No. 1.

Statement of Claim.

In the
Exchequer
Court.

IN THE EXCHEQUER COURT OF CANADA.

Between

THE B. V. D. COMPANY LIMITED Plaintiffs

and

CANADIAN CELANESE LIMITED Defendants.

No. 1.
Statement
of Claim,
29th Au-
gust, 1935

STATEMENT OF CLAIM.

Filed the 29th day of August, 1935

- 10
1. The Plaintiff is a body corporate and politic constituted under the laws of Canada and having its principal office at 980 St. Antoine Street, in the City of Montreal, Province of Quebec.
 2. The Defendant is a body corporate and politic similarly constituted and having its principal office at 4401 McGill College Avenue, in the City of Montreal, Province of Quebec.
 3. The Defendant is the owner of two Canadian Patents Nos. 265,960 and 311,185, and has brought an action against the Plaintiff in the Superior Court

In the
Exchequer
Court.

No. 1.
Statement
of Claim,
29th Au-
gust, 1935.
continued.

of the Province of Quebec for the infringement of the said patents by the manufacture and sale of certain shirts with stiffened collars produced by the Plaintiff in the Province of Quebec and sold by it throughout Canada.

4. The collars on the said shirts which are alleged to infringe the said patents are formed from three layers of material, the intermediate layer having been woven so as to include threads of cellulose acetate which, after the collar has been formed, are slightly softened by the action of a solvent and caused to adhere to the adjacent layers of material so as to form a collar which is highly permeable to gases and liquids and does not depend for such stiffness it may have upon the threads of cellulose acetate in themselves but only upon the adherence to each other of the layers of material constituting the collars. 10

5. The Plaintiff will ask leave to submit samples of the said shirts and collars to this Honourable Court at the trial of this action.

6. The said collars do not constitute an infringement of any exclusive property or privilege defined by the patents aforesaid and the said patents are, moreover, invalid and void for the reasons set out in the particulars of objection served herewith.

THE PLAINTIFF THEREFORE CLAIMS :—

- (a) A declaration that the collars or shirts with attached collars manufactured by it do not constitute an infringement of any exclusive property or privilege defined by Patents Nos. 265,960 and 311,185 or either of them. 20
- (b) A declaration that any claims of either of the said patents which define any exclusive right or privilege which would be infringed by the manufacture by the Plaintiff of the collars or shirts with attached collars are invalid and void.
- (c) Such other relief as may seem just.
- (d) The costs of this action.

(Sgd.) O. M. BIGGAR,
Of Counsel for the Plaintiff. 30

No. 2.
Particulars
of Objec-
tions,
29th Au-
gust, 1935.

No. 2.
Particulars of Objection.

PARTICULARS OF OBJECTION.

1. Patents Nos. 265,960 and 311,185 mentioned in the Statement of Claim herein are invalid on the grounds that—

(1) There was no invention having regard to the common knowledge of the art and to the patents, publications and uses hereinafter referred to.

(2) The alleged invention was not new ; it was known and used by others before it was made by the applicant of said patents, as appears

from (a) the common knowledge of the art at the said date ; (b) the prior knowledge shown by the patents set forth in the schedule hereto and the applications therefor. In the Exchequer Court.

(3) The claims in the said patents include more than any invention made by the applicant for the said patents. No. 2. Particulars of Objections,

(4) The alleged invention was not useful. 29th August, 1935—

(5) The specification of the said letters patent is insufficient in that if the processes described therein were followed the results stated would not be obtained. continued.

10 (6) The specification of the said letters patent contain more than is necessary for obtaining the end for which it purports to be made, and such addition was wilfully made for the purpose of misleading.

(7) The specification of the said letters patent contains less than is necessary for obtaining the end for which it purports to be made, and such omission was wilfully made for the purpose of misleading.

Delivered with the Statement of Claim this 29th day of August, 1935, by SMART & BIGGAR, Victoria Building, Ottawa, Canada, Solicitors for the Plaintiff.

SCHEDULE.

20 (A) Patents referred to in connection with Patent No. 265,960.

UNITED STATES PATENTS.

	Kennedy	...	...	...	...	No. 590,842	1897
	Crowell	...	...	...	...	No. 665,996	1901
	Weidig	...	...	...	...	No. 696,123	1902
	Kempshall	...	...	...	...	No. 769,129	1904
	Hesse	...	...	...	...	No. 1,065,684	1913
	Segall	...	...	...	...	No. 1,322,631	1919
	Van Heusen	...	...	...	...	No. 1,479,565	1924
	Macdonald	...	...	...	...	No. 1,537,848	1925
30	Wooduan and Dickie	...	...	...	...	No. 1,716,255	1929

SWISS PATENTS.

	Le Faguays...	No. 53,333	1910
	Nachmann	No. 77,238	1917

GERMAN PATENTS.

	Marsden	No. 103,506	1897
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BRITISH PATENTS.

	Millar	No. 17,549	1898
	Green	No. 9,879	1889

AUSTRIAN PATENTS.

40	Crefelder	No. 68,087	1913
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In the
Exchequer
Court.

(B) Patents referred to in connection with Patent No. 311,185.

UNITED STATES PATENTS.

No. 2.	Lehner	...	...	...	...	No. 713,999	1902	
Particulars	Tully	...	...	...	...	No. 1,358,799	1920	
of Objec-	Dryen	...	...	...	...	No. 1,377,761	1921	
tions,	Van Heusen	...	...	...	...	No. 1,479,566	1924	
29th Au-	King...	...	...	...	...	No. 1,610,686	1926	
gust, 1935—	Schloss	...	...	...	...	No. 1,614,258	1927	
<i>continued.</i>	Dreyfus	...	...	...	...	No. 1,634,613	1927	
	Neidich	...	...	...	...	No. 1,651,404	1927	10
	Dreyfus	...	...	...	...	No. 1,903,960	1933	
	BRITISH PATENTS.							
	Sponholz	...	...	...	...	No. 262,034	1926	
	Millar	...	...	...	...	No. 17,549	1898	

No. 3.
Further
Particulars
of Objec-
tion,
31st Octo-
ber, 1935.

No. 3.

Further Particulars of Objection.

FURTHER PARTICULARS OF OBJECTION

Furnished pursuant to the order made herein on the 29th of October, 1935.

1. The Plaintiff Company causes the shirts in question herein to be made for it by another company, but is regarded as the manufacturer thereof by the 20 Department of National Revenue for Canada.
2. All the shirts in question are sold by the Plaintiff under the trade name "Tex-Craft."

Delivered this 31st day of October, 1935, by SMART & BIGGAR, Victoria Building, Ottawa, Canada, Solicitors for the Plaintiff.

No. 4.
Further
Particulars
of Objec-
tion,
15th Nov-
ember,
1935.

No. 4.

Further Particulars of Objection.

FURTHER PARTICULARS OF OBJECTION

Pursuant to Order of November 15, 1935.

The following patents are added to the schedule attached to the particulars 30 of objection herein:—

- (1) To Part A of the said schedule :
United States Patent No. 607,454, F. W. Oliver, July 19, 1898 ;
British Patent No. 607 of 1856, Berard ;
British Patent No. 173,021, Dreyfus September 9, 1920.
- (2) To Part B of the said schedule :
United States Patent No. 590,842, Kennedy, September 28, 1897.

Delivered this 18th day of November, 1935, by SMART & BIGGAR, Victoria Building, Ottawa, Canada, Solicitors for the Plaintiff.

No. 5.
Statement of Defence.

In the
Exchequer
Court.

STATEMENT OF DEFENCE
Filed the 8th day of November, 1935.

No. 5.
Statement
of Defence,
8th Nov-
ember,
1935.

By way of Defence to Plaintiff's action, the Defendant says :—

1st.—It admits the allegations of paragraphs 1, 2 and 3 of the Statement of Claim herein.

2nd.—It denies the allegations of paragraphs 4 and 6 ;

3rd.—The Defendant expressly denies that its Letters Patent Nos. 265,960
10 and 311,185 are invalid and void, and avers on the contrary, that the said letters patent are good and valid and should be sustained ;

4th.—Previous to the institution of the present action, the Defendant, Canadian Celanese Limited, instituted on or about July 25th, 1935, an action before the Superior Court for the District of Montreal, in the Province of Quebec, against the present Plaintiff, the B.V.D. Company Limited, for an injunction and damages by reason of the infringement of the said Letters Patent Nos. 265,960 and 311,185 by the present Plaintiff, the said action bearing No. D--141,945 of the records of the Superior Court for the District of Montreal, in the Province
20 of Quebec, in which Canadian Celanese Limited is Plaintiff, and the B.V.D. Company Limited is Defendant ;

5th.—The Defendant denies to the Plaintiff, under these circumstances, the right to pray by the present action for a declaration that the Plaintiff does not infringe the said letters patent, and the Defendant alleges that this honourable Court is without jurisdiction with respect thereto ;

6th.—Under reserve of its said objection, the Defendant alleges that the said collars or shirts with attached collars manufactured by the Plaintiff constitute an infringement of the said letters patent of invention and of each one of them ;

Wherefore the Defendant prays that by judgment to intervene, it be
30 declared that this honourable Court is without jurisdiction to adjudicate with respect to a declaration that the collars or shirts with attached collars manufactured by the Defendant do not constitute an infringement of any exclusive property or privilege defined in Letters Patent Nos. 265,960 and 311,185, or either of them, owned by the Defendant ; that it be declared that the said letters patent and each one of them are good and valid and have been infringed by the Plaintiff, and that the Plaintiff's action be dismissed ; the whole with costs.

Montreal, this 6th day of November, 1935.

(Sgd.) H. GERIN-LAJOIE,
Of Counsel for the Defendant.

In the
Exchequer
Court.

No. 6.

Defendant's Statement as to Date of Invention Relied upon.

No. 6.
Defendant's
Statement
as to date
of inven-
tion relied
upon.

**DEFENDANT'S STATEMENT AS TO DATE
OF INVENTION RELIED UPON.**

For the purposes of this action only and with the issues as presently joined, the Defendant states that it proposes to rely on the dates of invention as of which it is entitled to priority according to the records of the Patent Office, with respect to each of the patents in suit, namely, as to Patent No. 265,960, the date of the corresponding British application, to wit, January 23rd, 1925, and as to Patent No. 311,185, the date of the corresponding U.S. application, to wit, December 15th, 1927, both said dates being referred to in the oaths accompanying respectively the application for the said Canadian patents. 10

Signed at Montreal, this 14th day of November, A.D. 1935.

(Signed) LAJOIE, LAJOIE, GELINAS & MACNAUGHTEN,
Solicitors for the Defendant.

No. 7.
Opening of
Proceedings
at the Trial.

No. 7.

Opening of Proceedings at the Trial.

PLAINTIFF'S SUMMARY OF THE PROCEEDINGS AT THE TRIAL
contained in pages 1 to 172 (part) of the Transcript.

Mr. Biggar opened the case for the Plaintiffs at some length. 20

At the conclusion of his opening address the President invited Counsel for the Defendant to indicate the nature of the Defendant's case, and Mr. Lajoie addressed the Court. In the course of his remarks he said :—

“ Your Lordship has in mind that the patentee is Dr. Camille Dreyfus.
“ Your Lordship no doubt knows about Dr. Dreyfus.”

Mr. BIGGAR : “ If Dr. Camille Dreyfus's personality and knowledge
“ are material I hope he will be here, but I have grave fear that he will
“ not be. I do not think my learned friend ought to open facts that he
“ is not prepared to prove.”

HIS LORDSHIP : “ Oh, certainly not.” 30

Mr. LAJOIE : “ I do not know how my learned friend intends to
“ deal with it, but he certainly made out and asserted as facts yesterday
“ a lot of matter which is not proved, but which he merely represented as
“ being facts which he intended to prove. So I presume it is on the same
“ footing—— ”

HIS LORDSHIP : “ Go on, Mr. Lajoie.”

Mr. LAJOIE : " Dr. Camille Dreyfus, together with his brother, Dr. Henri Dreyfus, residing in London, are well known in this field of industry, as will be established at the trial. They have formed these large companies dealing chiefly with cellulose acetate. Now Dr. Camille Dreyfus together with his companies has been a pioneer in this art. He has been associated with the early developments of cellulose acetate as a commercial product.

In the
Exchequer
Court.

No. 7.
Opening of
Proceedings
at the
Trial—
continued.

10 " Cellulose acetate came to be widely known as a commercial product comparatively recently. This is a new industry. Cellulose acetate came to be used in war days as dope on aeroplane wings. That was the original commercial application. Since then the product has developed tremendously, and has been applied, due to the efforts of Dr. Dreyfus and his associates, to a great many uses in the textile industry and other industries. I point out these facts at the outset in dealing with the patents on an art which is of recent origin in its commercial application, and in which we have the pioneer of the industry as the patentee."

Later he said :—

20 " Dr. Dreyfus taught the use of thermoplastic yarns of a cellulose derivative woven into the fabric. That was new and that is the all-important feature of the invention. We are not concerned with the uniting of fabrics otherwise than by the presence of a cellulose derivative in the form of yarn woven into the fabric."

HIS LORDSHIP : " You are limiting to yarns, are you ? "

Mr. LAJOIE : " I am not limiting, but the patent limits it very definitely, there can be no doubt about it."

And still later :—

30 " As I mentioned a moment ago, the patent essentially is the uniting by means of the use of yarns of cellulose derivative, which has to be a thermoplastic derivative, and by the application of heat and pressure, thus obtaining a composite material. That is the essence."

Evidence for the Plaintiff was then adduced as follows :—

EXHIBIT 1 : Patent No. 265,960, the petition and oath.

EXHIBIT 2 : Patent No. 311,185, with petition and oath.

EXHIBIT 3 : Assignment by Camille Dreyfus and Henri Dreyfus to Defendant, dated February 20th, 1926, recorded March 17th, 1926, as No. 131,044.

EXHIBIT 4 : Assignment from Camille Dreyfus to Defendant, dated September 17th, 1932, recorded September 23rd, 1933, as No. 184,149.

40 Mr. Biggar then offered in evidence United States Patent No. 1,903,960, corresponding to the first patent in suit.

Mr. LAJOIE : " My Lord, before this patent is put in, I wish to object to the production of the United States patent which is not involved in this case and has no pertinency to the present suit. I do not believe that it is customary to put in foreign patents which are not in issue and which cannot be pertinent to the case.

In the
Exchequer
Court.

No. 7.
Opening of
Proceedings
at the
Trial—
continued.

“ This is an action for a declaration of non-infringement, and for a declaration of invalidity of the patent. I do not think a patent issued in the United States on possibly a different application should be put in in this present suit. I wish to point out to your Lordship that this is not the British patent which was applied for in 1925, and in virtue of which a priority date results in favour of the patentee. It is an entirely different patent. It is purely and simply a foreign patent.”

HIS LORDSHIP : Your priority ?

Mr. LAJOIE : Yes, my Lord, it is not the patent. It is purely and simply a foreign patent, and that is all it is, my Lord. 10

HIS LORDSHIP : On what ground do you wish it in ?

Mr. BIGGAR : For the purpose of showing the fact that there were corresponding patents, as Mr. Dreyfus has already admitted, in the United States and in Canada and in Great Britain.

HIS LORDSHIP : Give us the dates of them. And the patent you put in is not the one establishing the priority ?

Mr. BIGGAR : My friend says so.

HIS LORDSHIP : That is Mr. Lajoie's objection, that that is not the patent you are putting in. I thought likely it would be the one.

Mr. BIGGAR : The point is that this is the United States patent 20 corresponding to the one in suit.

Mr. LAJOIE : It is not the one establishing the priority date.

Mr. BIGGAR : I agree with that, but I am not concerned with that. The patentee may have taken patents in various countries.

HIS LORDSHIP : Exception is taken to any patent other than those in relation to priority.

Mr. BIGGAR : My submission is that when an inventor makes an application in respect of the same invention in different countries, you are quite entitled to look at the different applications for the purpose of seeing what that invention is. 30

Mr. LAJOIE : If some allegation is made in that respect.

HIS LORDSHIP : It is usually done. I am not sure about it. I think I will allow it in but reserve the objection to strike it out.

EXHIBIT No. 5 : U.S. Patent No. 1,903,960 to Camille Dreyfus.

Mr. BIGGAR : The next is the British corresponding patent, my Lord, number 248,147, applied for on January 23, 1925, and the complete specification accepted on March 4, 1926.

Mr. LAJOIE : I wish to enter an objection for the same reason, my Lord. As far as priority is concerned, we will put in a certified copy of the Dreyfus application, so that the production of the patent serves no 40 purpose.

HIS LORDSHIP : I will reserve your objection as to that also.

EXHIBIT No. 6 : British Patent No. 248,147 applied for January 23, 1925, specification accepted March 4, 1926.

Mr. BIGGAR : Then the next, my Lord, is the corresponding United States patent to the other Patent, No. 1,828,397, applied for on December 15, 1927, and issued on October 20, 1931.

Mr. LAJOIE : I suppose the same objection will apply ?

HIS LORDSHIP : The same objection will apply.

Mr. BIGGAR : I do not know that there is a British one corresponding to the second one.

EXHIBIT No. 7 : Patent No. 1,828,397, United States. (To be filed.)

The REGISTRAR : Have you got that ?

10 Mr. BIGGAR : I will give you that.

Then, my Lord, I am handing your Lordship a book containing the patents relied upon.

Mr. LAJOIE : Oh, no, my Lord, we intend to object to several of the patents that my learned friend has referred to, as each one of them will have to be probably fought out. There are very serious objections of different characters to most of these patents. Several of them we claim are not admissible.

HIS LORDSHIP : I understand he is simply handing me a book for my use.

20 Mr. LAJOIE : Not to be filed as an exhibit ?

HIS LORDSHIP : This is a book of the prior art.

Mr. LAJOIE : As long as they are not exhibits filed in the record.

HIS LORDSHIP : We will discuss that when we come to it. He is simply doing what is always done. In a well prepared case there is a book of the prior art relied upon handed in for the Court's own use.

The REGISTRAR : But they are marked as exhibits.

Mr. LAJOIE : It is a question of whether they will go in as exhibits. I doubt that your Lordship wants to have the patents used.

30 HIS LORDSHIP : The only prior art that can be mentioned in evidence are those that can be mentioned in the pleadings.

Mr. CHIPMAN : Some of those mentioned in the pleadings will be objected to by us on certain grounds.

HIS LORDSHIP : How could you object to evidence being given on them ?

Mr. LAJOIE : As not being relevant to the case on account of the dates being subsequent.

HIS LORDSHIP : That is a matter of argument. We will dispose of that when we come to it.

40 Mr. LAJOIE : Then I suppose we will have to discuss whether they should be admitted.

HIS LORDSHIP : I expected to hear you say that not one of the prior arts has anything to do with the case.

Mr. LAJOIE : It does not go quite that far, my Lord. I would ask for your Lordship's ruling. I understand you are not admitting them.

HIS LORDSHIP : You need not file them as an exhibit just now. We will know what you put in.

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Court.

—
No. 7.
Opening of
Proceedings
at the
Trial.—
continued.

In the
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No. 7.
Opening of
Proceedings
at the
Trial.—
continued.

Mr. BIGGAR : Those are the ones I am going to rely upon. If your Lordship finds that they are not relevant, then your Lordship can exclude them. There is no reason why they should not go in as exhibits. The question is as to their relevancy having regard to their dates.
EXHIBIT No. 8 : Binder of Prior Art.

Mr. BIGGAR : Then, my Lord, I want to put in the Examination for Discovery. I will put in the whole of it, of Mr. Camille Dreyfus, because I do not need to select parts of it. There are some things in it that I rely upon.

Then in case this case went further and any question arose with regard to the failure of the Plaintiffs to get the facts with regard to Mr. Dreyfus, or with regard to Mr. Dreyfus's knowledge and the work that he did in anticipation of the patent, I would like to put in the notice of motion asking him to attend at his own expense for further examination, and the order dismissing that application, so that the situation will be clear on the record.

Mr. CHIPMAN : May I suggest that it is not proper to put them in as exhibits ; they are part of the record.

HIS LORDSHIP : They are part of the proceedings, Mr. Chipman.

Mr. CHIPMAN : Should they be put in as exhibits at this stage ? 20

HIS LORDSHIP : Yes.

Mr. CHIPMAN : I understand that they are already part of the record.

HIS LORDSHIP : Mr. Biggar stated that in the event of an appeal he wants to have these in in that way.

The REGISTRAR : Shall I put them in as an exhibit ?

HIS LORDSHIP : Yes.

Mr. BIGGAR : Yes.

EXHIBIT No. 9 : Examination for Discovery of Camille Dreyfus.

EXHIBIT No. 10 : Notice of Motion and Order Dismissing Application. 30

(There follows the evidence of Theodore Loew, page 172.)

No. 8.
Plaintiff's
Evidence.

No. 8.

Evidence of Camille Dreyfus, on Examination on Discovery.

Evidence
of Camille
Dreyfus.
Examina-
tion on
Discovery.

EXAMINATION ON DISCOVERY of CAMILLE DREYFUS, aged 57 years, President, Canadian Celanese Limited, of the City of New York, U.S.A., taken this 20th day of November, 1935, the said deponent being called for Examination on Discovery, after being first sworn upon the Holy Evangelis.

Deposed : At 8 o'clock p.m.

(Examination resumed from the afternoon.)

Mr. BIGGAR : Mr. Dreyfus, I am going to ask you some simple questions in English and will you answer them in French if you must but in English if 40

you can because we shall certainly save a great deal of time.—*A.* I found out that you speak French so well that I would ask you to speak French as my ear would get it better.

Q. My difficulty is that I am instructed by a colleague and an expert who do not speak French, consequently insofar as the examination is in French, we will have to take the necessary time for me to communicate to them in English what you say in French, you see then how it will save time.—*R.* Mais, c'est la même chose n'est-ce pas, vous êtes obligé de transmettre ce que moi je vous dis en anglais, pour qu'ils comprennent, donc du moment que vous parlez bien français, comme vous l'avez démontré cette après-midi, je ne vois pas plus d'inconvénients à ce que vous me parliez en français ; de toutes façons vous êtes obligé de transmettre la moitié c'est-à-dire cinquante pour cent, puisque ce n'est pas les questions qu'ils veulent avoir mais la réponse.

Q. C'est vrai—*R.* Il me semble que cela irait beaucoup plus vite et tout le monde sera content.

Q. Si c'est nécessaire que vous répétiez en français, la langue que je parle ne fait pas beaucoup de différence.—*R.* Vous causez très bien très bien.

Q. Can you tell me when the Defendant Company, Canadian Celanese, Limited, was incorporated ; it was about 1924 was it not ?—*R.* I could not tell you exactly. Je ne peux pas vous le dire exactement mais il y a quelqu'un qui le sait ; je crois que c'était en 1925, n'est-ce pas ?

M. GERIN-LAJOIE : Je voudrais savoir d'abord du Dr. Dreyfus s'il consent à être examiné en anglais ou s'il persiste à être examiné en français ; lequel voulez-vous ?—*R.* Je sais que c'est arrangé que l'examen doit être fait en français, ce serait plus facile pour moi, pour mon oreille et pour ma pensée.

Alors, *M. le Régistrai*re, comment doit-on procéder ? Il me semble que si le témoin a droit d'être examiné en français l'examen doit être conduit en français.

M. LE REGISTRAIRE : J'ai déjà décidé cela et j'ai indiqué que peut-être on pourrait procéder de cette manière : Poser les questions en anglais.

M. GERIN-LAJOIE : C'est-à-dire que le Juge a demandé aux parties de s'entendre s'il était possible. Le seul point de droit qu'il ait décidé dans le moment c'est celui du témoin d'être examiné en français. Si nous commençons l'examen il faut décider comment le témoin va être traité, autrement, nous aurons à faire face à une situation impossible.

Mr. BIGGAR : *Q.* Will you find out from one of the Officers of your Company who is present what the date was ?

M. GERIN-LAJOIE : Vu la déclaration du témoin qu'il désire être examiné en français, je fais objection et je dis que le témoin devra être examiné en français, et que, par conséquent les questions devraient être soumises en français.

LE REGISTRAIRE : Do you not think, Mr. Lajoie, that the Judge has decided that ?

M. GERIN-LAJOIE : Je ne crois pas, *M. le Régistrai*re.

Mr. MONTGOMERY : I understand that the Judge gave us a fatherly admonition to get together.

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tion on
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continued.

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M. GERIN-LAJOIE : Cependant, je crois que les remarques du Juge furent : If the witness wants to speak in French I can't prevent it.

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Evidence.

Mr. BIGGAR : I quite agree that the witness could not be required to speak any language of the two, but I would say that the question might be asked in English and the witness could answer it in French if he pleases.

M. GERIN-LAJOIE : C'est une suggestion qui avait été faite.

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of Camille
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Examina-
tion on
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covery—
continued.

LE REGISTRAIRE : I have made my ruling and I do not think it has been overruled. I still hold to my opinion and I am afraid I can't go back on it, we will go on the best we can and we will see later on.

M. GERIN-LAJOIE : De quelle façon ?

10

M. LE REGISTRAIRE : If the question is put in English the witness may reply in French.

M. GERIN-LAJOIE : Le témoin aura droit de demander que la question lui soit posée en français.

LE REGISTRAIRE : Il en a le droit.

Mr. BIGGAR : Si je comprends bien, oui.

LE REGISTRAIRE : Le Juge a dit que si le témoin insiste et déclare qu'il ne peut pas saisir exactement le sens de la question, il peut demander, insister, s'il le veut à ce que la question lui soit posée en français, mais je ne crois pas que cela sera nécessaire.

20

Mr. BIGGAR : Q. Can you give us the date, Mr. Dreyfus ?—R. Est-ce que vous auriez l'obligeance de me transmettre cela en français.

Q. Est-ce que vous ne comprenez pas ?—R. Quelle est la date ? Moi je ne connais pas la date de la formation de la société par coeur, était-ce en 1926 ? (Le témoin s'informe et dit que la date est 1926).

Q. Have you been the President ever since its organization ?—A. Yes.

Q. And when was the first composite sheet fabric of the kind described in Patent No. 311,185, made ?

M. GERIN-LAJOIE : M. le Régistreur, si l'examen doit se continuer de cette façon-là, je désire que mon objection soit bien notée quant à la forme 30 des questions qui sont soumises en anglais. Je ne veux pas paraître y avoir acquiescé mais je fais une objection formelle à l'encontre des questions posées en anglais vu la déclaration du témoin qu'il insiste à être examiné en français, car, autrement je paraîtrais avoir renoncé à cette objection.

M. LE REGISTRAIRE : J'ai déjà décidé que l'examen devra être fait en français et que les questions devraient être posées en français mais vu la décision du Président à laquelle je suis obligé d'acquiescer, je dois permettre les questions d'être mises en anglais.

M. GERIN-LAJOIE : Pourrais-je suggérer, M. le Régistreur, d'après ce qui a été dit antérieurement, que cela soit sous réserve du droit du témoin 40 de faire répéter la question en français s'il le désire.

LE REGISTRAIRE : Oh, oui !

Mr. BIGGAR : We all understand that if it comes to a point where the witness does not answer on that account I will be glad to take that responsibility on my shoulders if we can't get along. Let us try it.

M. GERIN-LAJOIE : Alors je demanderais qu'il soit bien entendu que si le présent examen doit continuer cela soit sous réserve du droit des parties relativement à l'objection faite de la part de la défense quant à la forme des questions qui seront posées au témoin soit en anglais ou en français.

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Mr. BIGGAR : I was asking Mr. Dreyfus when the first composite sheet fabric was made according to the patent in the suit—I gave the number wrong—I meant Patent No. 265,960.

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M. GERIN-LAJOIE : Je m'objecte à cette question pour une autre raison, c'est qu'il n'est pas question aujourd'hui dans cette cause de la date de l'invention.

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tion on
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continued.

LE REGISTRAIRE : Si la question se rapporte à cela l'objection serait maintenue mais je ne sais pas à quoi cela porte.

M. GERIN-LAJOIE : On demande au témoin à quelle date a été faite la première feuille de matériel suivant la demande de brevet.

Mr. BIGGAR : "In accordance with the patent," that is what I said.

M. LE REGISTRAIRE : Cela n'a rien à faire avec la date, vous avez déclaré que vous vous en teniez à la date de votre application.

M. GERIN-LAJOIE : Il n'y a aucune difficulté quant à la date qui est au bureau des brevets, c'est une date qui apparaît au dossier et sur laquelle il ne peut pas y avoir de discussion. Nous avons, par conséquent, renoncé pour les fins de la cause à toute date antérieure à laquelle pourrait remonter l'invention, par conséquent, aucune preuve devrait être tentée se rapportant à d'autres dates.

LE REGISTRAIRE : A prouver une date antérieure ; cela ne serait pas nécessaire.

M. GERIN-LAJOIE : Par conséquent, la question serait illégale.

LE REGISTRAIRE : Je ne sais pas si la question porte à ça.

M. GERIN-LAJOIE : Comme à sa face la question se rapporte à la date de l'invention ; je demanderais . . .

LE REGISTRAIRE : Elle ne va pas avant l'invention, on demande quand on a fait la première feuille en vertu ou sous la patente, on ne tente pas d'aller en arrière de la date de la patente, afin d'établir une date antérieure, je ne pense pas.

M. GERIN-LAJOIE : Je crois qu'il incomberait à mon savant ami d'expliquer ce qu'il a en vue en posant la question.

LE REGISTRAIRE : Je permets la question sous réserve de votre objection.

LE TEMOIN : Alors, quelle est la question maintenant ? En français, elle est tellement importante.

Mr. BIGGAR : Did you follow the question ?—*R.* Oui, mais je voudrais maintenant savoir quelle est la question, en français et je vais y répondre.

Q. Let me ask you again in English and you tell me if you do not understand. My question was : When was the first composite sheet fabric made under the patent ?—*R.* Est-ce que vous réferez au Canada ou est-ce que vous voulez

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me faire dire quelque chose référant à l'Angleterre ou quelque chose en Amérique ?

Q. To commence we will speak about Canada.—*R.* Eh bien au Canada, je crois que c'est à peu près au mois de mai 1935, cette année.

Q. And what was the nature of the composite sheet fabric which was then made?—*R.* Of the composite sheet? De la composition des tissus ?

Q. What were the materials of which it was made?—*R.* On a donné des licences à des firmes, je crois à trois ou quatre, pour exploiter notre produit au Canada, n'est-ce pas, voilà.

Q. That was in May, 1935?—*R.* Oui, c'était au mois de mai 1935. 10

Q. And what was the nature of the fabric then made?—*R.* Je n'ai aucune récollection de cela, n'est-ce pas, puisque tout le monde fait ce qu'il veut. D'après mon opinion peut-être que quelqu'un a utilisé cela avant, n'est-ce pas, mais d'après ce que j'ai entendu dire, et d'après ce que je connais, on a commencé à l'utiliser au mois de mai 1935.

Q. Yes, but as far as you know, there were none made, there were no composite sheets made under the patent before that?—*R.* Oui, mais je ne sais pas ce qui s'est passé au Canada.

Q. Have you made any inquiries from the appropriate officers of the Company?—*R.* Cela n'est pas venu à mon attention et je n'ai jamais rien 20 entendu.

Q. Well, there are officers of the Company present in this room, are there not?—*R.* Voulez-vous dire cela en français, s'il-vous-plait ?

Q. I said there are officers of the Company present in the room as well as yourself?—*R.* Oui, il y a M. Cadian.

M. GERIN-LAJOIE : Il vous demande s'il y en a.—*R.* Oui il y en a.

Mr. BIGGAR : *Q.* And the official position of those gentlemen is ?

M. GERIN-LAJOIE : Je m'objecte à cette question, la question telle que posée ne peut pas permettre au témoin de se renseigner auprès d'eux.

LE REGISTRAIRE : Peut-être que le témoin dira plus tard qu'il ne 30 connaît rien et cela ne sera d'aucune utilité.

M. GERIN-LAJOIE : Nous avons déjà offert des noms avant même qu'on ait fait une motion.

LE REGISTRAIRE : La question est permise sous réserve de l'objection.

M. GERIN-LAJOIE : Sous réserve de l'objection, vous pouvez répondre.—*R.* Alors qu'est-ce que voulez que je vous dise sous réserve.

Mr. BIGGAR : *Q.* I asked what their official positions were?—*R.* M. Palmer, je pense est vice-président de la société et M. Cadian est aussi vice-président.

Q. Now would you inform yourself from them or would you prefer that they should be examined?—*R.* Ecoutez, monsieur, je n'ai aucune objection 40 à faire tout ce que vous voudrez, mais je suis là pour être examiné, je suis à votre disposition mais je n'ai aucun désir à vous soumettre ; si vous voulez examiner qui que ce soit, allez-y, puisque je ne puis pas vous le défendre, tout de même, n'est-ce pas, alors, c'est très poli de me demander cela et je l'apprécie beaucoup, mais je n'ai rien à vous dire, je n'ai pas à donner d'ordres.

Q. Well I will come back then, has the Company any knowledge of the manufacture in Canada of composite sheet fabric under the patent, prior to May, 1935 ?—R. Je dirais oui, puisque nous avons eu le brevet, n'est-ce pas, nous avons beaucoup de brevets et peut-être que quelqu'un le sait pendant qu'un autre ne le sait pas, mais moi je n'ai pas causé avec eux sur ce sujet et je ne peux pas vous le dire.

Q. You see, I am examining you as an officer of the Company and I am asking you for the knowledge of the Company on a particular point, and the knowledge that I am asking for is the knowledge whether or not there was
10 manufactured in Canada any composite sheet fabric under this patent prior to May, 1935 ?

Mr. MONTGOMERY : What is the knowledge of a Company, Mr. Biggar ? The Secretary knows certain things that the President does not and this applies to other officers also. An individual can only give his own version. I have never been able to understand what that meant, the knowledge of a company. Which man in a company has the knowledge of the company ? The documents of the company are the official knowledge of the company and are kept by the secretary. What is the knowledge of a company ?

LE TEMOIN : Permettez-moi d'ajouter . . . nous avons des ingénieur-chimistes, des "Managers," des officiers n'est-ce pas, alors c'est leur devoir de savoir ce qu'ils ont, ce que la société a, "ses assets." Alors moi je ne veux pas être responsable s'il y a quelqu'un de la société qui ne le sait pas, alors, moi je crois qu'il devrait le savoir. Je veux simplement vous dire tout ce que je sais, moi, je vous le dis avec franchise et honnêteté mais je ne veux pas être responsable de l'ignorance des autres dans leur tâche.

Mr. BIGGAR : Q. As far as you have been able to find out was there any composite sheet fabric manufactured in Canada under this patent prior to May, 1935 ?—R. Moi, je vous ai donné cette date parce que je l'ai demandé à quelqu'un qui le sait mais quant à la question que vous me posez, je ne le sais
30 pas, je ne peux pas vous répondre, voilà ma réponse : je ne le sais pas.

Q. I will put it this way : Does the Defendant Company contend that there was any composite sheet fabric made under this patent, in Canada, prior to May, 1935 ?—R. Nous ne disons rien du tout, n'est-ce pas, c'est vous qui me le demandez, n'est-ce pas. Moi je vous dis : Je ne le sais pas.

Q. But you understand Mr. Dreyfus that this examination is for the purpose of finding out what position the Company is going to take at the trial of this action ?

LE REGISTRAIRE : Could not Counsel give you that, it may be better.

M. GERIN-LAJOIE : L'interrogatoire est fait sur des questions de fait
40 et nous nous en rapportons à la procédure. On ne peut pas interroger le Dr. Dreyfus sur d'autre chose que des questions de fait.

Mr. BIGGAR : On veut s'assurer quelle sera la défense faite par la compagnie.

M. GERIN-LAJOIE : Ce n'est pas le témoin qui peut le dire ni aucun autre officier. C'est une question légale et pour son avocat.

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tion on
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Mr. BIGGAR : The rule is quite clear that an officer can be examined on behalf of the Company and that it is his duty to ascertain what is the information in the possession of the Company and to give it in cross-examination.

The REGISTRAR : That is the general rule. Apparently Mr. Dreyfus is mixed up with so many companies that probably a vice-president or another man would know more about the affairs of a company.

LE TEMOIN : C'est exactement ce que je dis dans le mémorandum. Vous avez cru bien faire en m'amenant ici. Je vous donne précisément tout ce que je sais. Vous pouvez être sûre que je n'ai rien à cacher. Tout ce que vous voulez savoir et que je sais je vous le dirai mais je ne peux pas vous dire 10
de choses que je ne connais pas. On a beaucoup de choses à faire et beaucoup de brevets, des centaines, mille brevets, peut-être encore plus. Je vois quelqu'un qui me regarde quand je dis cela . . .

Mr. BIGGAR : This officer, Mr. Registrar, is no doubt as President of the Company responsible for the instructions for the defense of this action. The fact that I am directing my question to now, is a fact that is within the knowledge of the Company and I want to know whether this fact is so or not.

Mr. MONTGOMERY : I happen to be President of the Textile Company and if you would ask me any question about their products I would not be able to answer them. 20

Mr. BIGGAR : If you gave instructions for a defense you would know jolly well the facts upon which your Company bases its defense.

Mr. MONTGOMERY : If you would ask me how their product is made I would not know that.

Mr. BIGGAR : Yes, but it would be your duty to find out . . . I am not obliged to examine everybody in the employ of the Company, the President is the man who is responsible for the conduct of this litigation.

Mr. MONTGOMERY : Where do you get that ?

The REGISTRAR : If he says he doesn't know ?

Mr. BIGGAR : I imagine he is not only an ornamental president but that 30
he is active.

LE TEMOIN : Vous êtes très honnête en disant cela et je suis honnête en vous disant que je ne le sais pas, qu'est-ce que vous voulez que je fasse ? Toute la société est à votre disposition pour lui demander les question que vous voulez, mais moi je vous dis que je ne le sais pas.

Q. It is not necessary for me to examine the whole company, I am entitled to address my questions to you.—R. Alors pourquoi m'a-t-on fait venir ici ? Je suis à votre disposition pour répondre aux questions que vous me demandez.

The REGISTRAR : The witness apparently does not want to answer since he does not know. 40

Mr. BIGGAR : Will you take steps now to find out what the facts are ?—R. Est-ce que je pourrais sortir un moment avec les officiers de la compagnie pour savoir si eux le savent, si vous voulez ?—R. Cela peut bien aboutir à rien. Cela peut être un mélange de choses techniques et en dehors de la sphère de

ces messieurs. Ces officiers-là sont plutôt des officiers de l'administration, moi aussi je suis de l'administration, et, comme vous l'avez dit ce matin d'une colossale société en Amérique ; je suis tête d'une colossale société en Angleterre, ici je suis tête et quand on est tête on ne connaît pas les détails, n'est-ce pas ? Il faut demander au monde quels sont les détails.

Q. Would you be good enough to inform yourself on this particular detail from the officers in the room ?

M. GERIN-LAJOIE : Il n'y a rien qui dit que les officiers qui sont dans cette salle peuvent donner au témoin les renseignements qu'il désire, ils ne sont
10 que deux officiers, ce n'est pas toute la compagnie et ils ne sont pas là pour être examinés.

The REGISTRAR : What is the question again ?

Mr. BIGGAR : Q. I am merely asking if as far as the Company knows any composite sheet fabric was made prior to May, 1935, under this patent.

LE REGISTRAIRE : Quelle est l'objection à cela ?

M. GERIN-LAJOIE : Il peut répondre quant à ce qu'il connaît concernant les faits.

Mr. BIGGAR : My question was : Would you be good enough to inform yourself on this particular point from the officers in the room ?—R. Moi je
20 pense qu'ils n'en savent pas plus que moi puisque ce ne sont pas des hommes techniques mais ce sont des hommes qui font partie de l'administration et de la vente des marchandises. M. Palmer est gérant des ventes, et M. Cadian est secrétaire de la société et même temps que vice-président. Qu'est-ce que vous voulez, un vice-président c'est comme un président n'est-ce pas, il ne sait pas tout. Je crois que c'est inutile de répondre à ça parce qu'il faudrait que je repasse tout mon staff pour voir ce qu'ils ont fait.

LE REGISTRAIRE : On ne peut pas examiner tous les membres d'une compagnie et il me semble que qui vient ici devrait être préparé. Si vous vous objectez à ce que le témoin réponde ou qu'il ne doit pas prendre d'informations
30 dites le et on fera une entrée au dossier.

M. GERIN-LAJOIE : S'il veut s'informer auprès des officiers de la compagnie il faudra que ce soit à propos de ce qu'ils connaissent personnellement. Ces deux officiers-là ne représentent pas toute la compagnie. Je n'ai pas d'objection en dehors de cela mais vous ne pouvez pas demander l'impossible.

LE REGISTRAIRE : Est-ce que le témoin est autorisé à demander l'information ?

M. GERIN-LAJOIE : Je n'y vois pas d'autre objection.

LE REGISTRAIRE : Pouvez-vous avoir ces dates-là ?—R. Je ne peux pas vous dire oui, je ne peux pas vous dire non. Il faudrait que je ramasse
40 tout le monde ensemble et que j'aie du temps pour le faire. Il me faudrait du temps puisque j'ai d'autre chose à faire. Je n'ai pas été prévenu de cela. Cela pourrait se faire, mais je ne peux pas vous le dire maintenant. Je suis ici, pour témoigner de ce que je sais moi-même, n'est-ce pas, et je ne vais pas au-delà et je ne veux pas être tenu responsable. Je ne le sais pas.

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LE REGISTRAIRE : La substance de la réponse est simplement ceci que le témoin ne le sais pas personnellement et qu'il ne croit pas que ses officiers dans la chambre puissent lui donner l'information.

M. GERIN-LAJOIE : C'est ça.

Mr. BIGGAR : Do you say that you will not ascertain that fact from the officers of the Company who are present in the room ?—*R.* Oh no, I do not refuse anything. Si vous le voulez et si mon conseil le veut et me donne la permission de le faire, si vous le permettez M. le Régistiaire, je vais m'informer.

(The Examination is suspended for a few minutes.)

Mr. BIGGAR : *Q.* Have you informed yourself ?—*R.* Yes I have informed 10 myself. Est-ce que je peux savoir . . . Vous voyez maintenant que je suis très accomodant et que je viens de commencer en anglais et vous savez que mon esprit travaille en français—pour bien faire maintenant il faudrait savoir qu'elle est la question précise que vous me posez.

Q. The question I asked was . . .—*R.* Est-ce que vous ne pourriez pas la faire en français ?

Q. My question was : Would you inform yourself from some of the officers who are in the room whether any composite sheet fabric was made under this patent, in Canada, prior to May, 1935 ?

LE REGISTRAIRE : By the Company ?

20

Mr. BIGGAR : Oh no ! In general.

LE REGISTRAIRE : Qu'est-ce que vous répondez à cette question après consultation ?—*R.* Avec mes collègues, après consultation, je peux dire qu'ils n'ont comme moi aucune idée mais il y a sans doute bien du monde de notre société qui le saurait mieux. La question que vous m'avez posée n'est pas tout à fait précise, puisque, bien entendu, cela se rapporte au monde qui ont pris des licences chez nous à la date de 1935. C'est bien entendu que ces gens-là qui ont travaillé cela ont dû voir nos brevets longtemps après et aussi les conditions qui les accompagnent ; après quoi ils sont venus chez nous pour prendre une licence quand ils ont vu que nous avions les brevets. Je réponds 30 cela.

Mr. BIGGAR : *Q.* Are there any vice-presidents of the Company besides the two gentlemen who are here ?—*R.* Il y en a deux encore.

Q. There are four altogether ? (The witness is informed by one of the officers present that he is not one of the vice-presidents and that there are only three.)—*R.* Alors je me rétracte au sujet de ce que j'ai dit à propos de M. Cadian, je croyais qu'il était vice-président alors qu'il ne l'est pas, il est secrétaire-trésorier.

Q. Then have you or either of these officers any reasons to suppose that anyone else in the Company has a knowledge that is the knowledge of the 40 Company with regard to the manufacture of any composite sheet fabric under this patent prior to that date or about that date ?—*R.* About the manufacture ? Posez votre question en français car je veux savoir si je comprends bien n'est-ce pas.

Q. Est-ce que vous avez aucune raison de supposer qu'il y a des officiers de la compagnie qui ont l'information au sujet de la fabrication d'une

“ composite sheet fabric ” en vertu de cette patente avant le mois de mai 1935 ? (Le témoin consulte d'autres personnes présentes)—*R.* Non je ne crois pas que les officiers de la compagnie le sachent, je ne pense pas.

Q. Now, of course you have in the Company, I suppose, some fifty officers and senior employees who might have that information?—*R.* Vous avez demandé des vice-présidents, n'est-ce pas, les trois, n'est-ce pas ?

Q. Oui.—*R.* Voilà ma réponse qui se rattache à eux, maintenant nous avons tout un pataclan d'employés.

10 *Q.* Un mille?—*R.* Combien avons-nous d'ouvriers, je crois que nous en avons plus que trois milles. (Le témoin consulte quelqu'un.) D'après ce que j'entends nous en avons deux mille cinq-cent.

Q. You would agree Mr. Dreyfus, that I can't successively call as witnesses twenty-five hundred different persons and so you, I am afraid, must assume the responsibility for representing the Company.—*R.* Il faudrait que je fasse une investigation là-dessus, n'est-ce pas, voilà tout. Moi, je ne peux pas vous dire ce que quelqu'un sait ou ne sait pas. Maintenant il faut de l'expérience pour savoir faire cette investigation n'est-ce pas et ça, nous allons voir.

20 *Mr. BIGGAR :* Mr. Registrar I want to call your attention to the statement that the witness has now made which is that they have twenty-five hundred employees in the Company and that unless an enquiry is made it is impossible for the witness to say whether the Company had any knowledge of the manufacture of this composite sheet material in Canada before May, 1935.

The REGISTRAR: A laborer would not have the knowledge of the Company.

Mr. BIGGAR : I am pointing out that the witness says that whether the Company knows or does not know, this information cannot be given me according to the witness, without an enquiry and therefore I think that it would be necessary to postpone the completion of this examination until that enquiry has been made. Anyhow I will go on as far as I can now.

30 *Q.* When, according to your present information, composite sheet material began to be made in Canada under this patent, what were the characters of the composite sheet material that was made, to begin with, which of the non-thermoplastic or relatively non-thermoplastic material was used for the manufacture of the fabric ?

40 *M. GERIN-LAJOIE :* Ja m'objecte à la question parce que le témoin a déclaré que l'usage qui a été fait du brevet No. 265,960, qui est celui je crois, auquel réfère mon savant ami, était au moyen de licences qui avaient été accordées à d'autres maisons ; par conséquent le tissu en question n'a pas été fait par la défenderesse et le témoin ne peut pas être requis je crois, de témoigner sur ce que les autres personnes ou autres maisons ont pu faire. On ne peut pas s'attendre à ce que ce soit non plus à la connaissance du témoin.

LE REGISTRAIRE à M. BIGGAR : You would not expect that would you ?

Mr. BIGGAR : No, the witness says that the Company has no knowledge of the manufacture of that material as far as he now knows, prior to May, 1935. It follows that he does not know of the manufacture of composite sheet material

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under this patent on or about May, 1935 ; I am asking which of the several materials specified in the patent this fabric of which he does not know, was made.

M. GERIN-LAJOIE : Le témoin a expliqué que c'était au moyen de licenses.

The REGISTRAR : The witness has said that he did not know of the fact that some had been made in May, 1935.

M. GERIN-LAJOIE : Il a expliqué que c'était à cause des licenses qui avaient été accordées par la compagnie.

The REGISTRAR : If it was by licencees, let him say so and that is the end of it. 10

M. GERIN-LAJOIE : Je crois que c'est ce qu'il a dit que c'était des licenses accordées par la compagnie en Mai, 1935.

The REGISTRAR : I do not think that was clear.

M. GERIN-LAJOIE : Il peut donner sa réponse encore.

The REGISTRAR : There is no objection to the question anyway. Would you repeat your question, Mr. Biggar ?

Mr. BIGGAR : The question was : of which or of what non-thermoplastic or relatively non-thermoplastic material such as those mentioned in the patent of the silk, cotton, linen, artificial silk of the cellulose type, wool or other non-thermoplastic fibres or filaments or mixtures of these materials was the composite sheet fabric of which he knew of the manufacture in May, 1935 ? 20
—*R.* Je ne sais pas puisque se n'est pas mon devoir de savoir ; chaque licencié fait ce qu'il veut ou ce qu'il peut suivant sa license. Mon devoir c'est simplement d'encaisser les "royalties." Nous avons un brevet bien entendu et les gens savent qu'ils contrefont ce brevet s'ils ne prennent pas de licenses et c'est tout ce que je sais. Sans doute, si je le savais je vous le dirais mais ce serait trahir un secret de nos clients et je vous dis franchement que je ne le pourrais pas.

Q. I will have to ask you to find out perhaps by the same inquiry that you may have to make to find out the other information because you see you told me that you knew of its being made under this patent in May, 1935 ; now 30 I am merely asking you what was the material you know of being made in May, 1935 ?

M. GERIN-LAJOIE : Je fais objection à la question telle que posée et surtout à l'interprétation donnée par le procureur de la demande à la réponse déjà donnée par le témoin. Il vient d'expliquer positivement que la compagnie a accordé des licenses.

LE REGISTRARE : Le témoin a dit n'est-ce pas, que dans le mois de mai 1935, il en a eu connaissance lui-même ; quant au fait . . .

M. GERIN-LAJOIE : Non, il vient de dire que non.

LE REGISTRARE AU TEMOIN : Si ce n'est pas à votre connaissance . . . avez-vous dit que vous aviez obtenu l'information ?—*R.* Non, nous avons donné des licenses. J'ai dit précisément, M. le Régistiaire, que je ne puis savoir ce que nos licenciés font, c'est un secret qu'ils gardent jalousement et si 40

je le savais je ne pourrais le trahir sans le consentement de ces gens ; alors du moment que je ne le sais pas je ne trahis rien.

LE REGISTRAIRE : I understand that the witness is merely speaking of what he thinks the licencees have done and he does not answer that question.

LE TEMOIN : Toujours est-il qu'ils ont pris des licences sur nos brevets. C'est tout ce que je sais et je dis aussi que cela est arrivé au mois de Mai, pour être plus précis c'est le 23 mai 1935, ça c'est la date fatale.

M. GERIN-LAJOIE : Pour une des licences ?—*R.* Oui, c'est une date qui me revient maintenant.

10 LE REGISTRAIRE : C'est la date d'une licence mais non pas le fait de l'avoir fabriqué.

M. GERIN-LAJOIE : Oh non, ce témoin ne connaît rien de cela.—*R.* Je ne suis pas ici comme un expert pour mentionner tel ou tel procédé, je dis tout simplement ce que je sais. Vous voyez maintenant M. le Régistreur, comment il est agréable d'avoir les choses en français complètement, sans doute je n'avais pas saisi l'expression mais je fais ce que je peux.

The REGISTRAR to Mr. BIGGAR : Then, are you going to examine him as assignor of the patents ?

Mr. BIGGAR : Yes.

20 M. GERIN-LAJOIE : I will make an objection to that. We are not concerned with that to-night.

The REGISTRAR : If what the witness says is an explanation that it was the licencees and he says that he does not know, I suppose that is the end.

Mr. BIGGAR : I do not think so, there is quite a lot more.

The REGISTRAR : That is the end of that question.

Mr. BIGGAR : Are we right then, Mr. Dreyfus, in now understanding that a licence to manufacture fabric under this patent was granted on May 23rd, 1935.—*R.* Je crois que c'est exact.

30 Q. Then probably you can tell me that prior to that the Company had never manufactured any fabric in accordance with this patent ?—*R.* I do not know that.

Q. Surely I am entitled to know that ?—*R.* Ça c'est une question à laquelle je ne puis pas répondre maintenant, cela dépend de ce que vous entendez, il faudrait que la question soit plus précise, votre question est tellement vague. Fabriquer pour la vente ? fabriquer pour "experiments" ? ou fabriquer comment ? C'est un point sur lequel je ne peux pas vous dire oui ou non. Si vous posiez une question qui me permette de vous dire oui ou non je le préférerais beaucoup.

40 Q. Let us define the question then, Mr. Dreyfus : Did the Company manufacture any composite sheet fabric under this patent prior to May, 1935, for sale ?—*R.* Si vous me demandez cela, je crois que non ; nous n'en avons pas vendu d'après mon opinion. C'est mon opinion sur ce point mais il faudrait que je me renseigne aussi, mais d'après mon opinion on n'en a pas fait.

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Q. And, as far as you are aware now, did the Company manufacture any composite sheet fabric under this patent by way of experiment before that date?—*R.* Ca je ne le sais pas non plus sans faire une investigation.

Q. And, you can ascertain, I suppose, by enquiry whether or not that was done?—*R.* Oui je crois que je peux le faire mais je n'en suis pas sûr.

Q. If you find that it was done I would ask you to be good enough to bring with you any samples now in existence?

M. GERIN-LAJOIE : Je m'objecte à ceci en autant qu'il n'est pas convenu que ce témoin doit revenir ici pour un autre examen. Je ne sais pas si mon savant ami désire faire ajourner cet examen à plus tard pour faire revenir le témoin une autre fois de New York. 10

Mr. BIGGAR : I have made it quite clear already that the witness said that he could not answer questions which should properly be answered before consulting twenty-five hundred persons.—*R.* Vous m'avez demandé combien nous avons d'employés, n'est-ce pas, et j'ai répondu que nous en avons environ deux mille cinq cent.

Mr. BIGGAR : The purpose of the examination on discovery is to find out what is the nature of the Plaintiff's claim or the Defendant's claim and also to get such facts as may be useful in examining the parties for the purpose of making his own case. There are certain things that I have asked that are certainly necessary for the purpose of ascertaining what the Defendant's case is, and the witness says that so far he cannot give that information without an enquiry and in that case it is obvious that we cannot finish this examination without an adjournment to permit an enquiry to be made. 20

Q. Now, Dr. Dreyfus, how do you happen to know of this licence of May 23rd, 1935?—*R.* Je crois que dans la procédure des affaires cela vient à ma connaissance comme toutes choses importantes viennent à ma connaissance. C'est comme ça que je l'ai su. Je suis président de la société donc, c'est un rapport, n'est-ce pas, qui m'apporte de l'argent et il faut savoir d'où cela vient.

Q. And do you receive . . . I think you told me that you received the money that comes in from the licencees?—*R.* Ça c'est une question sur laquelle je ne suis pas bien renseigné, je pense bien que quand quelqu'un signe un contrat pour payer quelque chose, il respecte sa signature. 30

Q. And, did the Company receive any royalties under this licence of May 23rd, 1935?—*R.* Il faudrait que je me renseigne sur ce point car je crois qu'il y a quelqu'un dans cette chambre qui le saurait mieux que moi, je ne connais pas les détails de cela.

Q. Did the Company give any instructions to the licencees with regard to the manufacture of the composite sheet fabric pursuant to the patent?

M. GERIN-LAJOIE : Je m'objecte à cette question comme étant étrangère à la contestation ; la licence est accordée en vertu du brevet et cela ne change ni le brevet ni la licence quelles que soient les instructions données. 40

The REGISTRAR : The action is for impeachment and I can't see I can settle that objection now or not. The question is allowed subject to your objection.

Mr. BIGGAR : My question was : Did the Company give any instructions to the licencees with regard to the manner in which the fabric should be made pursuant to that patent ?—*R.* Je ne puis pas vous répondre là-dessus, puisque je ne le sais pas.

Q. You could find that out I suppose ?—*R.* Peut-être que je peux me renseigner si cela peut vous être utile.

Q. What I am particularly anxious to know is whether that non-thermoplastic material or relatively non-thermoplastic material was silk, cotton, linen or some other fabric of the kind ?

10 M. GERIN-LAJOIE : Je m'objecte à cette question comme étant entièrement étrangère au litige, même je ne comprends pas la question telle qu'elle est posée.

LE REGISTRAIRE : Je ne sais pas si cela est matériel ou non, je ne vois pas l'objection pour le moment.

M. GERIN-LAJOIE : Ce que le procureur demande évidemment est : Quelles sont les instructions qui ont été données relativement . . .

LE REGISTRAIRE : Non, la question est : Quel est le matériel dont il s'est servi. Pourquoi, je ne sais pas.

M. GERIN-LAJOIE : Un matériel utilisé par les licenciés ? C'est clairement illégal.

20 LE REGISTRAIRE : S'il ne le sait pas ou si c'est par les licenciés, qu'on le dise et ce sera la fin.

M. GERIN-LAJOIE : C'est pour cela que je m'objecte aussi. Si c'est pour les licenciés c'est la fin, si c'est pour les instructions qui ont été données en rapport avec les licences je ne crois pas que la question devrait être permise, dans tous les cas la question ne devrait pas être permise parce que l'on ne sait pas sur quoi elle est basée.

Mr. BIGGAR : What I want to know is whether that non-thermoplastic material or relatively non-thermoplastic material was silk, cotton, linen or some other fabric of that kind in respect of which a license was granted and royalties
30 paid under it ?

Mr. GERIN-LAJOIE : Je m'objecte à cette question en autant que la licence couvre le brevet, il n'est pas question de matériel dans une licence, ce n'est pas limité au matériel.

LE REGISTRAIRE : If the witness does not know let him say so, that would be outside of the Company's activities and that would put an end to the question.—*R.* Eh bien, écoutez, nous donnons une licence sur un brevet et tout ce qui est dans le brevet appartient au licencié.

Mr. BIGGAR : *Q.* Convenu. *R.* Quand nous avons donnée une licence nos intérêts cessent ; nous ne sommes pas curieux. En ce qui me concerne, tout
40 ce que je sais c'est que nous touchons des " royalties." Maintenant vous me demandez des détails sur ce que font nos clients mais je ne puis pas vous répondre là-dessus, je ne le sais pas.

Q. Mr. Dreyfus, do you seriously tell me that having granted a licence under this patent it is a matter of entire indifference to the Company whether the licencee is making silk pyjamas or cotton dresses or linen dresses or anything

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else, it is a matter of entire indifference what they are making?—*R.* Vous pouvez continuer comme ça n'est-ce pas, puisque c'est ce que vous voulez dire. Maintenant si je comprends bien votre pensée en anglais, non, ce n'est pas précisément ainsi. Je vous dis : prenez ma position, j'ai un brevet, quelqu'un vient me demander une license, c'est mon brevet je lui la donne s'il me paye mon prix. D'ici là je ne vais pas lui demander s'il emploie un mélange de soie ou de coton, de laine, de n'importe quoi ; ce n'est pas mon devoir de le savoir. Je peux le savoir mais je ne le veux pas quoique qu'il y a moyen pour moi de le savoir comme tout le monde a le moyen de savoir ce qu'un individu fait, n'est-ce pas ?

10

Q. Would you be good enough to produce the licences you speak of ?

M. GERIN-LAJOIE : Je m'objecte à cette question et spécialement à la production de license. Je crois, *M. le Régistrai*, que ce serait tout à fait illégal et que cela tenderait à dévoiler les affaires privées de la compagnie. Je dois dire que j'attache beaucoup d'importance à cette objection car il n'y a rien dans la loi qui puisse le permettre.

The REGISTRAR : How would that affect the patent, *Mr. Biggar* ?

Mr. BIGGAR : It is very important *Mr. Registrar* ; the witness says that he does not know what these things are. My instructions are that the license provides for the paying of royalties with reference to specific articles made in a specific way with which the Company is very familiar. One of my contentions is to prove that this patent has never been resorted to at all and that these articles in respect of which this license purports to have been granted are articles which are not within the patent at all, which matter is of very considerable importance to the question of actual resort to the patent, you see.

20

M. GERIN-LAJOIE : En réponse aux remarques qui viennent d'être faites ; comme je l'ai fait remarquer tantôt, l'usage ou le non-usage par Canadian Celanese Limited de ses brevets, ne peut pas affecter la validité de ses brevets et toutes les explorations que mon savant ami dans l'usage que la compagnie peut faire de ses brevets n'ont aucune portée sur la cause, n'affecte pas la validité des brevets tout comme si la compagnie avait simplement mis ses brevets dans un casier, sans s'en servir, cela ne serait pas une cause d'invalidité.

30

M. LE REGISTRAIRE : Il peut bien en suggérer la raison.

M. GERIN-LAJOIE : Il incombe à mon savant ami de prouver la raison légale de sa question. Je m'objecte à la question et à la production de la license, car cela dévoilerait les secrets de la compagnie.

M. LE REGISTRAIRE : Il ne faut pas oublier non plus, *M. Lajoie*, que le témoin a dit telle ou telle chose et qu'il y a une manière de contester, une manière de faire pour établir . . .

40

M. GERIN-LAJOIE : Il contredira alors son propre témoin . . . d'ailleurs, une simple question a été posée, à savoir, si il y a eu une license d'accordée, le témoin a répondu qu'il y en avait . . . Lorsque l'on veut arriver à la license elle-même, pour en connaître les termes, pour connaître

quelles conditions contient la license et sous lesquelles elle a été accordée, cela devient des affaires privées de la compagnie et ne peut pas intéresser la demanderesse et n'est pas légale dans les circonstances; cela ne peut pas affecter la validité des brevets.

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M. LE REGISTRAIRE : Je vais permettre la question sous réserve . . . vous pourrez faire ce que vous voudrez avec le Témoin s'il refuse de répondre.

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M. GERIN-LAJOIE : Nous sommes obligés d'insister sur notre objection et pour avoir une décision sur ce point-là, c'est une affaire importante pour la compagnie.

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10 M. LE REGISTRAIRE : Dites simplement pour que ce soit sur le dossier : Le Témoin refuse nécessairement de répondre sur votre avis et plus tard ce sera à la Cour de décider si j'ai raison ou non quant à la production de la license.

Mr. BIGGAR : *Q.* Doctor Dreyfus, in view of the refusal of your Counsel . . . perhaps you can tell me how the royalties under this license are calculated?—*A.* I do not know, I have not that information now.

Q. Are they calculated by referring to the number of dozens of some particular article made by the licensee?—*R.* Je le répète, je n'ai pas vu la license.

20 *Q.* Have you got any licences that are not . . . that is that you do not receive royalties calculated in that way?—*R.* Encore une fois, la question en français, s'il vous plaît.

Q. Est-ce que vous avez des licenses sous lesquelles les paiements ne sont pas calculés par douzaines d'un article spécifié?—*R.* Je ne peux pas vous le dire, je ne le sais pas.

Q. Vous pouvez vous informer à ce sujet, n'est-ce pas?—*R.* Cela, bien sûr, je pourrais le faire, s'il plaît à la Cour.

M. GERIN-LAJOIE : Je m'objecte à la question car je la crois illégale; les termes des licenses sont des matières privées, des affaires de la compagnie.

M. LE REGISTRAIRE : C'est la même objection que je prends sous réserve . . . et on continue . . .

30 Mr. BIGGAR : *Q.* Do you know, Mr. Dreyfus, which of the particular thermoplastic derivatives of cellulose are used in these articles made under the patent under this or any subsequent licence?

M. GERIN-LAJOIE : Je m'objecte également à cette question comme étant étrangère à la contestation, comme ne pouvant aucunement affecter la validité du brevet et comme étant des actes des tiers.

M. LE REGISTRAIRE : La production des documents devant la Cour est une question bien différente à mon point de vue . . . I do not know if it is immaterial or not . . . Je permettrais la question sous réserve.

40 M. GERIN-LAJOIE : Quelle réponse donnez-vous, docteur?—*R.* J'ai dit, moi, que je ne sais pas.

Mr. BIGGAR : *Q.* And that you could find out?—*R.* C'est la même réponse, je ne suis pas sûr je crois.

M. GERIN-LAJOIE : *Q.* Il faudrait que vous renseigniez auprès des tiers?

M. LE REGISTRAIRE : If that is very necessary for you to enquire of third parties?

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Mr. BIGGAR : If the Company does not know and since the Company has no information about it, that is the end of it.—*R.* On ne peut pas aller chercher quelque chose chez un tiers sans en avoir le contrôle.

M. LE REGISTRAIRE : Si la question demandait une réponse qui vous obligerait à faire une enquête chez une personne en dehors de votre compagnie, je crois que l'objection serait maintenue, mais je croyais que la question était sur un point qui est la connaissance de la compagnie.

M. GERIN-LAJOIE : Non, la question posée par le procureur est que le Témoin fasse une enquête auprès des tiers, auprès de ceux à qui des licences ont été accordées.—*R.* Absolument, puisque moi je ne peux pas jurer ici que tel ou tel licencié fabrique tel ou tel tissu, d'une manière telle ou telle, avec le plastic tel ou tel, et quoi ? Je ne peux pas le dire, je ne le sais pas, ce n'est pas à moi de le dire. C'est le licencié qui va vous le dire sans doute, moi je ne sais rien, ce n'est pas à moi que vous devez demander ça, ce que le tiers fait. Mon brevet couvre le tout, n'est-ce pas, alors, ce que le tiers fait m'est bien égal du côté juridique, moi je ne suis intéressé qu'à ramasser les redevances. 10

M. GERIN-LAJOIE : Je soumets mon objection en autant qu'il s'agit de s'enquérir de faits auprès des tiers.

M. LE REGISTRAIRE : Je maintiens l'objection sur ce point.

Mr. BIGGAR : *Q.* Would you be good enough, before the examination is resumed—when it is adjourned, it may be some days hence—to ascertain whether the Company has any knowledge of the non-thermoplastic material that is used or has been used by any of the licensees and whether it has any information with regard to thermoplastic that has been used by any of the licensees. 20

M. LAJOIE : Je m'objecte à cette question.

M. LE REGISTRAIRE : Pour quelles raisons ?

M. GERIN-LAJOIE : Vu qu'il n'est pas question d'ajourner, à une date antérieure, pour permettre une enquête et parce que le procureur ne peut pas demander des renseignements de la compagnie qui nécessiteraient une enquête pour savoir ce que les tiers peuvent faire. 30

M. LE REGISTRAIRE : The question is perfectly right, whether the Company knows or not . . . if the Company has no information, that is different.

M. GERIN-LAJOIE : Le procureur a choisi de faire venir le président de la compagnie qui a tous les renseignements qu'il peut fournir, mais on ne peut pas obliger le président de la compagnie à faire une enquête sur ce point-là.

Mr. REGISTRAR : Let's get along. This is going to go to the Judge and you will have to get directions from him.

Mr. BIGGAR : *Q.* Now, again, Mr. Dreyfus, I wish you would find out which of the two ways specified in the patent for thermoplastic material is used, so far as the company has any knowledge, with regard to any of the licenses, whether it is used in a mixed fabric as described in the patent or whether it is used in a fabric exclusively composed of thermoplastic yarns, that is the information I want.—*R.* Il y a tellement de points, n'est-ce pas qu'il faudrait 40

que je reçoive une liste de ces points. Je vous donnerai tout ce que mon conseil voudra que je vous donne.

Q. Et vous me donnerez n'est-ce pas toutes les informations que la compagnie possède ?

M. GERIN-LAJOIE : Je m'objecte à la question précédemment posée parce que le Témoin ne peut pas être requis de s'enquérir de ces détails des procédés utilisés par des tiers ; également parce que l'usage qui peut être fait du brevet ne peut pas affecter sa validité.

10 The REGISTRAR : So far as the third parties are concerned, I am with you on that. No doubt the Witness must answer in some way or other. You are going to discuss that before the Judge. So far as I can see now all the question implies and all the information that is being required and sought after could be obtained, could be conveyed in writing without this witness coming back.

M. GERIN-LAJOIE : Without coming back ?

The REGISTRAR : Yes, without coming back.

Mr. BIGGAR : Q. Now, the next point on which I would like the Company's information is as to the nature of the plasticiser or softening agent or solvent which is used, so far as the Company is aware, by any of the licensees ?

20 M. GERIN-LAJOIE : Je m'objecte à cette question pour les mêmes raisons.

The REGISTRAR : Same ruling.

Mr. BIGGAR : The next point on which I would like information is the way in which, so far as the Company's information goes, any of the licensees are applying heat and pressure in making the patented material ?

M. GERIN-LAJOIE : Je m'objecte à la question pour les mêmes raisons.

The REGISTRAR : Same ruling ; the objection is reserved.

Mr. BIGGAR : Q. The next point upon which I should like you to give me such information as the Company has, is the temperature which is applied with the pressure, if any ?

30 M. GERIN-LAJOIE : Je m'objecte à la question pour les mêmes raisons.

The REGISTRAR : Same ruling, the objection is reserved.

Mr. BIGGAR : Q. And the next point, doctor, is the amount of pressure ?

M. GERIN-LAJOIE : Même objection.

The REGISTRAR : Same ruling ; reserved.

Q. And the next question is as to the information the Company has with regard to the time during which the material is exposed to the heat and the pressure at the temperature and at the pressure, of which the Company has information.

M. GERIN-LAJOIE : Même objection.

40 LE REGISTRAR : Même décision ; réservée.

Mr. BIGGAR : Q. Now, doctor, will you tell me whether any stiffening fabric has been manufactured in Canada so far as the Company is aware, under

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Patent No. 311,185 ?—*R.* Est-ce que je puis voir le brevet ? (le Témoin examine le brevet) . . . As I read the patent, I would say : yes.

Q. And when, for the first time ?—*R.* Moi, je ne peux pas dire cela.

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Q. Why do you say yes, then ?—*R.* Puisque j'ai lu la spécification, et j'ai dit : oui, il a du se produire quelque chose comme ça, c'est mon opinion, je n'ai pas les faits avec moi, n'est-ce pas ?

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Q. I mean, why is it your opinion ?—*R.* Là je ne peux pas analyser cela, j'en ai le sentiment.

Q. We are here for facts not for sentiment, what leads you to hold those sentiments. 10

LE REGISTRAIRE : Juste à votre connaissance personnelle.—*R.* Moi, je n'ai rien à ajouter à ce que j'ai dit.

Mr. BIGGAR : *Q.* You see, Doctor Dreyfus, what I want to know is what resort has been made, so far as the Company's information goes, so far as this Patent No. 311,185, in Canada, is concerned ? I want to know what has been made under this patent in the manufacture of material so far as the Company is aware ?—*R.* Encore ici, nous avons donné des licences sur ce brevet-là.

M. GERIN-LAJOIE : Are you willing that the witness should get information from the officers of the Company here present ?

Mr. BIGGAR : It is information I want, I do not care a bit where he gets 20 it . . . Si vous voulez consulter . . . *R.* Vous me demandez il y a un instant : est-ce que nous avons donné des licences sur ce brevet-là, à ce moment même, j'ai dit : oui, alors je dis la même chose que j'ai dit auparavant ; d'après les informations de mes officiers, je ne puis pas dire exactement, mais je suppose que oui.

LE REGISTRAIRE : Dites : Je suis informé que oui.—*R.* Nous avons donné des licences sur ce brevet. Je m'en rapporte aux réponses que j'ai données pour le premier brevet.

Mr. BIGGAR : *Q.* What was the second part of your question ?

The REGISTRAR : You just wanted to know if he had granted licenses ? 30

Mr. BIGGAR : No, I asked if the Company had any knowledge of material having been made in Canada, under this patent, and the answer which is really not responsive is that they have granted licenses under it. That has just begun and I will have to go on now and get details.

The REGISTRAR : I do not think we can begin to get through to-night ?

Mr. BIGGAR : Oh, no ! I will put in the subpoena which was served for the appointment of this examination, asking for the production of the books and, to-morrow, I shall put in copies of correspondence giving further details of the documents required which specify particularly the licenses granted under the patents. Perhaps my learned friend will admit that correspondence as he had 40 notice some ten days ago that these licenses were called for.

M. GERIN-LAJOIE : I do not know about the licenses. Do you mean papers relating to the commercial exploitation of the Patent ?

Mr. BIGGAR : Then, you will have no objection to this ?

The Examination is adjourned until Friday morning at ten o'clock.

On November 22nd, 1935.
The Examination is resumed from WEDNESDAY, the 20TH NOVEMBER.

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MR. CAMILLE DREYFUS is recalled.

Mr. BIGGAR : *Q.* Mr. Dreyfus, I was on the subject of the later of the two patents in question, that is Patent No. 311,185, and I think I was asking you when the fabric described in that patent had first been made in Canada ?—*A.* I think I replied to that.

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Q. You said that a license had been granted under this patent during the course of this year ?—*A.* I do not know if I said during the course of this year. *J'ai dit : au mois de mai, n'est-ce pas ?*

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10 *Q.* Are you speaking of the same license as you spoke of, that is the license for the second patent ?—*R.* That is . . . —I will oblige you now and speak English, if I cannot get on I will speak French,—I believe it is in the same license, we have given a license on both patents and that is my recollection. If you look up the licenses you will find that yourself.

Q. So that your present understanding is that the same license covered both these patents ?—*A.* I think so, if you go over the licenses you will find that both patents have been licensed.

Q. May I see the license then ?

20 The REGISTRAR : I want to say here . . . I was speaking to Mr. Biggar and to Mr. Montgomery, in chambers, that I had some doubts as to the relevancy of these questions upon the pleadings as they now stood, but in view of the broadness of discovery I am allowing the questions in that way.

M. GERIN-LAJOIE : Le Témoin produit, par son procureur, des copies photostat de chacune des trois licences suivantes :—

1o. Comme Exhibit No. 1, license en date du 23 mai, 1935, consentie par Canadian Celanese Limited en faveur de Tooke Bros. Limited.

2o. Comme Exhibit No. 2, license en date du 28 mai, 1935, consentie par Canadian Celanese Limited en faveur de John Forsyth Limited.

30 3o. Comme Exhibit No. 3, license en date du 28 mai, 1935, consentie par Canadian Celanese Limited en faveur de Cluett Peabody and Company of Canada, Limited.

Mr. BIGGAR : These are the only three licences, as far as you know, that are outstanding ?—*A.* Yes.

Q. And to make it quite clear, as far as you know, neither of the fabrics described in these patents was manufactured prior to the date of these licenses, in Canada ?—*A.* So far as I know.

40 *Q.* And were any instructions given by Canadian Celanese Limited with regard to the carrying out of the process under which these articles were to be made ?—*A.* I do not know if any instructions were given. It was up to the people to get the instructions from the patent.

Q. I would like to know whether the company did give any instructions or not ?—*A.* Well; I do not know if they got any instructions or if they did not, the licence does not call for instructions, does it ?

Q. I have not read it all.—*A.* Then let us read the licence.

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Q. It is facts which I am concerned with, we have got the licences in.—
A. I mean, do not ask me facts, I have not been dealing with those matters, I just cannot tell. You read the licence. The licence, in my opinion, does not call for instructions.

Q. Have you got any correspondence with the licencees, giving any instructions or directions or indications as to how the processes were to be carried out?

M. GERIN-LAJOIE: Je m'objecte à la question, le procureur de la demanderesse vient maintenant entrer dans la correspondance privée de la société et de ses licenciés. La question d'usage est bien éloignée de la cause. 10
Nous avons obligé mon savant ami en produisant les licences; maintenant, je soumetts qu'il va loin.

LE REGISTRAIRE: Vous discuterez les questions devant la Cour. Je permettrai la question sous la réserve de votre objection. Il y a plusieurs questions où il y a du doute. Pour le moment, elle est réservée.

M. GERIN-LAJOIE: For the present we will leave it under reserve.

The REGISTRAR: I tell you frankly, in Discovery, I am right to allow questions even if I am seriously in doubt, because I think the Court should have before it everything instead of coming back again.

Mr. BIGGAR: *Q.* Have you got correspondence with any of these licensees giving any directions or instructions with regard to the carrying out of the processes as described in the patents?—*A.* It is from the firms that you should investigate because I really do not know. 20

Q. I am asking you about the Company's correspondence.—*A.* All right, I will have to look it up, I have not that here, I am absolutely unprepared you see, I am just here on a technicality.

The REGISTRAR: Witness says he does not know personally and he may undertake to look it up.

Mr. GERIN LAJOIE: You may consult now. We have the answer I think and I think it will be procured.

Mr. BIGGAR: *Q.* Perhaps this is a convenient time for me to put in the correspondence as between Solicitors, following on the subpoena which I did file. There is a letter from the Defendant's Solicitors, dated November 5th and the answer dated November 6th. 30

EXHIBIT No. 4, containing a letter and the answer is filed.

The Exhibit is read by Mr. Biggar.

Mr. BIGGAR: *Q.* Have you got any knowledge of the nature of the articles that are being manufactured under these licences and in respect of which royalties are being paid?—*A.* If the royalties are paid I think the Company has knowledge of it, it would not come to my knowledge that they are not paid. As to the first question that you asked me on that subject, I will investigate, 40 and I will have a reply either in writing or otherwise, I do not see any objection to giving you any information you want or which is wanted by this Court.

Q. Mr. Dreyfus, I have here a shirt marked "Arrow" and having also a mark "Arrow-set collar," will you tell me if that is a shirt manufactured under

the Licence No. 3 ?—*A.* They have a number on it I guess, they put a number on it. Well I read here :

108 STANDISH

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LICENSED UNDER PATENTS Nos. 265,960 AND 311,185.

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Q. Have you any doubts that this is a shirt in respect of which you receive royalties ?—*A.* How can I tell you a thing like that, it is impossible. I will tell you all I know and what I can find out, but you ask me this, how do I know.
10 I will say it is like the cat in the bag, I do not know the colour of the cat in the bag.

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Q. Have you got a sample of the shirt made by Cluett-Peabody & Co., in respect of which you receive royalties ?—*A.* I have not a sample here.

Q. Has the Company got any samples ?—*A.* I do not know.

Q. And you do not know whether the collar of this shirt which I have produced is a collar of the type in respect of which your Company is receiving royalties ?—*A.* If you put it in the form "of the type" and I get my interpretation of "type" I would say it is a type.

Mr. BIGGAR : We will mark this shirt as Exhibit No. 5.

20 The WITNESS : If it stands up to laundry and not wilt, whatever you call it, it is a type.

Q. I have got a shirt here marked "Forsyth," with a like note on the tail : "Manufactured under Patents 265,960 and 311,185," is that a shirt of the kind in respect of which you receive royalties under Exhibit No. 2 ?—*A.* If the numbers of our patents are here, we collect on it.

Q. Those are the numbers of the patents in the suit ?—*A.* All right, the thing itself says it.

Q. What I am getting at, doctor, is, I want to know whether the collars of the kind attached to that shirt and the previous one produced as Exhibits,
30 are the only materials . . . —*A.* I cannot say anything else, you see it is Cluett-Peabody who put on that number so I have to admit that that is a collar made according to the patent.

Q. I do not think you follow me. My question is this : Has the Company received royalties in respect of shirts having collars or other parts made in any different way or looking any different from the collars on those shirts ?

M. GERIN-LAJOIE : I object to this question : "made in any different "or looking any different" means that they are not identical. I do not know if my learned friend will restrict his question to "looking any different." I object to the question which contains those alternatives.

40 The REGISTRAR : The Witness is intelligent and can reply and make distinctions. M. Dreyfus n'est pas un innocent, il peut savoir comment répondre. —*R.* Mais, monsieur le Régistiaire, tout ce que je peux dire, c'est que ce sont nos numéros. C'est une maison sérieuse n'est-ce pas, donc j'admet que c'est bien d'après notre brevet. Une maison sérieuse, ne ferait pas de "misrepresentations" n'est-ce pas ?

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M. GERIN-LAJOIE : *Q.* Mais les avez-vous vu vous-même les faire ?—
R. Non je ne les ai pas vus, et je n'ai pas le temps de les voir. Je prends pour
acquis que c'est fait d'après nos brevets par les numéros. J'ai l'opinion que
c'est fait d'après notre brevêt, c'est tout ce que je puis vous dire, comme question
de fait.

EXHIBIT No. 6 is filed. A shirt made by Forsyth.

Mr. BIGGAR : *Q.* But I want to know Mr. Dreyfus, whether the Company
has collected royalties in respect of the manufacture of a fabric different in
character from the fabric in, well, the collar, that is different from these that
I have produced ?—*A.* The licence speaks for itself. I mean, you have the
licence. 10

Q. It is a question of fact that I want. Is that collar a fabric of the only
kind in respect of which the Company has collected royalties or were there
other kinds of fabric in respect of which royalties have not been collected ?—
A. Our patent says . . . that is the licence says that we will collect
royalties . . . I do not know how to reply to those questions otherwise.
I do not seize the point.

Q. Your Company knows, whatever your personal knowledge.—*A.* The
fact is that we get royalties and we get them on the strength of our patent.
We all know and you know that, this is not something imaginary. How can
I reply to it ? 20

Q. You may not know personally but your Company knows exactly in
respect of what kind of fabric it is collecting royalties ?—*A.* Look here . . .
you have the licence before you and you see exactly what are the terms in detail
in that licence, and I am covering the whole ground.

Q. I do not ask you in respect of what fabrics you might collect royalties,
get me, I am asking on what kind of fabrics the Company actually collects
royalties ?

M. LE REGISTRAIRE : Le savez-vous ?

The WITNESS : I am absolutely open to you, I tell you, you have the
patent, you have the licence and they collect on that and the people pay royalties
on that. Whatever it is they write on the shirt itself, it is made under that
licence, what more can I say ? 30

Mr. BIGGAR : *Q.* You can tell me whether the Company collects royalties
on any other kind of fabric or not in the same shirt, the parts that are made.

The REGISTRAR : That is a question of fact and the witness should
answer that, if he does not know let him say so.—*A.* It is a question I do not
understand, I cannot say yes and I cannot say no. It might be an embarrassing
question. It might put me in the position of the fellow who, in divorce
proceedings, was asked : "Have you stopped beating your wife," for instance. 40

Mr. BIGGAR : *Q.* You understand the information I want, Doctor Dreyfus,
is whether, so far as the Company is aware, it is collecting royalties on any
other kind of fabrics than the kind of fabric of which the collars of these shirts
are made ?—*A.* May I reply that I am not aware if we collect any royalties on
anything else which is not covered by our patents.

M. GERIN-LAJOIE : I think you might ask if the Company inspects any
and every shirt that is made.

Mr. BIGGAR : Q. I am asking : so far as the Company is aware, do they receive any royalties on any fabrics which are different from the fabric of which these collars are made ?

Mr. GERIN-LAJOIE : May I ask my learned friend to state what he means, does he refer to the condition of the fabric, the stiffness, the material composing the fabric ? This would involve the whole manufacture of the collars. My learned friend must state in what respect it is different or not. These would have to be analyzed chemically to find out if one is different from the other. If you refer to the general appearance it may be different.

10 Mr. BIGGAR : Q. Particulars in regard to the character of the material, the porosity, the mode of manufacture.

Mr. GERIN-LAJOIE : Well, it is still worse, I do not think you would expect the Company to know that.

Mr. BIGGAR : My informations are that this is the only kind of material in respect of which the royalties are collected by the Company. The fact is, do they or do they not, one way or the other, and the Company knows. . . . I mean this business of hiding behind the ignorance of the president. —A. You have at your disposal anybody in the organization. If you ask me to be a magician or an X-Rayed-Eyed man or a radio man, I can tell you I am
20 not. That is all what I say. It is not a question to which I can reply, it is a question, as you put it, to which I have to say that I do not know.

The REGISTRAR : The answer is that the witness does not know and that he must make enquiries if necessary.—A. About that question there is no enquiry possible.

Mr. BIGGAR : Q. If you do not think that your Company has any record. A. We have to say that under oath, do you know if anybody knows or does not know, or something different, you see it is impossible to reply at all to a question of that nature. Will you let me have it in print and let us acknowledge it.

Mr. REGISTRAR : What is the result ?

30 Mr. BIGGAR : I want to have an understanding of what knowledge the Company has.

The REGISTRAR : By knowledge, you mean, records, I suppose ?

Mr. BIGGAR : They have only three licences, and there is no doubt at all that they have samples somewhere.

The REGISTRAR : Can you answer that by offering to give that if you can ?

Mr. GERIN-LAJOIE : We cannot answer the question, we certainly do not know of all the shirts and the chemical composition of the collars of the shirts manufactured by the licencees and we cannot be expected to know that.

Mr. BIGGAR : I would say further that my instructions are that the
40 process to be followed by these licencees has been laid down by these different companies, that their engineers are introduced at the factories of these licencees to give instructions how the process is to be carried out, that the materials or part of the materials for the purpose of manufacturing these collars are actually supplied to these licencees by the Defendant and that specific

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directions are given with regard to the character of the materials with which that fabric is to be treated in order to produce a collar of the kind in question. All that information is fully in the possession of the Defendant and there is absolutely no reason why it should not be given.

The REGISTRAR : I do not know whether I agree with you on the last part but if the information is available, let them give it and let's be finished.

Mr. GERIN-LAJOIE : In view of the statement of my learned friend, I would state that the information I have is that the facts mentioned by my learned friend are not accurate.

The REGISTRAR : Can you give an answer or not on that point ? 10

Mr. GERIN-LAJOIE : I think he has already said that he does not know.

The REGISTRAR : That he cannot say.

Mr. GERIN-LAJOIE : As a matter of fact we have an officer here who can give it.

The REGISTRAR : The general rule is that when an officer is being examined he must prepare himself to give the answers and if he does not know it is his duty as such to find out.

Mr. GERIN-LAJOIE : We might again hold a little conference ?

The REGISTRAR : I am not going to hold conferences, we will be here in two weeks. He can undertake to produce this in a statement under oath. 20

Mr. BIGGAR : The witness will have to come back, that is only the tenth point.

The REGISTRAR : I am not saying it is material at this point. I do not know at the present time, I cannot see it.

Mr. GERIN-LAJOIE : I think we can clear up that last question pretty quickly if Mr. Dreyfus will come over and we can get the information at once.

(The Witness withdraws for a few moments to consult with some officers of the Company.)

Mr. BIGGAR : Q. And the result of the conference ?—A. After consultation with my colleagues I say " no " to this question, the Company has no knowledge. 30

Q. The Company has no knowledge of the things these licencees are manufacturing ?

Mr. GERIN-LAJOIE : I think that the question is not fair.

Mr. BIGGAR : Q. I can quite understand that they are quibbling and that is the reason I am careful that the quibble be unsuccessful ?—A. I do not accept that compliment. I am not quibbling, I do not accept that compliment ; I am here to tell the truth and I am under oath and I want to tell you all the truth and everything I know, I will not accept the compliment that I am quibbling though.

Q. I say that the Company has no knowledge then, if I understand 40 correctly, of the materials the licencees are making and on which they are paying royalties ?—A. Is that not the same question you have asked but put differently ?

Q. I want to make sure that it is not different what the fact is.—A. I told you we have no knowledge according to the information I get of what our licencees are doing, what they use, what they do not use, we do not know absolutely.

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Q. You never gave them any instructions of what they were to do?—
A. If we have given instructions what to do, that is the question?

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Q. Yes?—A. Perhaps we have and perhaps they are not followed.

Q. Have you brought any record of the instructions that were given, if any were?—A. I do not know that, I told you that before, I do not know if
10 we have records, I will have to look them up if we have any record of that.

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Q. And ascertain whether there have been any instructions. Am I right, then, in understanding that the Company has never taken advantage of paragraph 8 of the licence-agreement, under which the Company is given the right of access to the records and books of any of the licencees for the purpose of verifying statements as to royalty payments and may, in the course of that, look at the shop records which accurately show the application of the terms of the agreement?—A. That is my opinion, Number 8 is a commercial clause which states that we have certain rights, whether we have used those rights or had conferences with the licencees to give us any information, I believe
20 they are enquiring, I do not think we have taken advantage of that clause Number 8 to go and check up because we, I understand, for instance, we are doing business with strong, reliable, honest firms, and we have taken their word for it. I would say that without consulting the records. Whether we have taken advantage of it and gone and put an inspector or see to everything they have done, according to clause Number eight, of this agreement, I could not tell you of the particulars without consulting the records.

Q. So that it would be unnecessary for you to examine the records and see?—A. If you want a definite reply I must see the question and then I will
30 put it up to our Company and they are going to give me all they can. To one part of the question, may be said yes, and to the other part of the question may be said no. The questions as you put them here have to be dissected anyway, I mean that I could not say yes or no.

Q. On your present information, you cannot say?—A. No, I cannot say, I could not tell you whether it is done. I do not believe it is the habit of our Company that they are going to see that their agreement is lived up to, in that way, I do not believe we proceed in that way.

Q. I want to show you a third shirt that is marked "TOOKE" and which appears to be made according to the licence.—A. Do you know the number of the licence?

Q. No, I want to call your attention to that, that is why I will put my
40 formal question generally. Have you given licences for anything different than the type of collars I produced, as far as your Company knows?—A. That is the same question.

Q. Yes, that is the same question.—A. I will have to give the same answer then.

EXHIBIT No. 7 is marked. (Shirt made by "TOOKE.")

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Q. Now, there has been put in a statement by the Defendant's Solicitor on Defendant's behalf that the dates of the inventions that were relied upon in respect to Patent No. 265,960, is the date of the corresponding British application, January 23rd, 1925. I want to know if you have a copy of that application.

—*A.* My attorney has a certified copy of the application and will undertake to supply a photostat copy of it.

The REGISTRAR : Which will be put in ?

Mr. BIGGAR : It is not necessary to have it marked as my learned friend has it under seal.

Q. And there was a patent corresponding to that patent granted in the 10 United States, was there not, Doctor Dreyfus?—*A.* Yes, sir.

Mr. GERIN-LAJOIE : Where should the American patent come in, what effect can the United States patent have on the infringement of a Canadian patent.

The REGISTRAR : The question is allowed, subject to your objection.

The WITNESS : I have already replied : yes.

Mr. BIGGAR : *Q.* And it is Patent No. 1,903,960, is it not?—*A.* That looks like it. My name is on it ? Oh, yes !

Q. And that patent, the United States Patent, No. 1,903,960, is the property of the American Company?—*A.* Yes. 20

Q. Of which you are also president?—*A.* Yes.

Q. Now, the date of the invention of the second of the two Patents, No. 311,185, is stated to be based upon the United States application, have you got a copy of that application ?

Mr. GERIN-LAJOIE : You can say that your attorney has the certified copy of the United States application, serial number 340,350, filed December 15th, 1927.

Mr. BIGGAR : *Q.* And on that application patent number 1,828,397 was issued?—*A.* Yes.

Q. And just to complete that . . . on the British application which is 30 produced, the British Patent number 248,147 was issued, was it not?—*A.* Yes.

Q. Now, have you got any knowledge of there having been any resort to these patents, that is to say, the manufacture of fabrics under them?—*A.* Under which patents ?

Q. We have been referring to the British and to the United States Patents, those are the ones to which I refer.

Mr. GERIN-LAJOIE : *Q.* I have to put in an objection as to any use made of the following patents, it seems to me we are going to the extreme limit.

The REGISTRAR : Can you show me why ?

Mr. BIGGAR : Constantly in this Court the commercial success of an 40 invention has been the subject of investigation.

The REGISTRAR : Sometimes it is brought up as an element as to the validity of an invention.

Mr. BIGGAR : I am anticipating the evidence that might be given on that point and I am going to . . .

Mr. GERIN-LAJOIE: We have not made any proof of the commercial success of the patents. My learned friend wants to enter into the litigation field in the rest of Great Britain. There is important litigation pending in the United States and Great Britain.

Mr. REGISTRAR: I think you will agree with me, Mr. Lajoie, I was going to allow the question under reserve. If you object sincerely enough to it, you may advise your client not to answer and that is the end of it.

Mr. GERIN-LAJOIE: You have to give your ruling first.

Mr. REGISTRAR: I will allow it subject to your objection. If you simply advise your client not to answer the question you can do it. I have no means of sending Mr. Dreyfus to jail. You take the responsibility.

Mr. GERIN-LAJOIE: I would ask you, Mr. Registrar, to give a ruling on that.

Mr. REGISTRAR: You are passing the buck. I will rule that the question is allowed under reserve of the objection.

Mr. GERIN-LAJOIE: I would ask you to submit this question to the Judge.

Mr. REGISTRAR: Oh, no, you can come back and argue the question. There are several of them. You can refuse to answer.

Mr. GERIN-LAJOIE: I will advise the witness not to reply to that question.

Mr. BIGGAR: In pursuance to that objection, Doctor Dreyfus, you refuse to give any information with regard to the commercial exploitation of the invention under the corresponding British and United States Patents?—*A.* I stick to the answer as advised by Counsel.

Q. Doctor Dreyfus, I find that this patent was assigned to the Defendant Company along with about 150 others? I am surprised there were not more.

Q. And I find that there are two assignments on file, in the Patent Office, one dated February 20th, 1926 and one dated September 17th, 1932, the latter giving 148 patents and the former some thirty or more. Some of them are granted to you, some of them to H. Dreyfus—that is Doctor Henri Dreyfus—who is Chairman, is he not, of the British Company of which you are a Director?—*A.* Yes.

Q. And some of them are granted to Mr. Palmer and Whitehead. Do you know them?—*A.* Yes, I know them.

Q. By whom were they employed at the time?—*A.* Can you give me their initials?

Q. C. W. Palmer and W. Whitehead.—*A.* I think that those are all right, yes.

Q. By whom were they employed?—*A.* You will pardon me if I do not have the date. At one time they may be employed by one company and at another time by another company.

Q. Do you mean that there are transfers of your employees from company to company?—*A.* That is not what I say. It has happened. We have people from the English company in Canada and in America and I believe we have

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even interchanged them after they have been here and *vice versa*. I mean it is a commercial interchange between the company.

Q. So, you really make no distinction as far as the three companies are concerned who is or in which employ a particular person is, in regard to an invention, I mean, the three companies get the benefit of the employees employed by any one of them?—*A.* The British company makes an invention and the Canadian Company gets an invention and the American company gets an invention.

Q. And so in the same way with an invention made by an employee of the Canadian Company or the American company, the other two get it in the same way?—*A.* Yes, they get it in the same way. 10

Q. So it really does not matter who the particular inventor's name is, the inventions appear generally to be assigned or the patents, to either you or Doctor Henri Dreyfus?

Mr. GERIN-LAJOIE: I object to the form of the question, as to whether it does not matter.—*A.* I think it is right. We do not know what is at the back of the question. It really does not matter, the Company has all that they have been assigned, you do not want to know the general rule between our companies, that is, there is nothing in that discovery for that case here, to my knowledge. 20

Q. Neither is there any doubt about it, it does not make any difference which of the three companies . . .—*A.* I am only afraid to answer your question with something that is not absolutely accurate. If my reply was in my words . . .

Q. I just want to make it definitely understood that really it did not make any difference if the employee of any one of your companies is an inventor, generally speaking, all three companies got the benefit of his invention, of any invention made by an employee of any of them?—*A.* I will refer to the patent under review. I would say it is generally as you say. The British Company has started the patent and it does not matter whether it is the American Company or the Canadian Company. The other patent under review has been started in America and the Canadian Company and the British Company have the benefit of that patent in their respective domain. 30

Q. I am simply asking whether my inference from these two documents was according with the practice generally followed?—*A.* I am not a legal counsel . . . I just say: Must you ask that question?

Mr. GERIN-LAJOIE: If you have any objection to giving the general policies of the Company. . .—*A.* My objection is only of a sentimental nature, it might be an agreement and technically one might be different from the other. And if I reply to that question without qualification whatsoever, 40 I might be charged in a remote way with committing a perjury, so I am very careful. I can only reply to very simple questions, to which I can say yes or no. To a question like that, of a general nature, it is difficult to say just yes or no.

Q. Well, and you are afraid therefore to state the general rule if it would be subject to objection.—*A.* If it is necessary to say so, yes, if it is not necessary, well . . .

The REGISTRAR: I do not think that there are actual contracts or binding agreements . . . anyway, it does not matter.

Mr. BIGGAR: Q. You have not answered my question, but I say that the practice you describe is the one ordinarily followed by the three companies? —A. It is logical.

Q. There is no contract anyway?—A. I could not reply to your question in a general way. In those cases under review it has been done exactly as you say.

Q. And that is the general rule, that is what I want to get at.

10 Mr. GERIN-LAJOIE: That question has no bearing on the case.

Mr. BIGGAR: Q. Has the Company any information on the subject of the effect of water on cellulose derivative yarns?

Mr. GERIN-LAJOIE: This is a technical question. Are you examining him as an inventor?

Mr. BIGGAR: No; as to the knowledge of the Company, with regard to the statement in the specification.

Mr. REGISTRAR: I do not think so. I maintain the objection.

Mr. BIGGAR: I will put the matter perhaps more clearly. The specification of the second of the two patents in question says: "Because yarns
20 "for organic derivatives of cellulose are not affected by humidity." Has the Company got any information as to the truth of that statement that yarns of organic derivatives of cellulose are not affected by humidity?

Mr. GERIN-LAJOIE: I object to this, it is purely a technical question.

The REGISTRAR: Do you mean by "the knowledge of the Company" of that fact . . . we have read the patent.

Mr. BIGGAR: It is a statement of fact.

Mr. GERIN-LAJOIE: It would take an expert chemist to answer that.

The REGISTRAR: The objection is maintained. I cannot see it. If they state that they do, in the patent, that statement is there. There is no
30 doubt. Now, what is the question . . . whether they know as experts?

Mr. BIGGAR: Not in a chemical manner, it is a question of fact.

The REGISTRAR: The fact is that it is there.

Mr. BIGGAR: The fact I am concerned with is: whether it is true that yarns of organic derivatives of cellulose are not affected by humidity?

The REGISTRAR: He may answer that as an expert but not as a question of fact.

Mr. BIGGAR: You rule against it?

The REGISTRAR: Yes.

Mr. BIGGAR: There are other statements of facts in the specification
40 which, according to my instructions, are mis-statements, is it ruled I may not ask the Witness as to the correctness of that statement?

The REGISTRAR: You say that the specification and so on go beyond what evidently is claimed?

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Mr. BIGGAR : Yes, directly.

Mr. REGISTRAR : I do not think it is a fact . . . what is the question you want to put ?

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Mr. BIGGAR : I am asking whether your ruling extends to enquiries in respect to other statements of fact in the specification ?

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Mr. REGISTRAR : If they involve the same kind of necessary technical knowledge, yes, my ruling will be the same, if they involve simply the matter of an ordinary clerk or an employee, I would permit it, but if it requires technical knowledge to answer the question it is a question for an expert.

Mr. BIGGAR : One of the questions is whether yarns made of cellulose 10 differ from . . .

[Here there is a discussion between Counsel for both parties and the Registrar, which is not taken down in shorthand at the request of the Registrar.]

Mr. BIGGAR : There is no doubt that my question is correct.

The REGISTRAR : I am trying to do my best. I am quite aware of the fact that I frequently err, I would not be human if I did not err sometimes, but that is the only distinction I wish to make. If the answer requires technical knowledge then it is a question for an expert and it is not subject to Discovery. That is the only point. That question may be answered if you put it this way : 20 Whether it is correct or whether there were certain yarns . . .—I do not remember the words—that might be a question of fact, but not from the point of view whether certain things react in a certain way, that would be technical.

Mr. BIGGAR : The question is : Is it true that yarns of organic derivatives of cellulose are not affected by humidity ?

Mr. GERIN-LAJOIE : I object.

Mr. BIGGAR : As a fact is it true that yarns of organic derivatives of cellulose are not affected by humidity ?

Mr. GERIN-LAJOIE : That would require technical knowledge.

The REGISTRAR : I do not think so, it is a question of fact, on the 30 question of fact a person could, by seeing the thing . . . I do not profess any knowledge of chemistry . . . but as a fact was it noticed by the Company's experience whether or not it was affected by humidity ?

Mr. GERIN-LAJOIE : That would be for a technical man to express an opinion from a scientific standpoint.

The REGISTRAR : I want Mr. Dreyfus to answer that question simply as if he was an ordinary officer of the Company, say the secretary or some other officer, without making use of any technical knowledge.

The WITNESS : I cannot dissociate my commercial knowledge from my technical knowledge. I would reply to that question by saying : " How 40 " long is . . . " It is the same thing, you can have all kinds of arguments about that.

The REGISTRAR : As the question is put, I would allow it subject to your objection, but purely as a question of fact.

Mr. BIGGAR : Will you please read the question Mr. Reporter.

Q. Is it a fact that yarns of organic derivatives of cellulose are not affected by humidity ?

Mr. GERIN-LAJOIE : I object and I would advise the witness not to answer the question.—A. I just do not answer because that is distinctly a question for an expert, it would take an expert to reply to that. I am an expert and I could give it but I do not see that I am called upon to-day as an expert and I am not going to attempt to be an expert.

10 Mr. BIGGAR : Q. I want to know now, the knowledge of the Company or any of its officers have with regard to the development of the invention if it is the invention described in the first of the two patents in question.

Mr. GERIN-LAJOIE : I object to this question inasmuch as the development of the invention, the date and the specification of the invention are not now points at issue in this case inasmuch as a statement was filed by Defendant as to the date of the invention.

Mr. BIGGAR : I want to know what was done.

Mr. GERIN-LAJOIE : That would be the development of the idea before the patent, not the exploitation of the patent ?

Mr. BIGGAR : No.

20 Mr. GERIN-LAJOIE : I object, it would only lead to the date.

Mr. BIGGAR : My enquiries are not directed to the dates.

Mr. GERIN-LAJOIE : What could be the object of it, I do not suppose you care to tell me.

Mr. BIGGAR : I have no hesitation in telling you. The parties give a lot of misinformation and wilfully describe things that I am told are not true, I am proposing to direct my question on Discovery to the purpose of establishing that.

Mr. LAJOIE : It has nothing to do with the development of the invention . . . if you can bring evidence the statements are not true . . .

30 Mr. BIGGAR : Only from this witness.

The REGISTRAR : I think I shall maintain the objection, I cannot see where it is relevant to this. You are attacking the patent because it goes beyond the invention, you are going to have a nice field day with the Judge, you might as well decide that point before him.

Mr. BIGGAR : My friend has not raised any point with regard to any distinction between the knowledge the witness has as an inventor and as president of the Company. I am entitled to examine the witness as the assignor of the patent to the different companies. Do you rule I cannot make any enquiries from him as assignor with regard to his activities ?

40 Mr. GERIN-LAJOIE : As to his activities prior to the application ?

The REGISTRAR : I do not see how it will affect the validity or the invalidity of the patent.

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Mr. BIGGAR : If my learned friend is refusing to give information as assignor, I do not want to repeat the question.

The REGISTRAR : You mean that the same question will be put to him now as assignor, that is with regard to the development of the invention ?

Mr. BIGGAR : I think I am entitled to get them from the witness ; if there is any question about my being entitled to get an answer from the witness as president of the Company I say I have the right to get them from him as assignor to the Company.

The REGISTRAR : I am thinking of both.

Mr. BIGGAR : The only difference between the two examinations is 10 that one can be used at the trial and one cannot be used. I want to get as much as I can from the examination. I am going to insist on that point. I suggest that the question might very well be determined by the trial Judge.

The REGISTRAR : The whole thing is to my mind that everything which preceded the actual taking out of the patent would have nothing to do with the invalidity, would it ?

Mr. BIGGAR : Yes, it has a great deal to do with it.

The REGISTRAR : If the patent is good . . . if the invention is patentable . . . if you mean the same question . . . have we got the complete question or simply the discussion ? 20

Mr. BIGGAR : Then I asked the witness for the difference with regard to certain of his advances in the application for the patent.

Mr. REGISTRAR : And you made an objection ?

Mr. GERIN-LAJOIE : Yes sir.

Mr. BIGGAR : I am listening now. The question applies only to the eliciting of certain facts from the witness as applying to the assignor or as President of the Company.

The REGISTRAR : Let's shorten it up ; you will have to discuss the matter over again with a better and higher tribunal.

Mr. BIGGAR : I would like perhaps to let rest on my friend's refusal 30 to give evidence rather than on a ruling.

The REGISTRAR : The objection is maintained on that question.

(After an argument between Counsel, the Registrar maintains the objection of the Plaintiff's Counsel.)

At 12.10 p.m. The Examination is adjourned until this afternoon.

The examination is resumed at 2.15 in the afternoon.

The REGISTRAR : I was not in the room when the questions were submitted to the Judge and I would ask Counsel if they would agree upon making a statement as to what happened.

Mr. BIGGAR : I have noted a half dozen questions and I thought that 40 the more satisfactory way of dealing with the matter would be for me to ask those questions and if Mr. Lajoie thinks he is justified under the ruling in refusing to answer he may say so and instruct the witness not to answer.

The REGISTRAR : I want a ruling in some way or other, I do not know if it is necessary . . .

Mr. GERIN-LAJOIE : I think, Mr. Registrar, that we should have the ruling of the Court, it is a question of agreeing upon the substance of it.

The REGISTRAR : I understand that Counsel agreed that the Judge would communicate his ruling to me.

Mr. GERIN-LAJOIE : On one point.

The REGISTRAR : And that was the question of the admissibility of the question calling whether or not certain parts of the specification were true and
10 I am directed by the Judge to say that that question should not be put.

Mr. GERIN-LAJOIE : Then, the other point I think on which the Judge decided . . .

Mr. BIGGAR : I am not prepared to agree with regard to any statement here purporting to summarize what the Judge said because . . .

Mr. MONTGOMERY : I do not suppose any harm would be done by stating what he heard.

Mr. GERIN-LAJOIE : My understanding of the ruling is that :—

First : Doctor Dreyfus may be examined as an assignor.

20 Secondly : that questions pertaining to the development and the conception of the invention should not be allowed ;

Thirdly : that any question relating to the commercial exploitation of the invention outside of Canada, also should not be allowed.

The REGISTRAR : Are you prepared to agree with that or not ?

Mr. BIGGAR : I would rather not agree.

The REGISTRAR : Counsel for Plaintiff does not agree to the ruling. I may say that is my understanding from what the Judge told me.

Mr. BIGGAR : Then I will go on. Doctor Dreyfus, what suggested the resort to these patents and particularly the first one taken out, after so long an interval after they had been obtained ?—A. I beg your pardon ?

30 Q. What suggested the resort to the earlier of these two patents in question after so long an interval after being obtained ?

Mr. GERIN-LAJOIE : I object to any question as to whatever may have been the motive of the Defendant Company. Whatever may have been the motive of the Company to resort to these patents could not affect the validity of the patents.

The REGISTRAR : I have made up my mind. From now on I shall make no ruling. Counsel shall make his objection and if the question is persisted in he may instruct his witness to refuse to reply. We shall proceed to the end of the examination and after that if anybody wants the question to be replied to,
40 they shall take the proper means to have the witness do so. You can go ahead and your objections will be noted, and that is the end of it. If you instruct the witness to not answer, that is the end of it.

Mr. GERIN-LAJOIE : I would advise the witness not to answer the question.

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Mr. BIGGAR: The next question is: With what derivative of cellulose have you tried to produce the composite sheet fabric described in the first patent?—*A.* That is all described in the patent.

Q. You do not understand? With what derivatives of cellulose have you actually tried . . . *A.* They are all described in the patent.

OBJECTION BY Mr. GERIN-LAJOIE: That question is one which would involve evidence of the development of the invention.

Objection noted.

Mr. BIGGAR: I want that information with regard to any time up to the assignment of this patent, to the Defendant Company. 10

Mr. LAJOIE: I object to this question, as the only use which the witness has referred to has been put in the licences.

Mr. BIGGAR: I am not directing my question to the witness's own experiments.

Mr. LAJOIE: But to experiments prior to that.

Mr. BIGGAR: At any time.

Mr. GERIN-LAJOIE: It is the conception, or the development.

Mr. BIGGAR: To any time up to that date.

Mr. GERIN-LAJOIE: I would advise you Mr. Dreyfus not to answer.

The REGISTRAR: The objection is noted. 20

Mr. BIGGAR: The next question is as to the knowledge the witness had before the application for the patent upon which he relies for the filing of it. I want to know whether the witness knew that there was a thermoplastic derivative of cellulose which was not adapted to serve the purpose of making a composite sheet fabric such as the patent describes.

Mr. LAJOIE: I object to this question as relating to the development of the invention.

Mr. BIGGAR: I want to know if there were not certain thermoplastic derivatives of cellulose, to the knowledge of Defendant at that time, which could not be used in any such fabric as the patent described? 30

Mr. LAJOIE: I object to this question.

Mr. REGISTRAR: The objection is noted.

Mr. BIGGAR: I want to know whether or not at that time I speak of, the witness knew or gave instructions when he signed the patent application, and I am speaking now of the application for a patent in Canada, not anywhere else . . .

Mr. GERIN-LAJOIE: On the first patent?

Mr. BIGGAR: Yes, on the first patent . . . whether at that time the witness knew that different derivatives of cellulose existed quite different from other derivatives of cellulose. 40

Mr. GERIN-LAJOIE: I object to this question.

Mr. REGISTRAR: The objection is noted.

- Mr. BIGGAR : Whether he knew at that time that different derivatives of cellulose . . . thermoplastic derivatives of cellulose reacted differently with different plasticisers ?
- Mr. GERIN-LAJOIE : I object to this question.
- Mr. REGISTRAR : The objection is noted.
- Mr. BIGGAR : Whether he knew at that time, there were certain derivatives of cellulose which were thermoplastic only when mixed with certain plasticisers and were non-plastic either alone or with other plasticisers ?
- Mr. GERIN-LAJOIE : I object to this question.
- 10 Mr. REGISTRAR : The objection is noted.
- Mr. BIGGAR : Whether he knew that there were organic derivatives of cellulose which were non-thermoplastic under any circumstances.
- Mr. GERIN-LAJOIE : I object to this question.
- Mr. REGISTRAR : The objection is noted.
- Mr. BIGGAR : Whether he knew that there were cellulose esters which were non-thermoplastic in any circumstances.
- Mr. GERIN-LAJOIE : I object to this question.
- Mr. REGISTRAR : The objection is noted.
- Mr. BIGGAR : And of course . . . I would like to go on and ascertain
- 20 with which particular derivative of cellulose, whether thermoplastic or non-thermoplastic and whether cellulose esters or not and whether organic derivatives or not, the witness tried to make composite sheet fabric of the kind in question.
- Mr. GERIN-LAJOIE : I object to this question.
- Mr. REGISTRAR : The objection is noted.
- Mr. BIGGAR : I want to know with what plasticisers he tried to make these fabrics ?
- Mr. GERIN-LAJOIE : I object to this question.
- Mr. REGISTRAR : Objection noted.
- Mr. BIGGAR : I understand my learned friend's objections to the last
- 30 few questions mean that he instructs the witness not to answer them ?
- Mr. GERIN-LAJOIE : That is right.
- Mr. BIGGAR : Then I also understand that the witness refuses to answer any question with regard to the facts which would be relevant to the question whether the specification is or is not sufficient as alleged and having regard to its insufficiency being alleged, is part of the objection.
- Mr. GERIN-LAJOIE : We abide by the ruling of the Court.
- Mr. BIGGAR : That is to say, you instruct the witness not to answer any question of fact on that point.
- Mr. GERIN-LAJOIE : Put your question and be more precise about it.
- 40 Mr. BIGGAR : I have put the questions that are directed in part to that issue: whether the specification of the Letters Patent is insufficient in the processes

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described or followed, the result would not be obtained. And I understand that I am refused any information as to the facts relevant to the issue whether the specification contains more than is necessary for obtaining the end for which it purports to be made, such having been made wilfully for the purpose of obtaining the patent.

Mr. GERIN-LAJOIE: You will put a precise question and we will see if we have any objection to such question.

Mr. BIGGAR: The only way I can ask those questions is in the form I have done: What was the knowledge this witness had at the time the specification was prepared? 10

Mr. GERIN-LAJOIE: I am sorry that I cannot enter into a discussion with my learned friend. Let him put his question and we will see if we will object or not.

Mr. BIGGAR: My point really is that I want it understood that the questions which I have asked and to which answers have been refused are directed to those points: whether, having regard to the knowledge that the witness had at the time the specification in question was prepared, the information given in that specification was to his knowledge, either insufficient or excessive for the purpose of misleading . . .

Mr. GERIN-LAJOIE: Let the question be put and we will see if we 20 object to it.

Mr. REGISTRAR: Put that with a question mark and make your objection.

Mr. GERIN-LAJOIE: I do not see that it is in the form of a question to the witness.

Mr. BIGGAR: I am making it clear that it is to those points that my questions were directed.

The REGISTRAR: Put them in the form of questions.

Mr. GERIN-LAJOIE: I do not think he should give any answer except 30 if the Attorney puts it in the form of a question to witness.

Mr. BIGGAR: All I want is to know if you would care to make an objection to the questions I have put, notwithstanding the explanations I have given as to their purpose.

Mr. GERIN-LAJOIE: I do not care to make a statement as to that.

Mr. BIGGAR: I want to ask a further question: What was common knowledge in the art at the time the specification was prepared and I would like to have the witness tell me whether it was not common knowledge that there were a large number of thermoplastic derivatives of cellulose which reacted differently in different circumstances and with different plasticisers?

Mr. GERIN-LAJOIE: I object to this question. 40

The REGISTRAR: The objection is noted.

Mr. BIGGAR: Whether it was common knowledge that there were a still larger number of organic derivatives of cellulose which likewise behaved differently in different circumstances.

Mr. GERIN-LAJOIE : I object to this question.

Mr. REGISTRAR : The objection is noted.

Mr. BIGGAR : Whether it was not common knowledge there was a somewhat similar class of cellulose esters which behaved differently in different circumstances ?

Mr. GERIN-LAJOIE : I object to this question.

Mr. REGISTRAR : Objection noted.

10 Mr. BIGGAR : Whether it was not common knowledge long before 1927 that cellulose derivative threads or threads of thermoplastic derivatives of cellulose or threads of organic derivatives of cellulose might be hardened or stiffened by the use of certain agents.

Mr. GERIN-LAJOIE : I object to this question.

Mr. BIGGAR : You direct the Witness not to answer ?

Mr. GERIN-LAJOIE : Yes.

Mr. BIGGAR : I think that indicates the limit to which my friend is going to refuse the information and I will stop there.

Mr. GERIN-LAJOIE : Mr. Registrar, as there are lots of objections, I suppose which are all of the same nature, they might be decided at once by Mr. Justice MacLean ?

20 Mr. REGISTRAR : There are certain ways in which to compel the Witness to answer. This jumping from the examination to the Judge is getting quite impossible for both the Judge and myself.

Mr. BIGGAR : I am not closing the examination, I propose to move . . .

Mr. REGISTRAR : Subject to the judgment of the Judge, I am closing the examination.

30 Mr. BIGGAR : I am not closing the examination. There are two reasons why I am not closing the examination. In the first place I am going to move to compel the answers to be given to the questions in respect of which I have been refused information and, there a number of points that are within the Company's knowledge or probably are, upon which the Witness is not at the moment sufficiently informed to give answers and in respect of which he has undertaken to ask information. So that the examination is not closed apart from the refusal of information.

Mr. GERIN-LAJOIE : On this last point mentioned.

The REGISTRAR : Subject to the order of the Judge.

Mr. GERIN-LAJOIE : On this last point mentioned we are ready to answer all such questions as he may be required to answer, he has since consulted with the officers of the Company who are in Ottawa and all the information which my learned friend is entitled to have . . .

40 The REGISTRAR : Do you mean to say we will go over the whole examination and pick the questions one after the other . . . the examination is closed subject to the order of the Judge. You have no questions now ?

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Evidence
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tion on
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Mr. BIGGAR : I have a number of other pieces of information to which I am admittedly entitled.

Mr. GERIN-LAJOIE : I would not say that you are entitled to them. We objected to practically everything. The examination may be suspended if my learned friend wants to go over some of those questions we may be able to give him some more information.

Mr. BIGGAR : I am relying on the undertaking given by the Witness with respect to certain information that he will furnish.

Mr. GERIN-LAJOIE : You have got it now.

Mr. BIGGAR : You had better go ahead and give it, I cannot remember 10 what they were.

And furthermore Witness deposeth not.

I hereby certify that the foregoing typewritten pages numbered from one to eighty-one contain the testimony of Mr. Camille Dreyfus and the argument of Counsel on objections, etc., made at this Examination on Discovery, taken in shorthand and transcribed by me, the whole according to law.

And I have signed,

(Sgd.) LIONEL LEFEBVRE,
Official Reporter.

In the
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Court.

No. 9.

20

Theodore Loew, sworn. Examined by Mr. Smart.

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THEODORE LOEW, sworn. EXAMINED BY MR. SMART.

Theodore
Loew.
Examina-
tion.

Q. Mr. Loew, I understand that beginning in February 1934 you commenced to be employed as an engineer by S. Liebovitz and Sons, Incorporated, of New York?—A. That is correct.

Q. What is the nature of their business?—A. Shirt manufacturers. They are one of the largest shirt manufacturers in the United States.

Q. And that later you were concerned with the installation of a process for manufacturing collars at St. Hilaire, Lte., at St. Romauld, near Quebec?—A. Yes. 30

Q. At the time you commenced your employment with Liebovitz and Sons in February 1934, were they manufacturing according to that process?—A. Yes.

Q. When were the collars manufactured according to that process by S. Liebovitz and Sons put on the market in the United States?—A. The first deliveries were made at the end of February, 1934, and they went on sale either the end of February or early in March, 1934.

Q. Did they continue to be sold during 1934?—A. Yes.

Q. In large numbers?—A. Yes.

- Q. What were your duties during that year, 1934?—A. During 1934 I worked on the design of the machinery for manufacturing these collars.
- Q. By that process?—A. Yes.
- Q. Anything else?—A. I assisted in the installation of this process in the S. Liebovitz plant at Meyerstown when some additions were made.
- Q. Then during the year 1935, in what way were you occupied in connection with this process?—A. In making installations of the process in the plants of licensees.
- Q. Did you prepare the instructions for them?—A. Yes.
- 10 Q. And you visited the plants?—A. Yes.
- Q. And you supervised the process carried on by the different licensees?—A. Yes.
- Q. About how many plants are there in the United States carrying on this process at the present time?—A. About thirty, I believe.
- Q. Are there some in Canada?—A. Two.
- Q. And some in Great Britain?—A. Yes, fourteen.
- Q. About how many shirt manufacturers in the United States are selling collars according to this process?—A. Sixty-three or sixty-four.
- 20 Q. About what order of sales do they amount to?—A. At present they are selling about 200,000 dozen a month in the United States and Canada.
- Q. When did you make this installation for St. Hilaire Lte?—A. In June, 1935.
- Q. And you have visited the plant since?—A. Yes.
- Q. Will you produce a collar made there?
- EXHIBIT No. 11: Filed by Mr. Smart. Sample collar made at St. Hilaire plant.
- Mr. LAJOIE: Was that manufactured by Mr. Loew or under his supervision?
- Mr. SMART: That is what he said.
- 30 Q. These collars you produce were manufactured by yourself at St. Hilaire?—A. Yes.
- Q. That is they were processed there by you?—A. Yes.
- Q. Will you give a brief description of the method employed in manufacturing these collars, Exhibit number 11?—A. The collar materials are cut and sewed in the regular method—
- Q. That is there are three?—A. Three ply, yes. They are sewed together and turned and sewed again in the usual method. They are then placed in the wet press—
- 40 Q. You might indicate the nature of the fabrics which are sewn?—A. The two outer plies are ordinary shirting material; the inner ply, the trubenized lining, contains the cellulose acetate threads. When the collar is completely sewed it is sent to the trubenizing department and placed in the wet press where it is dampened with the solvent, which consists of 75 per cent. acetone and 25 per cent. alcohol, and at the same time is subjected to a mechanical pressure of about 10 pounds a square inch.
- Q. You might describe that wet press?—A. The wet press consists of two metal platens, which are padded. These pads are kept moist with the solvent

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continued.

at all times. The collar is placed between the two pads and they are brought together and pressed together.

Q. The pads being made of what?—*A.* Steel padded with cotton cloth.

Q. What is the degree of wetness of those pads?—*A.* They are thoroughly dampened with it, dampened throughout, not just surfaced.

Q. What is the result when you press them together?—*A.* When they are pressed together, when they are dampened the cellulose acetate threads are softened and the collars are pressed together and are adhesively united. They are subjected to this treatment for about nine seconds, that is the average time. Then we remove—

10

Q. Before you go on, what is the effect of the acetone-alcohol mixture on these cellulose threads in the lining?—*A.* It swells or jellifies the cellulose acetate threads.

Q. The pressure I think you said was 10 pounds to the square inch?—*A.* Yes.

Q. And what then occurs when that pressure is exerted on the outside layers of cotton?—*A.* Well the cellulose acetate threads are softened by the solvent, and when the pressure is applied the two outer plies of the collar are pressed on the lining material, and the knuckles of that cellulose acetate thread, which are soft, are forced into the fibres of the overlying cotton fabric.

20

Q. There is no heat on that wet press?—*A.* No.

Mr. LAJOIE: Do not lead.

Mr. SMART: He said it already, I am just confirming.

Q. Is there any heat in that wet press?—*A.* No.

Q. Now after you finish with the wet press treatment—suppose you stopped at that point in the manufacture of the collar, what would you have?—*A.* You would get a collar which would be adhered but would have a rather bad appearance, it would be all wrinkled, it would be what they call wet wash finish.

Q. Then go on to the next step employed at St. Hilaire?—*A.* The collars are placed in a hot press. This hot press is the ordinary laundry press and has one polished metal face and one platen which is padded with about half an inch of cotton and wool felt. This press is heated by steam at a pressure of about 15 or 20 pounds, which keeps the press at a temperature of about 250° F. The collar is placed between the platens of this press and the press is closed by foot pressure, applying a mechanical pressure of about 10 to 20 pounds per square inch of the collar.

30

Q. You might describe for us the platens on that hot press. The lower platen is what?—*A.* The lower platen is a padded surface with about half an inch of cotton wool felt. The upper platen is nickel plated cast-iron surface.

40

Q. Hollow?—*A.* Yes, hollow and steam-heated.

Q. What is the purpose of putting the collar in this second hot press?—*A.* To evaporate the solvent rapidly and to give it a smooth finish.

Q. How long is the transfer from the wet press to the hot press?—*A.* It usually takes about two or three seconds.

Q. What do you mean by an ordinary laundry press?—A. The presses used by St. Hilaire were formerly used in the finishing department of their shirt factory which is called the laundry department.

Q. What are such presses used for in shirt factories?—A. For pressing collars and cuffs, ironing them.

Q. I am trying to get why you call them ordinary laundry presses?—A. It is the press sold by the American Laundry Machinery Company for use in laundries.

Q. How long do the collars remain in this hot press?—A. About 20 seconds.

10 Q. After they come out of the hot press, what is done with them?—A. They are finished and ready for attaching the band.

Q. What would you say was the result of subjecting the collars to this process you have described?—A. It gives a permanently neat collar that looks like a starched collar but requires no starch, and which is porous and comfortable.

Q. What about the manufacturing of it compared with other collars?—A. It is just as easy to manufacture as the ordinary starched collar. It requires no changes in the sewing operations, it only requires the additional pressing operation. The sewing and turning operations are the same as with the ordinary collar which has been made in this way for generations.

20 Q. I observe that the collar is made from three materials, three sheets of material?—A. Yes.

Q. If you had a single sheet of equivalent thickness would it be feasible or easy to manufacture?—A. No. If you used the single thickness of material of the body and weight of this finished collar it would be very difficult to make, or perhaps impossible to make a really satisfactory collar. It would be necessary to cut out the material oversize and then turn over the edges, which is rather difficult with heavy material and which would cause a rather thick and unsightly appearance along the edge, and would be very difficult to make a sharp point.

30 Q. In your hot press you referred to one of the platens being padded and the other a metal plate. Could the operation be carried on between two metal platens?—A. No, you could not use two metal surfaces because, due to the construction of any collar the edges of the collar are thicker than the body or central portion, and if you applied the pressure by means of two metal plates the pressure would be concentrated upon the edge, and the central part of a collar would not receive the necessary pressure. Also the necessary solvent has to be given a means of escape, and if it were placed between two heated metal plates it would have no place to escape and would carry with it the softened cellulose acetate, which would film over and be extruded from the edges of the collar.

40 Q. Dealing again with the mode of applying the pressure, such pressure as is used on collars of this kind, have you considered the mode of applying pressure described in the first patent in suit, that is by which the material is passed over a heated roll under tension in order to get a minimum pressure, specified to be 300 pounds?

Mr. LAJOIE: May I interrupt? The witness has not qualified as an expert. The first part of the examination bore merely on the operations that the witness had carried on, installations he made. My friend now is going to rather

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different ground, examining him as an expert. I think the witness should be qualified, if he is an expert.

HIS LORDSHIP: It is impossible to tell just yet.

Mr. SMART: This is the only question of that sort I was going to ask, whether that could be done.

HIS LORDSHIP: I will allow that.

The WITNESS: I do not believe it could be done in practice.

Mr. SMART: Why?

Mr. LAJOIE: That is opinion evidence.

HIS LORDSHIP: Unless this witness is an expert—

10

Mr. SMART: I would not put him forward as an expert on that subject.

HIS LORDSHIP: He is only going to say he thinks it could not be done, which is no use.

Mr. SMART: Perhaps to complete it he is going to refer to a formula, which I have no doubt my learned friend's experts know, and I do not think they will disagree. It is a minor point. That is why I was putting it to this witness, because I do not think it is a point of expert evidence on which there is any disagreement.

HIS LORDSHIP: What do you mean by formula?

Mr. SMART: There is a formula which gives the pressures that can be produced by stretching a material over a roller. It is used in calculating the 20 strains of belts and that sort of thing.

HIS LORDSHIP: You will get it from some other witness, I suppose?

Mr. SMART: Yes, I can.

Cross-exam-
ination.

CROSS-EXAMINED BY Mr. LAJOIE.

Q. Mr. Loew, how long have you been connected with Liebovitz and Sons?
—A. Since February, 1934.

Q. Previous to that in what line were you?—A. In engineering, X-ray machinery.

Q. Have you attended to all the installations in the United States that have been made by Liebovitz and Sons?—A. Yes, all but two, I believe. 30

Q. Was the installation at St. Romauld, the St. Hilaire plant, the first one in Canada?—A. Yes.

Q. Is that the only one in Canada?—A. No.

Q. You said that had been made in June 1935, I believe?—A. Yes.

Q. How long did you stay there for the purpose of the installation?—A. Three or four days.

Q. In June 1935?—A. Yes.

Q. Have you been there since?—A. Yes.

Q. When?—A. On Monday of this week.

Q. So until Monday of this week you had not been there in the interval? 40
—A. No.

Q. You produced a collar, Exhibit 11. Can you identify this collar as having been manufactured by you or under your supervision, this actual one?—A. Yes.

- Q. How do you identify it?—A. I brought them to Court with me.
- Q. By whom was this manufactured?—A. What do you mean?
- Q. Who were the persons who actually manufactured it?—A. Do you refer to the sewing or the trubenizing and processing?
- Q. Well I will not refer to it as a trubenizing process. The manufacturing operation for the uniting of the layers?—A. That was done by myself.
- Q. That is the process with respect to the wet press and the hot press that you have referred to were both done by you?—A. Yes.
- 10 Q. So that this is not actually a collar made by St. Hilaire Lte., for the Company Plaintiff, the B.V.D. Co., Ltd., it is just a sample you have made yourself for the purpose of this case?—A. Well it was made by myself.
- Q. For the purposes of this case, to bring in Court? Is not that right?
- Mr. BIGGAR: It is fairly obvious. We do not send out collars half processed.
- Mr. LAJOIE: During the four or five days—did you say four or five days that you were there in June, 1935?—A. I believe I said three or four.
- Q. Manufacturing was carried on, of course?—A. Yes.
- Q. During the full three or four days or only during the last day, or what part of the time?—A. During about two and a half—well I arrived there in
- 20 the morning and we started manufacturing that afternoon.
- Q. The machines had arrived before and were all ready to work on?—A. Yes.
- Q. So did you continuously manufacture for the three or four days after starting in the afternoon of the first day?—A. Yes.
- Q. You were teaching Mr. St. Hilaire I understand?—A. Yes.
- Q. It was just in the trial stage at that time?—A. For their purposes, yes.
- Q. Because the St. Hilaire people were not familiar with that process?—A. That is true.
- Q. Who is the Mr. St. Hilaire you taught it to, Mr. Louis St. Hilaire who
- 30 is here in Court?—A. Yes.
- Q. Did he manufacture in your presence or did you carry on all the manufacture?—A. The ordinary procedure, which I followed in this case, was to conduct the process myself in the presence of those who would later operate the machine or machines, and show them the operation, and then let them work it to become familiar with the process. In this case I operated the machine a short time, Mr. St. Hilaire operated the machine, and the boy who does the operating at present operated the machine.
- Q. Of course you have no personal knowledge as to what collars have been manufactured for the Company Plaintiff in this case and delivered to the Company
- 40 Plaintiff? You do not have anything to do with that?—A. I do not understand.
- Q. Have you any personal knowledge of the process carried on for the manufacturing of the collars that have been delivered by St. Hilaire, Lte., to the B.V.D. Company since the start of operations until this day?—A. Only that they have been subjected to this process.
- Q. Have you any personal knowledge of that?—A. Yes, I have examined some of the finished shirts.

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Cross-exam-
ination—
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Q. You have not seen the process carried out?—*A.* I have seen the process carried out on the sample shirts which were delivered to B.V.D. when they started manufacturing.

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Q. That is at the original stage?—*A.* Yes.

Q. I believe you told us you were not present at St. Romauld since the three or four days you were there in June, 1935, for the purpose of teaching the process?—*A.* Yes.

Theodore
Loew.
Cross-exam-
ination—
continued.

Q. Just your personal knowledge of all these facts. You spoke of about 200,000 dozen monthly sold in Canada and the United States, have you any personal knowledge as to that? What is your knowledge as to that?—*A.* I have access to the records of the manufacturers. It is part of my duty to examine their production figures. 10

Q. Apart from having access what do you know? Have you a list with you on which to base this estimate?—*A.* No.

Q. What do you base it on? How did you figure that out?—*A.* I looked at the list before I came here. I have access to them at all times.

Q. Where is that list?—*A.* In New York.

Q. You did not think it proper to bring it with you?—*A.* No.

Q. So you cannot furnish any details whatever in support of your figure of 200,000 dozen monthly?—*A.* No. 20

Q. Perhaps I may put it this way, that with respect to the collars and shirts known as Texcraft and manufactured by St. Hilaire Lte., at St. Romauld, and sold to the B.V.D. Company since June, 1935, until this date, you presume that they have been manufactured under the process that you have just described because you had taught Mr. St. Hilaire in June, 1935, to manufacture them that way?—*A.* And also upon my visit this week I asked Mr. St. Hilaire to show me how he had been doing them.

Q. Well if that is your information you cannot enter into that because that is hearsay.

Now let us deal with the instructions that you have given since that is about the list of your testimony. Have you given written instructions?—*A.* No. 30

Q. None of any kind?—*A.* No, not to Mr. St. Hilaire.

Q. To whom did you give written instructions?—*A.* To no one of the B.V.D. Company or St. Hilaire.

Q. To which other parties did you give written instructions?—*A.* It is customary at present to give written instructions to all licensees.

Q. To licensees wanting to operate?—*A.* Yes.

Q. Are they the same instructions practically?—*A.* Yes.

Q. Have you those written instructions with you?—*A.* They are instructions for the installation of the machines only. 40

Q. And the carrying out of the process?—*A.* No.

Q. You have not got written instructions for the carrying out of the process?—*A.* No.

Q. With anybody?—*A.* No.

Q. And never had?—*A.* No.

Q. Then we will hear the verbal instructions. You have stated that the fabric used as a lining at the time you taught the process contained cellulose acetate yarns?—*A.* Yes.

- Q. In what proportion?—A. Every third warp thread consists of cellulose acetate.
- Q. Who furnished you with this material?—A. What material?
- Q. I want to know where you got that material you told me you used. Who furnished it?—A. That was bought I understand by the B.V.D. Company and sent to St. Hilaire—I beg pardon—
- Q. It was with the St. Hilaire Company when you went there, I suppose?—A. Yes.
- Q. You took it from St. Hilaire?—A. Yes.
- 10 Q. You did not analyze it?—A. I examined it.
- Q. From visual examination such as you have made can you state the proportion of cellulose acetate yarns in that fabric?—A. Yes.
- Q. That would be a fabric analogous to the inner layer of Exhibit 11?—A. Yes.
- Q. Looking at this intermediate layer, what makes you say that it is every third warp?—A. With the naked eye I cannot tell, but with my counting glass I can.
- Q. Did you use the counting glass on the fabric?—A. I believe so.
- Q. You are not quite sure?—A. No, but I—
- 20 Q. Referring to the hot press, which you have spoken of, the solvent which you used in it is 75 per cent. acetone and 25 per cent. alcohol—I suppose that is methyl-alcohol, is it?—A. Yes.
- Q. Now, what instructions did you give with respect to the time during which this pressure is applied in the wet press?—A. I instructed Mr. St. Hilaire to leave it in the wet press as we call it, for whatever length of time would be necessary to develop the necessary adhesion.
- Q. That is a question of adjustment, I suppose?—A. Yes, sir.
- Q. The average would be how much?—A. About nine seconds.
- Q. Mr. St. Hilaire has previously told us about twelve seconds. I suppose 30 you would not dispute that?—A. Well, it might be that.
- Q. As an average?—A. As an average. The Canadian materials required a somewhat longer time.
- Q. Why did Canadian materials require a somewhat longer time?—A. They were of a somewhat finer weave than the material in the States.
- Q. So that, according to the weight and the fineness of the weave, you would have to vary the time of pressure?—A. Yes.
- Q. And that adjustment, of course, the operator would get from the practical operation of the presses, from his own experience?—A. Yes.
- 40 Q. Now with respect to the pressure applied with that wet press, you have spoken of about ten pounds per square inch. What were the instructions that you gave with respect to the degree of pressure?—A. I adjusted the machine while I was there and told him that the pressure should be kept approximately as I had adjusted it. There is no accurate method of knowing that pressure.
- Q. What does that pressure depend on? Why do you increase it or decrease it?—A. Do you say why did I increase it or decrease it?
- Q. What were the factors which would induce you to increase the pressure or to decrease it?—A. We rarely change it, once the pressure has been adjusted,

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ination—
continued.

except to allow for the packing down of the padding. You adjust the platen to keep the pressure constant.

Q. Would that vary according to the nature of the weave?—A. No.

Q. Is that 10 lbs. pressure a uniform pressure that is used with all of your licensees, without exception, in the States and in Canada?—A. It is approximately 10 lbs.

Q. What would be the range?—A. The variation would be very great. I mean, there is no—we use a toggle link in these measurements, and it is rather difficult to adjust those machines accurately, and the pressure developed is largely guess work. 10

Q. How is the pressure applied,—by what means?—A. By a toggle link.

Q. How is that worked? Will you just explain how that works, because we are not familiar with such a machine?—A. I could with a diagram.

Q. It is operated with a foot?—A. Yes.

Q. Then the operator will apply more or less pressure, will he?—A. No, the pressure will be the same when the pedal is moved to a certain distance, the pressure will always be the same.

Q. And is the machine adjusted so that the pedal will only travel a certain distance?—A. Yes.

Q. And does the adjustment of the pressure also depend upon a screw 20 which is being worked with the toggle?—A. Yes.

Q. And in this case you adjusted it, you state, to about approximately 10 lbs. pressure per square inch?—A. Yes.

Q. Did you give any instructions to St. Hilaire as to any change that might be required for any further adjustment of it?—A. Yes.

Q. What instructions?—A. I told him that it would be necessary to raise the platen as the padding was packed down to keep the pressure the same.

Q. Did I understand you to state that the two plates of the press were padded?—A. Yes.

Q. Of that wet press?—A. Yes. 30

Q. Is the solvent on both plates?—A. Yes.

Q. The effect of the solvent, I believe you have stated is to soften the cellulose acetate in that intermediate layer?—A. Yes.

Q. And under these conditions, that is through the action of the softening agent, it will more readily adhere to the adjacent fabrics upon pressure?—A. Yes.

Q. Do you know that heat also softens cellulose acetate?—A. Will you repeat the question, please?

Q. Do you know that heat also softens cellulose acetate?—A. No.

Q. You do not?—A. No.

Q. Have you ever tried it?—A. Yes. 40

Q. You have tried the application of heat on cellulose acetate yarns?—A. Yes.

Q. With what sort of a fabric—was it all cellulose acetate fabric?—A. With all cellulose acetate fabric and with our regular lining material.

Q. Well, referring to the all celanese fabric—

Mr. BIGGAR: Do not use the word "celanese." You have explained that that was a trademark. We do not use any celanese.

Mr. LAJOIE : Q. Referring to an all celanese fabric, that means an all cellulose acetate fabric—celanese being the trademark word for it—what temperature did you apply to the all cellulose acetate fabric?—A. I tried it at temperatures running from 120 degrees C. to about 190 degrees C.

Q. And what was the result?—A. Well, there was practically no result in all cases.

Q. Why do you qualify it by stating “practically”? What do you mean by practically?—A. At the highest temperatures at which I worked the fibres of the cellulose acetate cloth were distorted, had been distorted by the pressure, but there was no adhesion between the layers of the sandwich.

Q. Have you tried it with a softening agent—with the application, say, of a softening agent?—A. Yes.

Q. Which one?—A. Dimethyl phthalate.

Q. What was the result?—A. When I used sufficient dimethyl phthalate, I could get adhesion at the higher temperatures and pressures.

Q. Which higher pressures and temperatures?—A. I began to get adhesions at about 180 degrees centigrade.

Q. Did you ever attempt to find out how many seconds it took for the acetone mixture to evaporate in the hot press?—A. Yes.

20 Q. How long?—A. It takes about 12 to 15 seconds to be completely evaporated.

Q. You have spoken of the transfer from one department to another, when the material is switched from the wet press to the hot press at St. Hilaire. Are the presses close to each other?—A. Yes.

Q. So that it is all in the one department?—A. Yes.

Q. What would happen if, after the assembly has gone into the wet press, you simply let it dry? I believe you have mentioned that you would get a wrinkled collar?—A. Yes.

30 Q. Anything else—is that the only reason for which you apply the hot press?—A. No, not the only reason.

Q. What is the other reason?—A. Well, the collar would not be as porous as a collar which had been—

Q. We will ask you to explain that to us fully. We are very much interested in that aspect of it. It is for the purpose of getting a greater porosity, amongst other objects, that you put the collar in the hot press?—A. Yes.

40 Q. Will you explain to us how that is?—A. The solvent which is put on the collar in the wet press softens the cellulose acetate, and if the collar is left wet and allowed to dry slowly by evaporation at room temperatures, the softened cellulose acetate will flow and film over—tend to film over—and make a more or less complete layer. Therefore we evaporate the solvent rapidly in order to harden the cellulose acetate as rapidly as possible, preventing the spread of the cellulose acetate.

Q. In teaching St. Hilaire, I presume you have not gone into these questions as to more or less porosity of the composite material and the more or less softening of the cellulose acetate, have you?—A. No.

Q. What did you give the pressure of the hot press at?—A. Mechanical or steam pressure?

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Theodore
Loew,
Cross-exam-
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continued.

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continued.

Q. Mechanical pressure?—*A.* About 10 to 20 pounds per square inch.

Q. Ten to 20 pounds mechanical pressure?—*A.* Yes.

Q. I believe you have given the steam pressure at from 15 to 20 pounds?

—*A.* Yes.

Q. And the heat at 250 degrees F.?—*A.* Approximately.

Q. What instructions did you give to St. Hilaire about the heat of a hot press?—*A.* I suggested the pressure reducer on the press to give a pressure in a range from 15 to 20 pounds, and instructed him to see that the pressure was maintained.

Q. Fifteen to 20 pounds steam pressure?—*A.* Yes.

Q. The heat, of course, you have stated, produces the evaporation of the solvent. The pressure does not assist the evaporation?—*A.* No.

Q. By the pressure by the hot press you get a squeezing effect on the softened cellulose acetate, do you not?—*A.* Yes...

Q. And on that account the cellulose acetate goes into the interstices or pores of the adjoining fabric, does it not?—*A.* Probably, but the effect would only last for a very short time.

Q. What do you mean by stating that the effect would only last a very short time?—*A.* The solvent leaves the acetate too hot to fill under that pressure.

Q. You have a softened cellulose acetate plastic which is being pressed between two fabrics, and I am asking you whether the cellulose acetate does not fill up at least part of the interstices and pores of all three fabrics which are being united?—*A.* No, it does not flow in that way.

Q. I am not speaking of flowing, but I am speaking of squeezing in or pressing into?—*A.* It is pressed into the outer plies of the cotton.

Q. You say it enters into the outer plies,—you mean into the interstices or pores of the outer plies?—*A.* It enters into the cotton threads.

Q. And not into the interstices or pores?—*A.* If the pores happen to be directly over one of those knuckles of the cellulose acetate, I suppose naturally it will go in.

Q. I suppose in all cases it will go into some of the interstices?—*A.* Yes, naturally.

Q. And being squeezed in that way do you contend it would only squeeze in the one direction, that is up and down, into the adjoining fabrics and not sideways?—*A.* There will be some sideways flow.

Q. Caused by the pressure?—*A.* Yes.

Q. And the sideways flow to that extent would also assist to fill up the pores and interstices?—*A.* Yes, slightly.

Q. When you speak of porosity of the composite fabric after it is out of the hot press, do you claim that it is more porous than when it was introduced into the hot press?—*A.* Will you repeat that question, please?

Q. When you refer to an increased porosity, do you mean that the collar, when coming out of the hot press, is more porous than it was when it was introduced in that press?—*A.* Well, as the collar was wet when it goes into the hot press, it would be rather difficult to test it for porosity.

Q. So that you have not made any test for that?—*A.* It is more porous than collars which are allowed to dry without going into the hot press at all.

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- Q. You have mentioned that, coming out of the wet press the fabrics would stick together?—A. Yes.
- Q. Are not those fabrics wet at that time?—A. Yes.
- Q. Do they stick while being still wet?—A. Not very hard. There is a slight glueness of the central lining fabric and they can be pulled apart very easily.
- Q. There is very little adherence at that time, while the collar is still wet?—A. Yes, because the cellulose acetate is still soft.
- 10 Q. In connection with the pressure in the hot press, when you speak of some 10 to 20 pounds mechanical pressure, is that the pressure actually applied to the collar assembly itself?—A. It is the average pressure over the area of the platen. You see we have rectangular platens on which the collar is placed, and then the average mechanical pressure is applied.
- Q. Would you make any distinction as to the pressure on the assembly of the collar itself?—A. I do not think there is much difference. The collar is soft and yielding, and that would tend to equalize the pressure.
- Q. And that is the figure over the entire surface, the pressure which you have just given?—A. Yes.

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RE-EXAMINED BY Mr. SMART.

- 20 Q. You have told my friend that the plies of the collars as they come out of the wet press would not have great adherence; if those same collars were allowed to dry, what would be the result?—A. They would adhere quite well.

Re-exam-
ination.

RE-CROSS-EXAMINED BY Mr. LAJOIE.

- Q. When you say they would adhere, what do you base your statement on?
- Mr. SMART: I do not understand that my friend has the right to continue.
- Mr. LAJOIE: This is a new point which my friend did not bring out on his own examination.
- 30 HIS LORDSHIP: I think it is a perfectly fair and obvious question to ask. If there is anything you do not understand about it, or if there is any purpose in asking the Witness again about it, all right, but do not cross-examine on it again.
- Mr. LAJOIE: I am merely asking leave of your Lordship to put that question, that is all.
- HIS LORDSHIP: What is the question?
- Mr. LAJOIE: It follows from the question just put by my learned friend, that is all.
- Q. What do you base that answer on that you have just given? You have 40 made tests?—A. Yes, I have made tests.
- Q. How does that compare with the final adhesion after it has gone through the hot press?—A. On the average, it is just a little bit less. Some of them come out better; some of them come out worse. The average is a little less.
- Q. So that you get a better adhesion after it has gone through the hot press?—A. Yes.

Re-cross-ex-
amination.

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DONALD HOWARD STEWART, sworn. EXAMINED BY Mr. SMART.

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tion—

Q. You are what officer of the Plaintiff Company?—A. I am the president.

Q. And have been for some period?—A. Since it was formed.

Q. You are selling shirts with what you call the Texcraft collar?—A. Yes,

sir.

Q. Is this one of the shirts which you sent to the office of Smart and Biggar?

—A. Yes.

Q. And which have been sold by your Company?—A. That is right.

EXHIBIT No. 12: Filed by Mr. Smart. Shirt with Texcraft collar.

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Q. All these shirts that you sell with the Texcraft collar have been made for you by whom?—A. By L. St. Hilaire.

Q. And you use the word "Texcraft" as your trade name for these?—A. For that particular type of collar.

Q. Which is licensed by the Trubenizing Process Corporation?—A. Yes, sir.

Q. Will you tell me the circumstances under which you came to obtain the license and instruct the St. Hilaire Company to manufacture these for you?

—A. For some time as shirt manufacturers in Canada we were extremely interested over the new type of shirt which we heard of being made in the United States and which was commonly known as the fused collar. We went into the

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question among ourselves for some time as to just what we should do in obtaining a license to manufacture this type of shirt because it was our understanding that there were two firms who claimed they had patents, and it was a question of deciding what to do in this matter. Finally we decided to obtain a license from the Trubenizing Process Corporation, the reason being that from our investigation we had come to the conclusion that their process produced the finest type of fused collar.

Mr. LAJOIE: I think that is all irrelevant.

HIS LORDSHIP: It is irrelevant, yes.

Mr. SMART: When did you take this license and commence selling these shirts in Canada?—A. At the end of May, 1935.

Q. How long before that time had you observed the effect of this type of shirt on the shirt industry in the United States?—A. For over a year.

Q. It had considerable effect there on the market?—A. Yes.

Mr. CHIPMAN: Can this witness be qualified to answer that?

Mr. SMART: Just proceed?—A. It had in our opinion revolutionized the shirt industry.

Q. And what was the result in your business when you introduced this new type of collar?

HIS LORDSHIP: What is the purpose of that question, Mr. Smart? You are not trying the patent under which they were licensed.

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Mr. SMART: No, my Lord.

HIS LORDSHIP: I do not quite see what you are driving at.

Mr. SMART: In effect, as I think your Lordship will see, it has been a revolution in the shirt business, and the date of the revolution is important as being in 1934 and 1935, whereas the patent in question here is one of 1925.

HIS LORDSHIP: I see your point.

Mr. SMART: And there is some relevancy as to the date when this occurred.

Mr. CHIPMAN: I do not see that the date of the revolution determines the matter.

Mr. SMART: No, but I am suggesting that the patent as filed in 1925 was no real contribution, and the fact that it was not used for ten years is some help to me in making that argument.

HIS LORDSHIP: Well, we should not waste much time on that.

Mr. SMART: No, I am just about finished with that point.

Q. I do not think you really answered the question. What about Canada?—A. The change in Canada has been very much of the same type, only having been started here later it has not reached the extent that it has in the States.

Q. What kind of fabrics can you use on the collars for the outside and inside of the collar fabric?—A. Well, we have made very few tests of that kind, because in the shirts that we have made so far they have simply been the usual type of regulation shirt, and we have had no difficulty with any. The collars have been made out of the ordinary type.

Q. Do the collars match the shirts?—A. The collars absolutely match. We have had no trouble whatever with discolouration although apparently there has been considerable amount of trouble of that type because the textile mills of Canada have come to us and have brought out that point, the fact that we have not given them problems with their dyes, but as far as our own colours are concerned we have had no trouble.

Q. You are speaking of colours, printed or woven, in what, white shirts?—A. No, the same type of fabric but printed with colours, red and blue, and so on.

Q. You are able to use the same fabric in the collar; that is, if it is a blue stripe, you can use the same blue stripe?—A. The collars are made of the same material as the body.

Q. That is what you referred to?—A. In the colours running in in all types of coloured shirts.

CROSS-EXAMINED BY Mr. LAJOIE.

Q. Have you got the date of the license that you took from the Trubenizing Process Corporation, Mr. Stewart?—A. No, I don't remember the exact date, it was towards the end of May.

Q. It may be in June?—A. No, I think it was May.

Q. But you do not know, you cannot give any date?—A. Not definitely.

Q. You have not got the license with you?—A. No, sir, I have not.

Q. I presume the license carries an undertaking by the Trubenizing Corporation to protect you in case of a patent suit, does it?

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HIS LORDSHIP : They would be very foolish if they did not have it.

Mr. LAJOIE : Perhaps so, but——

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HIS LORDSHIP : That is generally understood. It does not matter.
I will assume that they are protected.

Mr. LAJOIE : He can answer so easily Yes or No.

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continued.

HIS LORDSHIP : He says he is a licensee of the patentee, that is all
there is to it.

Mr. LAJOIE : That question has been put repeatedly in patent cases,
my Lord.

HIS LORDSHIP : Not very frequently I think before me. It might be 10
one of those questions that would not be permissible at all ; if a case were
being tried before a jury. It would be like asking an automobile man if his
automobile was insured, with probably the loss of a verdict.

Mr. LAJOIE : *Q.* You have spoken of the troubles with dyes in connection
with the colours ; I did not get your explanation about that. Did I understand
you to say that you had had trouble previously in connection with the colouring
of the shirts ?—*A.* No, I said, Mr. Lajoie, that we had had no difficulty since
we had started manufacturing and selling these shirts in Canada with any
colours running in printed broadcloths, which is the common cloth used ;
although I understood that that was rather unusual, inasmuch as the Textile 20
Mills of Canada have come to me on account of selling their material and have
spoken of the problems that they have had with colours running since the fused
collar began being manufactured in Canada.

Q. But you are not prepared to say that the troubles they have had were in
connection with collars made by cellulose acetate yarns ? It is not a fact that
their troubles had arisen under other methods that had been used ?—*A.* Under
methods other than the methods employed by us.

Q. And other than the method of employing cellulose acetate yarns ?
—*A.* I do not know that.

Q. You are not aware of that. Personally in your firm, did you have any 30
trouble in connection with the colouring of collars and shirts ?—*A.* Running
from the fusing of the collars ?

Q. Yes ?—*A.* No, sir.

Mr. BIGGAR : Now, my Lord, the next witness in point of order would be
Mr. St. Hilaire himself, whom I am calling merely for the purpose of giving
some formal evidence with regard to some materials which he sent to
Dr. Esselen, the expert witness who will follow him. I do not know whether
there is a stenographer prepared to take his evidence, and I am informed that
Mr. St. Hilaire does not speak English.

HIS LORDSHIP : There is a stenographer——

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The REGISTRAR : I was only asked by one side, and I understand that
Mr. Lajoie has arranged for a stenographer.

Mr. LAJOIE : We knew that if my learned friend was not examining
Mr. St. Hilaire, we wanted to produce him, although I could not see how in

the world Mr. Biggar could make his case without producing Mr. St. Hilaire ; so that I made this arrangement with a stenographer in Montreal. Mr. Duclos, the Registrar, told me there might be some difficulty in getting one in Ottawa, and I told him if Mr. Biggar does not produce Mr. St. Hilaire and examine him in his own way, I will have to telephone him at Montreal, but that was only if he was not examined by Mr. Biggar. Of course, I quite realize that he is to be examined by the Plaintiff. It is up to them to make their own arrangements.

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His LORDSHIP : Mr. Biggar, of course we will have to have a stenographer.

10 Mr. BIGGAR : What it really means now is the practical point that I will have to go on with Dr. Esselen's evidence.

Mr. LAJOIE : Could we not get one for this afternoon ?

The REGISTRAR : The only reporter around here is engaged in a criminal case in Hull. He is the only one I would recommend and whom the Court would accept.

HIS LORDSHIP : We will have to make the best arrangement we can make for to-morrow morning.

No. 11.

GUSTAVUS J. ESSELEN, sworn. EXAMINED BY Mr. BIGGAR.

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HIS LORDSHIP : For what purpose is he being called ?

20 Mr. BIGGAR : Your Lordship will see in the course of Dr. Esselen's examination that he got certain materials from Mr. St. Hilaire upon which he made some tests, and he is going to give evidence with regard to the tests made on this material.

HIS LORDSHIP : You merely want to show—

Mr. BIGGAR : That these were the materials that were used in the manufacture.

HIS LORDSHIP : Is it necessary to call him ? I do not suppose Mr. St. Hilaire could help you or hurt you at all.

Mr. LAJOIE : Mr. St. Hilaire is the manufacturer : he is the only one who can speak from personal knowledge.

30 HIS LORDSHIP : He cannot inform us about this patent.

Mr. LAJOIE : Mr. St. Hilaire is the one who manufactures these collars that we are concerned with.

HIS LORDSHIP : He could not tell you anything more than Mr. Loew.

Mr. LAJOIE : It may be slightly different. It is the vital part of the case, my Lord.

40 Mr. BIGGAR : Q. Dr. Esselen, will you indicate your experience with regard to cellulose derivatives and their use in the arts ?—A. Well, I studied chemistry at Harvard University and received my Bachelor of Arts degree after specializing in chemistry in 1909. I spent the next two years in the graduate school there specializing in chemistry and acting as a teaching fellow, taking

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my master's degree in 1911 and the Ph.D. degree in 1912. The following two years I was a member of the research staff of the General Electric Company at Lynn, Mass., and for the next three and a half or four years I was the manager of a small plant which manufactured cellulose acetate and materials made from cellulose acetate during the war. Since that time I have been directing research of various types, chiefly connected with the application of chemistry to industry, and during that time I have made a special study myself of the chemistry of cellulose and its derivatives.

Q. Are you a member of the scientific societies?—A. I am a director of the American Chemical Society and a director of the American Institute of 10
Chemical Industries; a fellow of the American Association for the Advancement of Science; a fellow of the American Institute of Chemists; a member of the Society of Chemical Industry of Great Britain and of the Association of Consulting Chemists and Chemical Engineers.

Q. And have you made an examination and study of the patents that are in question in this action?—A. I have.

Q. Now for the purpose of that study you got certain samples did you not from St. Hilaire Limited in Quebec?—A. I did.

Q. Can you recognize those?—A. Yes, those are samples which I received from St. Hilaire, and they have my initials on them which I put on them when 20
I received them.

Mr. BIGGAR: I think they had better go in separately. Exhibit 13 will be a completed separate collar with a piece cut out, and Exhibit 14 is an unprocessed collar with a piece cut out of the lining, and I think that is just a duplicate of that, is it not?

WITNESS: That is all.

EXHIBIT No. 13, Filed by Mr. Biggar: Completed collar with piece cut out.

EXHIBIT No. 14, Filed by Mr. Biggar: Unprocessed collar with piece cut out.

Q. Now you cut out of Exhibit 14 this piece that I am showing you, did 30
you not?—A. Yes.

Q. I will make sure that that is right, as far as the number goes.—A. Yes, that was cut out of there and fits into the same places which can be seen.

EXHIBIT No. 15, Filed by Mr. Biggar: Small piece of fabric.

Q. And in what way has that piece, which we will call Exhibit 15, been treated?—A. That piece has been dyed with a dye which dyes cellulose acetate threads but does not dye cotton threads.

Q. A red dye?—A. A red dye.

Q. Now I see on that a little ink square?—A. Yes.

Q. What does that little ink square or rectangle?—A. A rectangle.

Q. What does that represent?—A. That represents an area which was 40
photographed.

Q. And is this the photograph?—A. Yes.

Q. That is a stereoscopic photograph. There are two, of course, mounted together?—A. That is a magnified stereoscopic photograph.

Q. And the magnification, according to the note on the back is "12.5"?
—A. Yes, twelve and a half times.

Mr. BIGGAR: Your Lordship has already seen that.

Mr. CHIPMAN : Are you putting that in as an exhibit ?

Mr. BIGGAR : Yes.

EXHIBIT No. 16, Filed by Mr. Biggar : Stereoscopic photograph.

Q. Having regard to that sample, Exhibit 15, and the photograph, Exhibit 16, what is the character of the fabric ?—A. Well, the photograph shows that the threads in one direction are all cotton, and the threads in the other direction are two threads of cotton and one thread of acetate material—cellulose acetate material.

10 Q. Then out of Exhibit 13 you cut out also a piece, did you not ?—
A. Yes.

Q. And that is that piece ?—A. That is that piece.

EXHIBIT No. 17, Filed by Mr. Biggar : Piece of material cut out of Exhibit No. 13.

Q. What has happened to this Exhibit 17 by comparison with the collar from which it was cut, has it just been stained ?—A. No, it was first opened up so that we could see the condition inside.

Q. The layers split apart ?—A. The layers split apart.

Q. What else, and stained ?—A. Yes, in the same way as in the previous piece that was cut out from the untreated lining.

20 Q. And I see a small rectangle, and is that on the lining, and is that the photograph ?—A. Yes, this is a photograph of the lining, similarly magnified and also stereoscopic.

EXHIBIT No. 18, Filed by Mr. Biggar : Photograph.

Q. Dr. Esselen, will you explain what has happened to the cellulose acetate threads as is shown by those Exhibits, Nos. 16 and 18 ?

Mr. CHIPMAN : Has my friend got extra copies of those photographs ?

WITNESS : Yes, I will have them this afternoon.

30 Mr. BIGGAR : Q. I am handing the Witness Exhibits 16 and 18, the two photographs ?—A. In Exhibit 16, which represents the lining fabric before it has been subjected to any treatment, it is very apparent that the cellulose acetate threads are continuous threads. In Exhibit 18, which is a photograph of a similar piece of inner fabric after it has been trubenized and the resulting collar split apart shows that the cellulose acetate threads have been largely broken. The knuckles which are clearly apparent in the untreated fabric have to a large extent disappeared. There are still a few of them there, but to a large extent they have disappeared, and the cellulose acetate threads, such as are left, appear as very short broken pieces.

Q. Yes, I see. Would this diagram that I showed his Lordship yesterday indicate what has happened to the cellulose acetate threads ?

40 HIS LORDSHIP : You might return the photographs so that the other side may see them.

Mr. BIGGAR : Yes. They saw them yesterday.

WITNESS : Yes, that indicates essentially what has happened.

Mr. BIGGAR : We will mark that as Exhibit 19.

Mr. LAJOIE : Is it a written statement ?

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Mr. BIGGAR : It is a diagram.

EXHIBIT No. 19 : Filed by Mr. Biggar : Diagram.

Q. Now did you make some tests to determine the permeability of material subjected to a process similar to that by which this collar is stiffened ?—*A.* Yes.

Q. Perhaps you had better explain to his Lordship the way in which those tests were carried out ?—*A.* Just a minute ; I will get the apparatus which was used. In order to prepare the samples which were used in these permeability tests, I myself went to a plant at Cohoes, New York, which is regularly carrying out this process by which these collars were made. And there in my presence there were prepared some samples somewhat larger than an ordinary collar, 10 to be exact, samples approximately six inches square. These samples were prepared in exactly the same way that they were preparing collars at the time and were prepared in my presence by the regular operatives who were regularly working on—

Mr. LAJOIE : May I interrupt ? I do not see what relevancy it will have to give evidence on samples that have been manufactured by means of a process which is not identified as that carried out by Mr. St. Hilaire.

HIS LORDSHIP : I suppose he will do that.

Mr. BIGGAR : Q. You have heard the description that has been given of the process carried on by St. Hilaire Limited in the manufacture of these 20 collars ?—*A.* Yes.

Q. How did the process by which these samples that you are referring to were made correspond with or vary from that process ?—*A.* It was essentially the same process.

Q. Yes, and you got these pieces made under your observation, but larger ?—*A.* But larger.

Q. And what did you do with them ?—*A.* I kept them, of course, in my possession, took them back to my laboratory.

Q. Did you take any with you at the same time, any of the materials ?—*A.* I took at the same time some pieces of similar size and shape of exactly 30 the same materials ; that is, the same inner lining and the same outer fabrics. I took those back with me at the same time.

Q. Which were unprocessed ?—*A.* Which were unprocessed, right.

Q. And you took those back with you to your laboratory, and what did you do with them ?—*A.* I subjected them to a test to determine the rate at which water vapour would pass through the fabrics which had been trubenized, and exactly the same fabric which had not been trubenized.

Mr. CHIPMAN : I think we might avoid this word "trubenized" which is not in any dictionary that I am aware of. I do not think it has any legitimate status in this case. I notice it on the back of these exhibits. 40

HIS LORDSHIP : I was going to ask why that word was used.

WITNESS : The word "trubenized" is a word commonly used now-a-days to apply to the process of making fused collars that are made under the process of Trubenizing Process Corporation.

Mr. BIGGAR : Q. That is the process we have been talking about ?—*A.* That is the process we have been talking about and was described by Mr. Loew.

Mr. BIGGAR : Suppose we all agree to use the word " process " as meaning this particular process that has been described ?

Mr. CHIPMAN : I do not want to dignify the so-called trubenizing process unnecessarily, and I do not like the word " trubenized " used on these exhibits and " untrubenized " as if they were adequate descriptions. They help to give an atmosphere that my friends are not entitled to.

HIS LORDSHIP : Well, try to avoid the use of the word.

Mr. BIGGAR : I was suggesting an arrangement, my Lord, but my learned friend, instead of dealing with it, suggested something else. I suggested that we adopt for the purpose of this trial the word " process," meaning the materials which are said to have been processed have been submitted to a process corresponding to that which was described by Mr. Loew in his evidence this morning, but if my friend does not like that expression, let us get something we do agree on.

HIS LORDSHIP : And by that you mean the process used by the manufacturers of the shirts which your client sells ?

Mr. BIGGAR : I mean the particular process that Mr. Loew described.

HIS LORDSHIP : Yes.

Mr. BIGGAR : With the wet press and the acetone alcohol and the hot press.

HIS LORDSHIP : Well, the witness will use the word " process."

Mr. BIGGAR : *Q.* Yes ?—*A.* Then I brought with me a number of samples which had been processed and several samples of the same materials which had not been processed, and I subjected samples of each of these types of materials, that is the processed and the unprocessed, to comparative tests to determine the rate at which water vapour would pass through. What I actually did was to seal up a container of this sort—I had three of these containers—and I laid a piece of the fabric over them with a suitable rubber gasket to make a tight joint, and I measured the rate at which they lost weight after I had placed a certain amount of water there, each container having approximately the same amount of water at the same temperature. The containers were kept side by side during the tests.

Q. I do not think we need mark the container, but perhaps it would be useful to describe it as having a diameter of about four and three-quarter inches to five inches ?—*A.* Four and five-eighths, I think it is.

Q. A depth of about three inches ?—*A.* Yes.

Q. And around its top edge appear rings capable of being tightened down by thumb screws ?—*A.* Yes, and fitted with a flat rubber gasket to make a tight joint.

Q. So that a piece of material placed between these two rings would, after the thumb screws had been turned down, make a cover for the container such that any gases from the inside could escape only through the fabric ?—*A.* That is right.

[At 1.00 p.m. Court adjourned until 2.15 p.m.]

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GUSTAVUS J. ESSELEN, EXAMINATION BY Mr. BIGGAR (Resumed).

Q. Dr. Esselen, you were about to tell us how these tests worked out that you have described the apparatus for?—*A.* I think I had explained that the fabrics were used as the covers for the containers, sealed in such a way that any water vapour contained in the container would have to pass through the fabric. At the end of a four hour period I found the following results; these results for comparative purposes are calculated to the basis of a square foot area.

The sandwich which had not been processed but which had been laid up 10 very tight across the container there had permitted 5 grammes of water to pass through per square foot. There were two samples of processed material to compare with this. One of them had permitted 12.5 grammes, or roughly two and a half times as much, and the other one 15.8 or about three times as much water vapour to pass through as had passed through the unprocessed sandwich.

Q. And the water vapour you speak of, would that be capable of being described as a gas, or not?—*A.* Yes that would be a gas.

Q. So that as far as permeability to a gas of that kind is concerned, you say that the comparison was in favour of or against the processed material?—*A.* Well in both instances the processed material was distinctly more permeable 20 than the unprocessed.

Q. Now to complete what you have to say about the material of the kind that goes into these collars, to what is the stiffness of the collar due after it has been processed?—*A.* The stiffness of the collar is due to the fact that three layers of fabric have been caused to adhere to each other rather than just a single layer.

Q. How far, if at all, does that stiffness depend upon the cellulose acetate threads in the condition they are in after having been processed?—*A.* It can hardly depend very much on the cellulose acetate threads because by the process they are all broken into very short lengths. 30

Q. Is that capable of detection by examination of this Exhibit 17?—*A.* Yes if one looks at it under a magnifying glass. I think the photographs show it a little better.

Q. The lines of red are continuous or discontinuous?—*A.* The lines of red are broken, quite obviously.

Mr. CHIPMAN: We do not see what the witness is looking at.

Mr. BIGGAR: The lines of red in the lining material are broken.

HIS LORDSHIP: By the pressure?

Mr. BIGGAR: No. Perhaps you had better explain.

The WITNESS: They are broken by the process as a whole. When 40 the lining fabric is first subjected to the action of the solvent the threads become very soft. Then when they are in that wet press the slight pressure that is applied has a tendency to break these threads, because they have no strength while they contain the solvent.

Q. And to the eye they are left as lines, but in fact they are not complete lines?—A. Even to the eye I think it is apparent, if you compare the treated and the untreated sample, the treated sample has continuous lines, and the untreated the lines are broken.

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Q. You say in Exhibit 15?—A. In Exhibit 15 the lines are continuous.

Q. Whereas in Exhibit 17?—A. They are obviously broken.

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Q. Now turning to the first of the two patents in suit it begins by speaking of the subject being "fabrics or sheet materials having waterproof to gas proof properties." Will you tell me from the physical point of view what that involves?—A. Fabrics of that sort involve the closing of the pores or interstices to prevent the passage of water or gas.

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Q. And the degree of waterproofing or gas proofing depends upon what, or is a function of what?—A. The extent to which the pores have been closed.

Q. The next question is with regard to the general category of materials which are next mentioned, in line 8 and again in line 14; "thermoplastic cellulose derivatives." What does that expression mean?—A. It means derivatives of cellulose which become plastic under heat.

Q. Can you give an instance of other materials which are thermoplastic in the same sense?—A. Yes. One example of a thermoplastic material is wrought iron. It is in the thermoplastic condition when the blacksmith uses it on his anvil, but if it is to be poured into ingots it actually melts at a higher temperature and is then liquid. But it is thermoplastic at the stage at which the blacksmith uses it on his anvil.

Q. The next general phrase is the one that says, "or other ester or ether of cellulose." What is an ester of cellulose?—A. An ester of cellulose is a combination of cellulose and an acid.

Q. Either organic or inorganic?—A. Yes.

Q. And the expression "Ether of cellulose"?—A. An ether of cellulose is a compound of cellulose and an alcohol.

Q. Then there is another general expression used in the patent, I think it occurs only in the claims, that is "organic derivatives of cellulose." What does that include?—A. I presume an organic derivative of cellulose is any derivative of cellulose with some other organic compound.

Q. Such as?—A. Acetic acid.

Q. Generally organic acids?—A. An organic acid or organic alcohol. In other words it includes both esters and ethers.

Q. Taking the expression cellulose esters, what is the order of the number of theoretically possible materials that would come within that expression?—A. You mean combinations of cellulose with organic acids?

Q. Yes. When you say organic acids I understand you to tell me that esters may be either organic or inorganic?—A. Yes, that is right. I have never counted, but there are several hundred theoretically possible.

Q. And the greater number of those are included among the esters derived from organic acids or inorganic?—A. Organic acids.

Q. And roughly speaking in what proportion? Suppose there were hundreds in both groups, what would be roughly speaking the division between

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them?—*A.* It is very difficult to answer. I think probably three or four times as many organic as inorganic

Q. And of those how many are commercially known?—*A.* Of the organic?

Q. Yes, of the organic cellulose esters?—*A.* Well cellulose acetate is the most common, the only one that I know of available in large quantities. There are certain mixed esters that have recently appeared on the market made partly of acetic and partly butyric, and partly of acetic and partly of propionic acid.

Q. Would that substantially cover the commercial cellulose esters as far as the organic ones are concerned?—*A.* Yes.

Q. Are there others that are known as laboratory products?—*A.* Yes, 10 there are.

Q. Roughly speaking about how many?—*A.* There again I have never counted them. Probably 15 or 20, something like that.

Q. And of the remaining hundreds can you tell me what is known, or what kind of information there is about them, if any?—*A.* Beyond those 15 or 20—or let me put it this way; by far the largest proportion of theoretically possible ones have never been made.

Q. Turning to the esters derived from inorganic acids, what would be the position in regard to commercially known ones and laboratory products, by comparison with the total number of theoretically possible ones?—*A.* There 20 is only one commercially available one. It is very difficult to prepare the others, any others, even in the laboratory.

Q. There have been others prepared?—*A.* Others have been reported in the literature, yes.

Q. Is there any particular difficulty in making use of these others that have been prepared in the laboratory?—*A.* Yes, they are very unstable, they have not commercial possibilities.

Q. Have they any other objections to their use for the kind of purpose that the patent contemplates?—*A.* Well, I am only acquainted personally 30 with one of them, and that is not soluble in organic solvents.

Q. What about the same point with regard to organic cellulose esters? What about cellulose butyrate?—*A.* Cellulose butyrate is very difficult to use without its resulting in an objectionable odour, sometimes faint and sometimes stronger.

Q. And the valeriate?—*A.* That is open to the same objection.

Q. Speaking generally from your chemical knowledge, how safe would it be to predicate the action of the other possible esters either organic or inorganic?—*A.* I do not see how you can predicate it until you have made them.

Q. In other words, chemistry has some unexpected.—*A.* Yes.

Q. Then I think you have told me the expression "organic derivatives" 40 covers both the esters and the ethers?—*A.* That is right.

Q. When they are due to a combination with either an organic acid or an organic alcohol?—*A.* That is right.

Q. What about the ethers from the same point of view, their number, their adaptability as far as commercially known to purposes of this kind, and the existence of commercial and laboratory products?—*A.* There again theoretically a large number is possible.

Q. Of the order of—?—A. Well once more I have never counted them, I should think a matter of a hundred at least. But there are only three that are commercially available.

Q. And those are—?—A. The ethyl, the methyl and the benzyl.

Q. Would any of those present any difficulty for use for purposes of the kind contemplated by this patent?—A. No, I think those three could be used.

Q. What about methyl for water-proofing purposes?—A. For making a water-proof fabric it would be impractical to use methyl because it is ordinarily soluble in cold water.

10 Q. By cold water you mean what, water at room temperature?—A. Water at room temperature.

Q. What about the other possible ones? Speaking first of the laboratory ones, would they be possible to use?—A. Yes I think it is conceivable that some of the ethers might be used.

Q. And as far as those that have not been made are concerned, could you predicate their probable action?—A. No.

Q. Then coming back to the first of the four general categories, described as thermoplastic cellulose derivatives, would they or would they not cover cellulose derivatives falling within the other categories that we have just dealt with?—A. Some of them are thermoplastic and some are not.

Q. You are speaking now of those whose qualities are known?—A. Yes, of the cellulose esters whose qualities are known.

Q. And what about the cellulose ethers, would there be any thermoplastic ones included in them?—A. Yes the cellulose ethers are all thermoplastic, those I am familiar with.

Q. That would include then the ethyl, methyl and benzyl celluloses that are referred to specifically?—A. Those three are thermoplastic.

Q. What about the other two specific articles referred to? First nitro-cellulose?—A. That is not thermoplastic.

30 Q. Has it more than one form?—A. It has three ordinary forms. I might say the three forms are commercially distinguished by the percentage of nitrogen which they contain. I think you referred to that yesterday as the percentage of nitric acid, it is the percentage of nitrogen. If a nitro-cellulose contains more than 12.3 or 12.4 per cent. of nitrogen it is in the class of smokeless powder, an explosive. In the range of about 12 per cent. it is used as the basis for nitro-cellulose lacquers, and with about 11 per cent. of nitrogen, when used with camphor or other suitable plasticiser it is the basis of celluloid and the nitro-cellulose plastics.

40 Q. To what temperature approximately could you safely expose the first group, the explosive group, without risk?—A. I do not know the exact temperature. The stability of nitro-cellulose is ordinarily tested in the laboratory at about 135° C. and we seldom heat it above that temperature, because it is likely to decompose rather rapidly.

Q. Does that apply equally to all the three kinds?—A. Yes, the stability is ordinarily measured at that temperature.

Q. What would be the risk involved in exposing them to a temperature above that, from your general knowledge? I do not suppose you have done it,

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since you are here?—*A.* No. The explosive range might decompose with explosive violence, the others might catch on fire. It would be rather a risky performance to go over 135° for any length of time.

Q. What about a cellulose acetate?—*A.* In what regard?

Q. In regard to its thermoplasticity?—*A.* From the practical point of view cellulose acetate is not thermoplastic. From the strictly scientific point of view it is possible to heat cellulose acetate to a point where it becomes thermoplastic, but that range is rather high, and as far as the purposes of the patent are concerned it is above what I consider to be a practical temperature.

Q. Approximately at what temperature does cellulose acetate become 10 thermoplastic?—*A.* At about 200° C.

Q. And decomposes at about what?—*A.* When we talk about the decomposition point we have to recognize that there are a number of varieties of cellulose acetate chemically, but in general they begin to decompose at around 240° C. Some will run a little higher than that.

Q. Suppose you expose a fabric of the kind mentioned here, silk, cotton, linen, etc., to a temperature of 200° C. what would happen to that fabric?—*A.* If you should expose it as long as a few minutes, in two or three minutes it begins to scorch.

Q. Scorching at approximately what temperature?—*A.* Well, I have 20 observed scorching at 160 degrees C. for somewhere in the range of 3 to 5 minutes.

Q. Now, you can mix material, I suppose, with cellulose acetate so as to make it thermoplastic?—*A.* Yes, indeed.

Q. What kind of materials?—*A.* In general, plasticizers or softening agents.

Q. Would you look at page 6 of the patent, line 21, where it says that cellulose acetate fabric might be, for the purposes of the patent, associated with some other fabric, preferably after being coated or treated with a plasticizing or softening agent or solvent—what would that indicate to you with regard 30 to the thermoplasticity of cellulose acetate yarn, independently of a plasticizing or softening agent?—*A.* It would indicate to me, by the word “preferably” that it was the thought of the patent that cellulose acetate was plastic without a plasticizer.

Q. Then, if you turn over the page, in line 24, I find the expression:—

“The application of plasticizing or softening agents or solvents of the
“cellulose acetate or other thermoplastic cellulose derivatives to assist
“the melting effect.”

What would that indicate?—*A.* Again, that would indicate that they would melt without a plasticizer. 40

Q. And I find the same expression in line 26 on page 8: “it assists the
“melting or softening effect”—three lines from the bottom?—*A.* Yes. The connotation is obviously the same.

HIS LORDSHIP: I suppose, Mr. Biggar, those few questions are hardly proper. It does not matter much. Those questions are just construing what is—

Mr. BIGGAR: From the scientific point of view, my Lord.

HIS LORDSHIP : Oh, it is not discussing it from the scientific point of view. He just reads it and says that from the wording he would infer that.

Mr. BIGGAR : It was from the scientific point of view I was considering it, my Lord.

HIS LORDSHIP : I am not objecting very strenuously.

Mr. CHIPMAN : I think, my Lord, we should take the point that the Witness can speak as to the accuracy of a scientific word, but cannot draw conclusions from it, a deduction.

Mr. BIGGAR : *Q.* I think you have made, have you not, materials in
10 accordance with the directions of this patent ? Is that your sample ?—*A.* Yes.

EXHIBIT No. 20 : Filed by Mr. Biggar : Sample.

Q. Would you tell us how that was made ?

Mr. CHIPMAN : May we see that ?

Mr. BIGGAR : You saw it yesterday, I think. It is a beautiful sample of the product.

Mr. CHIPMAN : I would hate to sell it.

Mr. LAJOIE : Glassy.

Mr. BIGGAR : Would you indicate to us how that was made ?—*A.* A piece
20 of ordinary cotton cloth similar to that used as the outer ply of a collar such as has been exhibited here, has applied to one of its surfaces a piece of cellulose acetate fabric. This piece of cellulose acetate fabric was first impregnated with a plasticiser in the proportion of 20 grammes of plasticiser for 100 grammes of cellulose acetate fabric. The two were laid together, and heated in a hydraulic press under a pressure of 600 pounds to the square inch for five minutes, at a temperature which ranged between 144 degrees C. at the end of the test and 160 degrees C. at the beginning of the test.

Q. Is that a waterproof or gas-proof fabric ?—*A.* Yes it is waterproof. I have not tested it for gas-proofness, but it has all the appearances of being
30 a gas-proof fabric.

Q. My friends on the other side object, or suggest that that is open to criticism on the ground of its glassiness. What would have happened, or can you tell me what would have happened so far as the threads are concerned by the application of heat of the order of the heat that you applied with pressures down to 300 and for an ordinary length of time? Would the threads have been visible of the cellulose acetate ?—*A.* Do you mean if it had been applied to a cellulose acetate fabric alone ?

Q. No, with the other fabric ?—*A.* I am sorry, I do not think I have got your question.

40 *Q.* If you look at paragraph 6, that fabric comes within the second of the two alternatives, I imagine, does it not :

“ The heat and pressure may be such as to cause the filaments or fibres of thermoplastic cellulose derivatives to melt and disappear partly or entirely.”

Mr. CHIPMAN : Does my friend suggest that ?

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Mr. BIGGAR : They have disappeared in that.

WITNESS : Yes, they entirely disappeared in that sample.

HIS LORDSHIP : He is leading, you mean ?

Mr. CHIPMAN : Yes, my Lord ; he could not get the answer from the witness that he wished, and then he put the question in that form. I am objecting to that sort of examination as leading.

Mr. BIGGAR : Surely there must be some reasonableness about these objections.

Q. Can you say as to the effect of producing a water-resisting or even gas-resisting fabric without causing the filaments or fibres of the thermoplastic cellulose derivatives to disappear, under the first of that ?—A. If they did not disappear I would not expect it to be gas-proof or waterproof, because there would still be pores in the resulting fabric. 10

Q. Now, there are a number of passages that I referred to yesterday in the specification, with regard to heat and pressure. One point is repeated two or three times, but it will suffice. I think, if we take page 4, lines 12 to 20, paragraph 7 of the patent. What would be, so far as the Plaintiff's product is concerned, the effect of increasing the length of the time during which there was any exposure of the fabric to heat and pressure, and what would be the effect of increasing the heat or pressure ?—A. Well, I made some tests in order 20 to determine that point, and a measure of the effectiveness of increasing the time or increasing the temperature which I used was to measure the adhesive force between the outer cotton fabric and the lining fabric ; and I found that by increasing the time during which the temperature was applied, but keeping the temperature constant, there was very little difference observed, but there was a slight falling off in the strength of the adhesion between the lining fabrics and the outer fabrics.

Q. I have got a series of samples here, and you might tell us with regard to the making of those ?—A. The sample which is marked here 1-C—

EXHIBIT No. 21 : Filed by Mr. Biggar : Sample of fabric. 30

Q. You were going to tell us about it ?—A. I would like to explain, first, that these were all handled in exactly the same way, so far as the processing in the cold press that was described to us this morning was concerned.

Q. The variation between them was the variation in the way they were treated in the hot press ?—A. Yes. This sample, which is marked 1-C, was left in the hot press for 15 seconds.

Q. Will you deal with the comparison of them afterwards ?—A. I thought it would be simpler to get them all described and give the results all at once.

Q. Then the next one which you will describe was left in the hot press for how long ?—A. The next one was left in the hot press for a period of between 30 and 45 seconds. 40

EXHIBIT No. 22 : Filed by Mr. Biggar : Sample of fabric.

WITNESS : The next one was left in the hot press for 60 seconds, or one minute.

EXHIBIT No. 23 : Filed by Mr. Biggar : Sample of fabric.

WITNESS : The next one, which I think will be Exhibit No. 24, was left in the hot press for 180 seconds, or three minutes. I will deal with the others as a separate group.

As a means of comparison we measured the adhesion between the front ply, and the interlining, and between the back ply and the interlining, and added those together to get what we call a total adhesion.

EXHIBIT No. 24 : Filed by Mr. Biggar : Sample of fabric.

WITNESS : The total adhesion of the sample which was left in the hot press for 15 seconds, on our scale was 6. The one for 180 seconds was 5.1 on the same scale.

Mr. CHIPMAN : That is Exhibit No. 24 ?—A. Exhibit No. 24.

Mr. BIGGAR : And you have the other figures ?—A. I have the figures for the others. There was a very slight increase in the sample between 35 and 40 seconds ; the sample was 6.06,—that is Exhibit No. 22. And Exhibit No. 23 was 5.3.

Q. Then you have those figures in the form of a statement, I think, combined with the other series, and perhaps we had better go on with the other series ?—A. Very well. The series which we have just considered had to do with the effect of increasing the time. The next series had to do with increasing the temperature in the hot press but keeping the time constant. The next Exhibit is this one, which will be, I presume, Exhibit No. 25, will it ?

Mr. BIGGAR : Yes, Exhibit No. 25 ?—A. It was not put in the hot press at all, but was ironed smooth in a cold press which had no heat applied to it at all, just normal room temperature.

EXHIBIT No. 25 : Filed by Mr. Biggar : Sample of fabric.

WITNESS : The next one is one made for comparison, under the normal conditions, using the temperature corresponding to 20 pounds of steam.

EXHIBIT No. 26 : Filed by Mr. Biggar : Sample of fabric.

WITNESS : And the third one was made under a temperature corresponding to 60 pounds of steam.

EXHIBIT No. 27 : Filed by Mr. Biggar : Sample of fabric.

WITNESS : Now, using the same measure of the adhesiveness obtained, the Exhibit No. 25, which was smoothed out without any heat, had a total adhesiveness of 5.6. The one at a temperature corresponding to 20 pounds of steam (Exhibit No. 26) was 5.7 ; and the one corresponding to 60 pounds of steam was 5.45.

Q. These figures that you have just given us are set out in that statement ?—A. Yes.

Q. And the statement gives the adhesion both front and back, as well as the total ?—A. Yes, as well as the total.

Mr. BIGGAR : I had better put in this statement, my Lord, as it may be convenient to have it, and I will give my friends a copy of it. It refers to the last preceding exhibits.

EXHIBIT No. 28 : Filed by Mr. Biggar : Statement of adhesion.

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Mr. LAJOIE: Perhaps my friend could let us know what was the temperature in the first instance.

Mr. BIGGAR: Can you give us that?—*A.* I am glad to give you that. The temperature corresponding approximately to 20 pounds of steam.

The point is that the first four tests and the second three were not both made at the same time, but were made at different times. Exhibits 21 to 24 were made together at 20 pounds of steam temperature. Exhibits 25, 26 and 27 were made together.

Q. You have some samples, I think, in connection with the determination of the adhesiveness of cellulose acetate under heat and pressure without any plasticizer or solvent?—*A.* Yes. 10

Q. The pieces of fabric which you now produce were submitted to what kind of a test—what are they?—*A.* These are a piece of ordinary cotton fabric, a piece of all cellulose acetate fabric, which were heated in a hydraulic press under pressure of 600 pounds per square inch for five minutes, at a temperature which varied between 160 degrees centigrade at the beginning of the test and 155 degrees centigrade at the end of the test. As I removed this sample very carefully from the press, I took hold of one corner of the fabric in this way (indicating) and held it up in this way, and the sample fell apart. In other words, there was no indication that any adhesion had developed. 20

EXHIBIT No. 29: Filed by Mr. Biggar: Sample of fabric.

Q. Have you got other similar samples?—*A.* Yes.

Mr. CHIPMAN: May we see that last one?—*A.* Did he say that was all cellulose acetate fabric?

Mr. BIGGAR: That is a cellulose acetate fabric. Perhaps I should make it clear that it is the shiny fabric that is the cellulose acetate fabric in Exhibit No. 29.

WITNESS: That is right. I also ran a similar experiment with somewhat smaller pieces of similar fabrics, however, and I have here three pieces which were clipped together, the two outer pieces of white collar fabric, cotton, and one interlining of an all cellulose acetate fabric. These three were heated together in a hydraulic press for five minutes at a pressure of 600 pounds per square inch, at a temperature which varied between 176 degrees C. and 179 degrees C.; and when those came out of the press I subjected them to the same test of just picking one piece by the corner and shaking it gently, and they fell apart, showing that there was no adhesion. 30

Also in this test I noticed that there was a distinct scorching of the cotton fabric.

Similarly I have a similar fabric which has not been heated to show in comparison with the heating test.

Q. The top one is the one that has been subjected to the test and this other is the same fabric but not submitted to any test?—*A.* Yes, and they are marked "Before" and "After" so as to be distinguished. 40

EXHIBIT No. 30: Filed by Mr. Biggar: Sample of fabric "After."

EXHIBIT No. 31: Filed by Mr. Biggar: Sample of fabric "Before."

Q. Now dealing with the question of the plasticizers, softening agents or solvents that are referred to in the patent, perhaps you had better indicate what is the general character of those that are specifically mentioned in paragraph 9 ?

—A. Those are all high boiling or relatively high boiling plasticizers.

Q. Would you call them volatile or non-volatile ?—A. They are non-volatile.

Q. Now, I observe at the beginning of the second line in that paragraph it says that these plasticizers or softening agents or solvents are preferably high boiling or relatively high boiling. What other kinds of solvents are there ?

10 —A. Volatile solvents.

Q. And among those volatile solvents what common materials are included ?—A. Acetone, ethyl-acetate.

Q. What use is made, for example, of acetone in the making of cellulose acetate threads ?—A. Acetone is the solvent which is commonly used in the process of making cellulose acetate threads.

Q. And, generally speaking, that process consists in what ?—A. In making a solution of cellulose acetate of perhaps the consistency of honey by dissolving the cellulose acetate in the acetone and squirting that through exceedingly fine apertures into a stream of warm air which causes the acetone to evaporate and
20 be taken up by the warm air, leaving the hardened filament or cellulose acetate.

That is usually carried out in such a way that there are a number of these filaments extruded through the same spinnerette, as it is called, and the individual filaments are then gathered together and given a twist to form a cellulose acetate thread.

Q. And what becomes of the acetone ?—A. The acetone is carried away by the stream of air and is later recovered.

Q. The general steps taken in the manufacture of threads from cellulose derivatives, as I mentioned yesterday, are dealt with by Mr. Justice Clauson in the *British Celanese v. Courtaulds* case. You have seen that Judgment,
30 have you ?—A. I have read that.

Q. And would you say that, speaking generally, is an exposition of the situation which is generally correct ?—A. It is.

Mr. BIGGAR: I think your Lordship would like to have that to read. It is three or four pages of the R. P. C., and it is really a very useful exposition.

Q. I call your attention to the fact that here the patentee says that these plasticizing or softening agents or solvents should be preferably of the high boiling or relatively high boiling type. Supposing one selected one which was not of that type, in other words, one selected a volatile solvent, how would one go about using that in the way suggested at the end of paragraph 8, the immediately
40 preceding paragraph ?—A. Well, you would proceed as outlined there to dissolve it in the volatile solvent, and evaporate off the volatile solvent ; but at the same time naturally the volatile softening agent would disappear and you would be no further along than you were to start with.

Q. Would that be a possible way of carrying it out with the volatile solvent ?—A. No.

Q. How about carrying out the suggestions of the patent with the volatile solvent, I mean those suggestions that are discussed in paragraph 17 ?—A. Well,

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that paragraph also shows that the plasticizers or softening agents are dissolved in the volatile solvent. Now, if the plasticizers or softening agents are also volatile, they will naturally evaporate at the same time with the volatile solvent as it evaporates.

Mr. BIGGAR : *Q.* And would it be possible to resort to that proposal if you used or attempted to use a volatile solvent ?—*A.* No, I see—

Q. For the cellulose acetate ?—*A.* I see no way in which that proposal could be used with a volatile solvent of the cellulose acetate.

Q. What about the next proposal, beginning at line 24 ; that the plasticizer or softener remains distributed evenly on the cellulose acetate fabric ?—*A.* That 10 is perfectly true, of course, for the plasticizer or softener is non-volatile, but if it were volatile it would not remain there.

Q. It would not remain there ?—*A.* It would not remain there.

Q. What is the effect of these plasticizers or softening agents on the threads, I mean, is it an effect of softening the threads or is it not ?—*A.* Yes, it has the effect of softening threads and particularly in making them more susceptible to heat and pressure.

Q. And in the Plaintiff's process, what is the effect of the heat so far as it is used ?—*A.* It is to harden up the cellulose acetate and to drive off whatever solvent may remain. 20

Q. Now, can you tell me what the effect of using the kind of machine proposed in this patent, the kind of apparatus would be so far as the Plaintiff's process is concerned ; that is the apparatus that is described in paragraph 12 ?

Mr. CHIPMAN : The Plaintiff's ?

WITNESS : *A.* Well, first we find suggested the passage between pressure rollers.

HIS LORDSHIP : You are referring to the Defendant's apparatus ?

Mr. BIGGAR : Yes.

HIS LORDSHIP : You said the Plaintiff's.

Mr. BIGGAR : I said, what would be the effect of attempting to carry out 30 the Plaintiff's process with the apparatus suggested in the patent.

WITNESS : *A.* Of course, if you were to use heated rollers, the volatile solvent would evaporate very quickly—a heated roller and a heated or cold plate or surface—that implies that. Those are metallic. It would be very difficult to see how the volatile solvent would have a chance to escape there, and I think it would be difficult to carry out the Plaintiff's process with such equipment.

Q. What would be the result of the volatile solvent not being able to escape ?—*A.* A solution of the cellulose acetate in the volatile solvent would then have a tendency to spread out in the area between the lining fabric and the 40 outer fabric.

Q. And what effect would it have on permeability ?—*A.* It would make it much less permeable.

Q. You are speaking generally now about metal plates ?—*A.* Metal plates, yes.

Mr. BIGGAR : My Lord, I propose to ask the witness this question ; from a scientific point of view what would you say was the meaning of the expressions " plasticizers, softening agents or solvents " as used in this patent ?

Mr. CHIPMAN : That seems to me like two questions in one.

Mr. BIGGAR : No, no, I am not asking about two questions, I am saying what is the kind of materials that are covered by the compound expression which is used again and again in the patent.

Mr. CHIPMAN : That is not quite the same as the question put before.

HIS LORDSHIP : I think I shall allow that, and if you object it will be
10 noted.

WITNESS : That expression is used in a number of places in the patent, and in at least two places where it is used it is combined with the expression " non-volatile." Now, in view of the context of the patent I consider that the expression " non-volatile " is intended to be understood wherever the expression is used ; that is, it is non-volatile plasticizers. Plasticizers in general are not non-volatile. Softening agents are ordinarily always considered to be non-volatile. It is an expression which is, I think I am correct in saying, not infrequently used as a broad expression to cover all plasticizing materials.

Q. What is the root plasticizing material for cellulose products ?—A. The
20 original one, of course, is camphor, discovered in connection with the use of nitro-cellulose.

Q. Roughly speaking, how long has that been used ?—A. Since about 1856 or 1860 ; I don't remember.

Q. The combination of nitro-cellulose and camphor, has that got a name of its own ?—A. Yes, that is celluloid.

Q. What about the alternatives, such as those suggested in the patent ? Is there a generic name for those ?—A. Yes, they are sometimes referred to as camphor substitutes, probably more commonly in the earlier years than at the present time.

30 HIS LORDSHIP : You are referring to paragraph 9 ?

Mr. BIGGAR : Yes, my Lord.

Q. Dr. Esselen, you had some experience during the war with the preparation of aeroplane coverings, did you not ?—A. Yes.

Q. And you made for the purpose of this trial some samples of the kind of thing that you were then familiar with ?—A. Yes.

Q. And the way that these were produced, how did it compare with the way in which you prepared cellulose aeroplane fabric during the war ?—A. These samples were prepared exactly as we used to prepare the aeroplane test panels when we tested it out. Almost all aeroplane dopes, as they are known, are merely
40 another name for the varnish applied to the fabric wing of an aeroplane.

Q. And this one that I hand you that is marked " acetate," how was that prepared ?—A. That was prepared by applying several coats, six in fact, of a solution of cellulose acetate in a volatile solvent.

Q. And this that is marked " nitrate " ?—A. That was prepared in a similar manner only using a solution of the cellulose nitrate and a volatile solvent.

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Q. And the number of coats corresponded to those that you used to use ?
—A. Yes.

Mr. LAJOIE : Before my learned friend puts them in, I think this has no relevancy whatever to the material we are concerned with. The Witness has stated that during the war-time he did use such materials for covering as a dope to be used on aeroplane wings. What connection can that possibly have with a textile fabric that we are interested in, especially on composite material ?

HIS LORDSHIP : Well, unless it was made in the same way as suggested 10
by your patentee.

Mr. LAJOIE : There is not any proof of that.

HIS LORDSHIP : I think I will allow the question. Your objection will be noted.

EXHIBIT No. 32 : Filed by Mr. Biggar : Acetate sample.

EXHIBIT No. 33 : Filed by Mr. Biggar : Nitrate sample.

HIS LORDSHIP : What does your witness say about that ?

Mr. BIGGAR : That he made these in exactly the same way as he made corresponding material during the war.

HIS LORDSHIP : In what year ?

20

Mr. BIGGAR : Perhaps Dr. Esselen can tell us. I did not think it made much difference because the date of the patent is several years after the war. Perhaps you can tell us the date ?—A. Among other things, I was continually engaged in at that time aeroplane dopes during the war from late 1914 through to the end of the War.

HIS LORDSHIP : With cellulose material ?—A. Cellulose acetate and cellulose nitrate.

HIS LORDSHIP : It was general in England at the end of the War by the Celanese Company.

Mr. BIGGAR : I will be interested in hearing my learned friend's evidence 30
with regard to the pioneer character of his client.

Mr. LAJOIE : In connection with these two exhibits that are just being put in it is rightly pointed out to me that they have not been cited by way of anticipation. He says they have been manufactured in the same way as the material is to-day being manufactured under our patent, and that would be for the purpose of showing that there was not any novelty in the patent by reason of this prior user. Assuredly it should have been mentioned in the Particulars of Objection, and there is no reference to it whatever.

HIS LORDSHIP : I will admit the evidence and your objection will be noted, and if later you can convince me that they should be rejected, I will do 40
so. What did you call that aeroplane material ?

Mr. BIGGAR : Aeroplane fabric.

HIS LORDSHIP : Were they not made in England and used ? Was it not the British Celanese that started to do it ?

Mr. LAJOIE : Of course, it is the British Celanese.

HIS LORDSHIP : I knew one of the officers of the Company.

Mr. LAJOIE : As I mentioned this morning, it is the origin of the commercial product. This is the same parent Company.

Mr. BIGGAR : *Q.* I want to know something about your knowledge of the history of aeroplane fabric. Can you tell me how it developed and where, and so on, as far as you have it on hand?—*A.* I have already testified to the fact that I was employed at the beginning of 1914 in a small company outside of Boston which had been making cellulose acetate for five years before that, 10 to my knowledge, and I think somewhat longer. We actually made and sold in the United States, and also sold in Canada, aeroplane dopes made out of cellulose acetate. Those are things that I myself did. I had to come to both Toronto and Montreal during the War in connection with this work, and we actually made and sold aeroplane dopes here and in the United States. We also made plastic sheets from cellulose acetate which were used in the port-holes of the United States fighting planes. The practice United States planes used celluloid port-holes, but the fighting planes used cellulose acetate port-holes which were made in the factory of which I had charge.

HIS LORDSHIP : I would not go into this too much ; its relevancy is 20 doubtful.

Mr. BIGGAR : Your Lordship raised it. There is one other question I would like to ask.

Q. Were you the only manufacturers of aeroplane fabric at that time?—*A.* Of cellulose acetate dope ?

Q. Yes.—*A.* No, I think the Eastman Kodak Company were making cellulose acetate aeroplane dope at that time, and I think there was a second company that came along about 1915 or '16 in New Jersey that manufactured cellulose acetate aeroplane dopes. We sold the raw cellulose acetate to varnish 30 manufacturers who themselves made it up into dopes at that time.

Q. I mean, it was not exclusive knowledge on your part?—*A.* No.

Q. It was general in the industry?—*A.* Yes.

Q. I observe that those samples are somewhat thicker, that is Exhibits 32 and 33, somewhat thicker than Exhibit 20. How would the thickness be affected by reducing the number of coats on Exhibits 32 and 33?—*A.* The fewer the coats, obviously the thinner the product.

Q. These have the same number of coats that you were in the habit of putting on in 1916?—*A.* That is right.

Q. Dr. Esselén, you have looked at the patents that have been cited in this case, have you not?—*A.* Yes.

Mr. BIGGAR : There are two alternative ways of doing this, it is a question 40 of which your Lordship finds most convenient. I can go ahead and ask Dr. Esselén the necessary questions with regard to the second patent in suit and then go through this book straight ahead.

HIS LORDSHIP : I think it would be better to do that.

Mr. BIGGAR : Very good. I think it would be more convenient and we will not have to jump about in the book.

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Q. Then, Dr. Esselen, would you turn to the second of the two patents in suit. First I would ask you, if you can tell us, what are the materials that are commonly used and ordinarily used, apart from any patent, for reinforcing or stiffening?—A. Well, in order to find that out, I went to my tailor and asked him for samples of the material which he ordinarily used and he gave me these three samples as typical stiffening fabrics, as described, which he used for the making of garments, particularly suits and coats and top coats.

Q. Now, can you tell what these black—

Mr. LAJOIE: I wish to put in an objection. First of all, this is not first-hand information, and secondly, it is not the present-day knowledge of the art. I mean, it is the present-day knowledge of the art and not of the art as it stood at the time the patent was issued. That objection is a very serious one, and it has to be considered from the standpoint of the date of the application. 10

HIS LORDSHIP: There is something in that, but I do not think that is a strong enough objection to prevent Mr. Biggar putting these in.

Mr. BIGGAR: Q. Have you ever been fitted at the tailor's?—A. I have been.

Q. Have you seen any materials of this kind used in your coat at the time you were fitted?—A. I have.

Q. Since how long?—A. As long as I can remember. 20

Mr. CHIPMAN: After all, we are dealing with certain particular samples, my Lord. There is nothing to show. We all know about stiffenings.

HIS LORDSHIP: I think it might be conceded that stiffenings were used.

Mr. CHIPMAN: But it does not prove the age of this or anything about it.

Mr. BIGGAR: Q. Do you know what that black material is that sticks out in one of these samples?—A. It looks like horsehair and has all the physical properties of horsehair. I have made no chemical examination of it.

Q. They are just fabric threads, I think, in the other two?—A. Yes.

HIS LORDSHIP: You are putting them in?

Mr. BIGGAR: I was going to put them in to show the common way of stiffening fabrics. Everybody knows about it. It is simply to get a visual sample of it, that is all. 30

HIS LORDSHIP: I will allow you to put them in.

EXHIBIT No. 34; Filed by Mr. Biggar: Samples of stiffening fabric.

HIS LORDSHIP: This patent covers the stiffening of a specific kind.

Mr. BIGGAR: Yes, my Lord. This is only as an example of the kind of thing that is admitted to be old in paragraph 4. It says, "In the making of garments the use of stiff material is necessary in certain places, and it is desirable to use a stiff fabric. Heretofore, coarsely woven fabrics made of wool, cotton or the like, reinforced or not by stiffer material such as hair, 40
"have been used for this purpose." Those are just samples of that kind of thing.

HIS LORDSHIP: Yes.

Mr. BIGGAR : *Q.* In the next paragraph, Dr. Esselen, I observe a statement that yarns of organic derivatives of cellulose are not affected by humidity. Now, from what you have told us it is obvious that there are some hundreds of possible organic—

Mr. CHIPMAN : My friend should not lead, please.

HIS LORDSHIP : You were leading a bit, Mr. Biggar.

Mr. BIGGAR : I beg your pardon ?

HIS LORDSHIP : I say you were leading a bit.

Mr. BIGGAR : I had not got to the end of my question. I said, as you
10 have told us before, there are some hundreds of possible organic derivatives of cellulose, and I want to know whether one can say with regard to those hundreds whether or not they are affected by humidity—whether any scientific statement can be made with regard to them.

HIS LORDSHIP : I think the question is really put in a way to bring out an answer in the way you want it. I do not think it matters much to this witness.

WITNESS : I know of one organic derivative of cellulose that is affected by humidity.

Mr. BIGGAR : *Q.* There is actually one that is known which is affected
20 by humidity ?—*A.* Yes, methyl cellulose.

Q. That is the material that is mentioned towards the latter part of paragraph 5 of this patent ?—*A.* Yes.

Q. Can you tell me from a scientific point of view whether it can be predicated that all organic derivatives of cellulose are or are not affected by humidity ?—*A.* No.

Q. It is impossible ?—*A.* It is impossible to predicate.

Q. Do you know whether there is any effect produced by humidity on the other organic derivatives of cellulose that are known, such as cellulose acetate and formate and propionate and butyrate, or the ethers, such as ethyl and
30 benzyl ?—*A.* Well, I know that cellulose acetate is to a certain extent affected by humidity.

Q. More or less than ordinary cotton or silk or linen fabrics ?—*A.* I have not comparative figures on that. It is affected somewhat less than other forms of artificial silk.

Q. But as to the comparison between it and such materials as linen and cotton, you have not got any information ?—*A.* No. In general when cotton is humidified its strength increases. In general when cellulose acetate threads are humidified their strength decreases. The quantitative figures, I do not have.

Q. Turning to paragraph 8, can you tell me whether or not what is called
40 in that paragraph "spun cellulose acetate yarn" is stiffer or not than yarn made of continuous filaments of cellulose acetate ?—*A.* It is softer.

Q. Not stiffer ?—*A.* Not stiffer.

Q. Do you know for what particular purposes it is used having regard to its characteristics ?—*A.* Why, it is used in fabrics like draperies, for example, where it is desired to impart a soft drape to the material.

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Q. Turning to paragraph 9, there is an example given there of the mode of carrying out the invention which involves the use of cellulose acetate fabrics sprayed with ethylene dichloride, and it is suggested that the degree of stiffening may be affected by the dilution of the ethylene dichloride by water; what about that statement?—*A.* Ethylene dichloride and water do not mix, and I do not see how ethylene dichloride could be diluted by water.

Q. They do not mix?—*A.* They do not mix.

Q. I observe that the things that are to be used here are described at the top of page 4 as solvents, softening agents or swelling agents. What solvents would have a hardening effect on an organic derivative of cellulose?—*A.* 10

A. A volatile solvent.

Q. Yes, any others? Only the volatile, or would there be others?—*A.* No, I think only volatile solvents.

Q. And so far as concerns stiffening agents, what would be their effect on the stiffness of a yarn of organic derivative of cellulose?—*A.* They would have a tendency to make the yarn more pliable and less stiff.

Q. I observe that in both the claims, I think, that refer to these materials, the expression is not merely and not as in the disclosure, solvents, softening agents or swelling agents, but the expression organic solvents or softening agents. Is there any distinction between a solvent and an organic solvent?— 20
A. You mean as referred to cellulose acetate?

Q. Yes?—*A.* No, all the solvents of cellulose acetate are organic solvents.

Q. And would that apply also to the softening agents?—*A.* Yes, they are all—

Q. They are all organic?—*A.* Yes.

Q. So that nothing is really added or subtracted on that account by reason of the qualification of the word "solvent" by "organic" as far as you know?—*A.* No.

Q. Turning then to the patents and taking them in order as they are in the book, the first of them is Kennedy, U.S., Patent No. 590842, dated 30 September 28, 1897. How would you relate that to either of the patents in question?—*A.* That patent discloses a woven fabric containing two types of threads. One type is made of cotton, wool or silk, and the other type is made either of nitro-cellulose or its equivalent, cellulose acetate. The patent discloses a process of treating this fabric with a solvent such as acetone for the purpose of dissolving the nitro-cellulose or cellulose acetate, with the result that the fabric produced is thereby softened.

Mr. CHIPMAN: I suppose if my friend is going to take that line we can do the same, notwithstanding the remarks by the House of Lords in the case with which your Lordship is familiar. 40

HIS LORDSHIP: I am watching that. I do not know that this is contrary to it. You both have to be careful. I am more interested in your spending as little time as possible.

Mr. BIGGAR: What is the difference, if any, between the fabric described in this patent and shown in fig. 1 and the lining fabric of the Plaintiff's collars?—*A.* From the drawings given there I am unable to distinguish the fabric

represented in the drawings and the fabric used in the Plaintiff's lining. It is apparently the same construction.

Q. Have you tried the use of a solvent on a fabric corresponding to that drawing?—A. Yes.

Q. Is this the fabric? (Showing sample)—A. It is.

Q. Of which part has been dealt with with what solvent?—A. With acetone. It has been immersed in acetone and simply allowed to dry.

EXHIBIT No. 35: Filed by Mr. Biggar: Sample of fabric treated as per Kennedy patent.

10 Q. Was there any distinction in the mode in which you applied acetone to the fabric, Exhibit 35 and that indicated in the patent?—A. The patent says, beginning line 59:—

“The article containing nitro-cellulose or acetate of cellulose is then “sprayed or otherwise treated.”

I immersed rather than sprayed.

Q. There is also something that looks to me like a rope shown in Figs. 4 and 5 in this patent. Suppose that the rope shown there in Fig. 4 was wetted with acetone and then treated as this collar material is treated, what would be the effect as far as adhesion of the cellulose acetate threads to the threads of other material of which the rope was composed?—A. It would cause the adjacent strands of the rope to adhere to each other.

Q. Then turning to the next, there is a composite fabric here for belting purposes. That is Patent No. 607,454 to Oliver, dated July 19, 1898. What is the relation of the belting disclosed there to the patents in question?—A. The various layers of belting shown in the drawings have been impregnated with a solution of celluloid, and then after the surfaces have become dry they are united together under pressure.

Q. When you say celluloid, is there anything else that it can cover besides a combination of nitro-cellulose with camphor?—A. No, that is what celluloid covers. There are one or two alternatives mentioned in the patent.

Q. Alternatives to what?—A. To camphor.

Q. So that does it cover the use of what are called camphor substitutes with nitro-cellulose?—A. It mentions castor oil as a camphor substitute.

Q. I was speaking generally with regard to the use of the expression celluloid?—A. The expression celluloid is strictly limited in meaning to nitro-cellulose and camphor.

Q. What are materials which are a combination of nitro-cellulose and a camphor substitute called?—A. There is no specific trade name for those, corresponding to celluloid. They would be called nitro-cellulose plastics.

40 Q. You said these layers were pressed together?—A. Yes.

Q. Is there only pressure, or is there any heat in addition? What about the reference at line 65 page 1?—A. It says that the drying of the impregnated fabric may be assisted by artificial heat.

Q. Then the next patent is that to Crowell, U.S., Patent 665,996. How is that related to the patents in question?—A. This patent shows a composite fabric made of two or more plies, each ply being a woven web which has been

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first treated with a waterproof size. Then these waterproof webs are subsequently united together by glue or a similar adhesive under pressure.

Q. Suppose you only had the size without the composite fabric, what would happen to it if you used it as a waterproof fabric? What would happen to the size?—*A.* The size would not be affected, it is a waterproof size.

Q. The next patent is the one to Weidig, U.S., Patent No. 696,123. What is the relation of that to our problem here?—*A.* That patent discloses a fabric made of cellulose itself, that is purified cotton, which has been partially nitrated on the surface. In other words the surface of the cotton threads have been converted to cellulose nitrate. The plan is to use that as a bandage, and having 10 once wound it in place it is then moistened with a solvent, specifically acetone, which dissolves the nitro-cellulose and unites the various layers into one solid composite piece. Also a product which would be quite stiff.

Q. Would you look at Claim 25 of the first of the two patents in question and indicate to me what, if any, would be the differences between his Weidig fabric after having been dealt with in the way you suggest and the composite sheet material there described.

HIS LORDSHIP: Are you asking the witness to interpret this?

Mr. BIGGAR: No, I am asking what are the differences if any between the fabric described in Claim 25 and this Weidig fabric after it has been treated in 20 the way Dr. Esselen described.

THE WITNESS: I do not consider nitro-cellulose to be a thermoplastic derivative of cellulose as described in Claim 25.

Q. But apart from that?—*A.* Also it would not have been united into a single sheet by the application of heat and pressure. The product which is described would be the same physically, but made in a different way.

Q. How would the product compare with the Plaintiff's collars in the sense of the relation of the fabrics to one another?—*A.* The fabric of Weidig would be stiff and waterproof.

Q. This is a sample of Weidig material, is it? (Showing sample)—*A.* Yes. 30

Q. You made that?—*A.* I made that.

Q. In accordance with the disclosure of the patent?—*A.* Yes.

EXHIBIT No. 36: Filed by Mr. Biggar: Sample of fabric treated according to Weidig patent.

Q. You could fold that up I suppose and treat a bit of it with acetone to indicate the result that would be obtained?—*A.* Yes.

Q. But it is obvious, I imagine?—*A.* I think so.

Q. Now the next patent is that to Lehner, U.S., Patent No. 713,999. Will you indicate the relation of that?—*A.* That patent describes a process for making artificial threads with all the physical characteristics of horsehair. He 40 subjects a number of strands of artificial silk to a solvent to coalesce the different individual fibres into a single strand which is stiffer than the individual loose fibres.

Q. I observe that on the second page, at line 36, he says:—

“A product so formed possesses the appearance and properties of natural horsehair. It may be used for all the purposes for which the latter is employed. It may be employed in the textile arts and “embroidering.”

Is there as far as you know any reason why it should not be used in the same way as the material that looks like horsehair, in one of the materials in Exhibit 34?—*A.* No reason at all.

Q. And what about the difference from a practical point of view in the material here proposed and the kind of material proposed for stiffening material in the second patent in question, the stiffener patent?—*A.* It is essentially the same.

Q. The next patent is the Kempshall, U.S., Patent No. 768,129. What is the relation of that to our fabrics here?—*A.* That discloses a composite sheet material made up of a web of woven fabric and either a piece of celluloid on one side or a piece of celluloid on both sides. The woven fabric has first applied to it some celluloid solution, and then the celluloid is combined with it as I have explained on one or both sides under heat and pressure.

Q. You made a sample in the way indicated in that disclosure?—*A.* That is right; that is the sample.

Q. This is one in which there is a sheet of celluloid on both sides?—*A.* That has a sheet of celluloid on both sides.

EXHIBIT No. 37: Filed by Mr. Biggar: Sample with sheet of celluloid on both sides.

Q. Now I observe that is a good deal thicker than Exhibit No. 20.

Mr. LAJOIE: I think if my friend would give us an opportunity of seeing these exhibits one by one it would be helpful; as it is, he goes on with the next one.

Mr. BIGGAR: As a matter of fact, my friends have seen them all,—they had them all yesterday.

Mr. LAJOIE: We could not examine them yesterday, as we had to follow my learned friend's argument.

HIS LORDSHIP: That was enough to keep you engaged.

Mr. CHIPMAN: Yes, my Lord, and we did not think of it as evidence.

Q. Doctor, I was saying that the sample Exhibit No. 37 is considerably thicker than Exhibit No. 20, the one that you are familiar with?—*A.* Yes.

Q. There are two reasons for that, I suppose. In the first place that, you have told us, has celluloid on both sides of the fabric?—*A.* Yes.

Mr. CHIPMAN: May I again call my learned friend's attention to the fact that he should not lead?

Mr. BIGGAR: Surely I can repeat a remark he had already made.

Mr. CHIPMAN: I am calling attention to a legal question, and I have a right to object.

HIS LORDSHIP: The question was put in a leading form.

Mr. BIGGAR: I intended to, because I was calling the witness's attention to the fact of what he had just said, for the purpose of basing a question upon it.

Q. You have just told me, Dr. Esselen, that the piece which you have just put in has a piece of celluloid on both sides of it?—*A.* Yes.

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Q. In Exhibit No. 20 is there celluloid on both sides?—*A.* Just on the one side, the shiney side.

Q. Apart from that, was there any reason for making that Exhibit No. 37 thicker?—*A.* Yes, I purposely made it with thicker pieces of celluloid than the other because the patent says, in line 85, "When the compound material is to be made of a relatively considerable thickness, I provide the celluloid substance in the form of sheets of suitable thickness." I thought it was well to make it of thicker sheets. It would have been perfectly possible to have made it with thinner sheets.

Q. I think there is a subsequent sample with the same kind, of a Swiss 10 patent?—*A.* Yes.

Q. Would there have been any difficulty, so far as the disclosure in Kempshall is concerned, in making the two products similar to one another?—*A.* No, there would have been no difficulty if I had used a thinner celluloid.

Q. The next one, I think, is Segall?—*A.* Yes.

Q. That is United States Patent No. 1,322,631. Now what is the nature of that disclosure to what we have to do with here?—*A.* That shows several types of composite sheet material, made all of celluloid and a web of woven fabric. It shows a type in Figure 2 where there is one web of woven fabric and one piece of celluloid; and then the other two figures disclose in the one case one fabric 20 and two sheets of celluloid, and in the other case two fabrics and one sheet of celluloid.

Q. Those are Figures 2, 3 and 6?—*A.* Yes.

HIS LORDSHIP: The celluloid being the light lines, or the dark?—*A.* Just a minute and I will tell you. The fabric is No. 2 and the celluloid is No. 1. The fabric is the darker one, and the celluloid is the lighter one.

Mr. BIGGAR: *Q.* I think the next one is Dryen, U.S. Patent No. 1,377,761. Will you indicate the relation of that?—*A.* That patent discloses a special method of producing artificial horsehair and artificial straw as well as artificial silk from nitro-cellulose. 30

Q. You had the idea given there of using a cellulose acetate or other organic derivatives of cellulose instead of nitro-cellulose—I do not mean to say by the same process, but I mean to make horsehair?—*A.* It suggests the possibility.

Q. Is there any considerable difficulty in making a single stiff hair or thread of cellulose acetate that could be used for the purposes suggested here?—*A.* No.

Q. The next one is Van Heusen, United States Patent Number 1,479,565. Now, would you indicate the relation of that?—*A.* That patent shows—

Mr. LAJOIE: One moment, because we have an objection to that.

My Lord, we have an objection against the admissibility of this patent, 40 and the objection is an important one because it will affect several of the subsequent patents which are on the same footing. We claim that they are not relevant from the standpoint of dates, and, if so, then of course both sides would be relieved from having to produce any evidence whatever in connection with them.

Let us take this patent to Van Heusen, No. 1,479,565. This patent is

alleged in the Particulars of Objections as a publication—that is the only way in which it is used. Its date is January 1st, 1927, and that particular patent is alleged—

Mr. BIGGAR : No, excuse me, that is wrong ; it is dated January 1st, 1924, three years earlier.

Mr. LAJOIE : Yes, January 1st, 1924, is right.

HIS LORDSHIP : The application was in November, 1921.

Mr. LAJOIE : And that is cited only against patent No. 1. Patent No. 1 has been—the priority date applying to patent No. 1 is January 23rd, 1925. So this patent dates back a year and not quite a month—let us say approximately a year and a month.

HIS LORDSHIP : You are talking about another patent to Van Heusen, are you ?

Mr. LAJOIE : I am talking about the one which my learned friend has just produced, and which will apply to other patents.

HIS LORDSHIP : That is January 1st, 1924.

Mr. LAJOIE : And our date is January 23rd, 1925.

HIS LORDSHIP : You are a year behind.

Mr. LAJOIE : The point, my Lord, is that this is alleged as a publication. Now, as a publication, my point is that there is a delay of two years which the patentee, Dreyfus, had the advantage of. And as a publication, I submit that all publications within the previous two years previous to the application for the patent can be raised against the validity of a patent. That is under section 7 of the Old Act, which is a section which was in force at the time. (Reads section 7 of the old Act.)

As a publication, my submission is that that is not available because the Van Heusen patent does not serve as a publication more than two years previous to the Dreyfus application.

My further submission is that this patent cannot be used as proof of prior knowledge or user, first, because it has not been alleged as such in the Particulars of Objection, because no proof of prior knowledge or user has been made ; and moreover were such proof attempted, present section 61 would be a bar against using this patent merely as proof of user, as user would have to be prior use or knowledge which would meet the requirements of Section 61, paragraph A.

Clearly, no evidence has been brought in to show that Van Heusen has ever disclosed or used his invention in such manner that it has become available to the public.

HIS LORDSHIP : Mr. Lajoie, what I am considering is that Mr. Biggar is putting in these patents and is examining upon them individually, they not having been put in altogether yesterday. I see the point you are trying to make, but it seems to me that is a matter of argument. I will let Mr. Biggar examine the witness ; and your objections can be argued later, and then, if you convince me that it should be struck out, it can be done later. And if you raise the same point in regard to other patents, you may note it later.

Mr. LAJOIE : Without raising the objection more fully ?

HIS LORDSHIP : Yes.

In the
Exchequer
Court.

No. 11.
Plaintiff's
Evidence.

Gustavus
J. Esselen.
Examina-
tion—
continued.

In the
Exchequer
Court.

No. 11.
Plaintiff's
Evidence.

Gustavus
J. Esselen.
Examina-
tion—
continued.

Mr. BIGGAR : Perhaps I ought to say, my Lord, even at this stage, that my friend's present objection is entirely fallacious, because he has assumed a fact that is not true.

He says that this patent is cited as a publication. It is not. It is cited as showing a prior knowledge of the invention under paragraph 1, sub-section 2.

HIS LORDSHIP : That is anticipation, is it not—prior knowledge ?

Mr. BIGGAR : Yes surely. My friend is completely misapprehending. He has based his whole argument on the patent on a misinterpretation of the particulars of objection.

Mr. LAJOIE : No. 10

HIS LORDSHIP : That can be argued later.

Mr. BIGGAR : Q. With regard to the Van Heusen patent No. 1,479,565, of the United States, issued on January 1st, 1924, you made a sample of the material in accordance with the disclosure in that patent, did you not ?—A. Yes.

Q. Is that it ?—A. Yes, that is the one.

Q. This is Exhibit No. 38. Now perhaps you might indicate how this is made ?—A. That is a composite, sheet material—

Mr. CHIPMAN : Wait a bit. We have not had a chance to look at this material.

Mr. BIGGAR : Are we to stop proceedings ? 20

Mr. CHIPMAN : I think so.

Mr. BIGGAR : I am quite satisfied if His Lordship is.

Mr. CHIPMAN : All right.

HIS LORDSHIP : They are ready, Mr. Biggar.

WITNESS : That sample shows a composite sheet material which is made from two fabric webs which have been united under heat and pressure, after they have each been coated on one side with a nitro-cellulose solution and part of the solvent has been allowed to dry.

Mr. BIGGAR : Now, what would be the difference between that fabric, in its effect, and the fabric of the kind described in this patent in question ?— 30
A. The finished fabrics are quite similar.

Q. I meant, of course, the Dreyfus fabric ?—A. The composite fabric would be quite similar.

Q. What about the waterproof character of this Van Heusen fabric ?—
A. I have made no actual tests, but I should expect it to be waterproof from the way it is made.

Q. And to what extent would it be possible, following that process described by Van Heusen, to vary the impermeability ?—A. Well, I do not see that there is much leeway there. The process calls for the coating of the fabrics on one side with a solution, which means the making of a continuous film, and for 40
combining them.

Q. That would make it waterproof ?—A. That would make it waterproof.

Q. Now, looking again at Claim 25 of that patent, and, apart from the question of the thermoplasticity of nitro-cellulose, what would you say as to the difference, if any, between that sample, Exhibit No. 38, and a fabric of the kind described in the patent, Claim 25?—A. I can see no difference.

Q. Now, the next patent is the United States patent to Schloss, No. 1,614,258. What is the relation of the article disclosed in that patent and the articles described in the patents in question?—A. The Schloss patent shows a fabric which is stiffened along the edges, and explains that the stiffening is imparted by filaments of relatively stiff and resilient cellulose material. As
10 cellulose material they mention nitro-cellulose and organic derivatives of cellulose.

Q. And viscose, do they not, too?—A. Yes, also viscose.

EXHIBIT No. 38: Filed by Mr. Biggar: Fabric made according to Van Heusen U.S. patent No. 1,479,565.

Mr. BIGGAR: Q. Looking at that passage at lines 58 to 61 on page 1, what others, if any, would be included in the expressions used?—A. Resilient cellulose material such as viscose, nitro-cellulose, pyroxylin, or the like. Well, in the expression "or the like" I should expect it would refer to any type of artificial silk so called.

Q. Including or not including cellulose acetate?—A. Yes, I should expect
20 it would include that.

Q. And so far as the production of the effect desired by Schloss is concerned, would it make any difference whether you used one or other of these materials?—A. A matter of degree.

Q. And when I say one or the other of these materials, I intended to include not only the expressed materials but other organic derivatives of cellulose such for example as cellulose acetate?—A. Yes.

Q. It would apply?—A. Yes.

Mr. LAJOIE: I wish to enter an objection in regard to that patent for the reasons previously given.

30 Mr. BIGGAR: We had better be clear about my friend's objection, because I am not relying on this patent as against——

Mr. LAJOIE: In point of date as against patent No. 2, the same objection applies.

HIS LORDSHIP: You are referring to the Schloss patent?

Mr. LAJOIE: The Schloss patent, my Lord, which is in 1927.

Mr. BIGGAR: Q. The next one is the Neidich patent, a United States patent, No. 1,651,404.

Mr. LAJOIE: Will you put in the same objection, please, on the
40 admissibility?

HIS LORDSHIP: Did you say Neidich?

Mr. BIGGAR: Neidich is the patentee's name.

HIS LORDSHIP: The next one in my book is Dreyfus.

Mr. BIGGAR: Is the next one your Lordship has No. 1,903,960?

HIS LORDSHIP: It is the American patent of Dreyfus.

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Court.

No. 11.
Plaintiff's
Evidence.

Gustavus
J. Esselen.
Examina-
tion—
continued.

In the
Exchequer
Court.

No. 11.
Plaintiff's
Evidence.

Gustavus
J. Esselen.
Examina-
tion—
continued.

Mr. BIGGAR : Your Lordship can strike that out. It is one of those we told my learned friends we were not relying on.

Mr. LAJOIE : Which one, 613, Dreyfus ? Dreyfus 613 is out ?

Mr. BIGGAR : We can deal with that afterwards. We will find out what the trouble is.

Q. Will you turn to Neidich, No. 1,651,404 ?—A. Yes.

Q. And its relation to the problems here is only with respect to the second of the patents, the stiffening patent, is it not ?—A. Yes.

Q. And its relation to that is what ?—A. It shows a special type of artificial horsehair made from cellulose. 10

Q. As Neidich calls it at line 29 of page 1 ?—A. Yes.

Q. The next one that we have to refer to, I think, is the first British patent of Berard, No.607 of 1856 ?—A. Yes.

Q. That is a very short patent, and perhaps we might just explain it. Did you make any sample in accordance with this patent ?—A. Yes.

Q. You made two, did you not ?—A. I did.

Q. Will you indicate what is the difference between the two ?—A. One of them is a composite fabric made of one layer of woven fabric and one layer of nitro-cellulose composition, and the other one has a woven fabric on both sides.

Q. Will you indicate the parts of the disclosure to which they respectively relate ?—A. The first one is in the line 13 : 20

“ I unite such sheet of collodion to the fabric or other substance by pressure, aided by ether.”

Then following on—that was one sample—

“ The collodion may also be applied directly to the cloth——”

No, wait a minute. In line 16 :

“ It may also be employed as a means of uniting two fabrics together for the purpose of rendering them water-proof.”

Q. I see there are two alternative ways suggested of making them, and I want to know which you adopted. One is to obtain a layer or thin sheet of the collodion upon a sheet of glass in a frame and to give suppleness there to combine it with castor oil or other suitable fat, and so on, and the other is in line 15, that the collodion may also be applied directly to the cloth or other substances without being first formed into a sheet ?—A. I made a sheet first. 30

Q. In both these cases ?—A. In both these cases.

Q. And that is No. 1 with only one sheet of fabric ?—A. That is right.

Q. And the collodion applied in the form of a sheet, and that is No. 2 ?—A. That is right.

The REGISTRAR : These are Exhibits 39 and 40.

Mr. BIGGAR : I did not think I had to take a recess. 40

Mr. CHIPMAN : I really think my learned friend has not got to take that tone at all. This is the proper and natural way to carry on, and my learned friend should not take that tone. We will get on much more comfortably if we do not have that tone.

EXHIBIT No. 39 : Filed by Mr. Biggar : Sample made in accordance with Berard Patent 607, with only one sheet of fabric.

EXHIBIT No. 40 : Filed by Mr. Biggar : Sample made in accordance with Berard patent 607, the collodion applied in the form of a sheet.

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HIS LORDSHIP : Go on, Mr. Biggar, I want you to finish.

Mr. BIGGAR : I wanted to go on, I only sat down because my friend asked me to stop.

No. 11.
Plaintiff's
Evidence.

HIS LORDSHIP : Mr. Chipman says to go on.

Mr. BIGGAR : I beg your pardon.

Gustavus
J. Esselen.
Examina-
tion—
continued.

10 Q. I wanted to ask Dr. Esselen what, if any, would be the difference between Exhibit 40 in which there is only one piece of fabric and Exhibit 20. What is the actual difference between the two?—A. Well, one of them is made with nitro-cellulose and one is made with cellulose acetate. They were not made the same way, but the finished product is similar.

Q. What about the difference, if any, between the plasticiser used with the nitro-cellulose in Exhibit 40 and the cellulose acetate in Exhibit 20?—A. Well, the plasticisers have the equivalent effect. They are not the same substance.

Q. But there are plasticisers with each?—A. There is a plasticiser with each.

Q. And is each of these plasticisers within the general class of camphor substitutes, or is one of them outside?—A. No, I consider them in the general class of camphor substitutes.

20 Q. With regard to No. 2, that is the second Berard which is marked Exhibit No. 39, what if any would be the practical distinction between that and the Van Heusen sample?—A. I see no practical distinction between them.

Q. Those are both nitro-cellulose, are they not?—A. Yes.

At 4.30 p.m. January 9th, Court adjourned until 10.30 a.m. January 10th, 1936.

Mr. BIGGAR : My Lord, would you like to allow Mr. St. Hilaire to be intervened? I would like to let him get back to his factory. It will only take a minute or two, and we could deal with him right away.

30 I understand we have not yet available a French stenographer, but my friend Mr. Lajoie and I are in agreement that we might translate ourselves.

Mr. LAJOIE : I am quite willing to agree to that.

No. 12.

No. 12.
Plaintiff's
Evidence.

LOUIS ST. HILAIRE, Sworn. EXAMINED BY Mr. BIGGAR.

Q. Mr. St. Hilaire, you are an officer of St. Hilaire Limited of St. Romauld?
—A. Yes, sir, the president.

Q. You manufacture there shirts with collars, and also separate collars?
—A. Yes, sir.

Q. I show you two collars (Exhibits 13 and 14) are they of your manufacture?—A. Yes.

40 Q. You have a mark upon them that identifies them?—A. Yes.

Louis St.
Hilaire.
Examina-
tion.

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Exchequer
Court.

No. 12.
Plaintiff's
Evidence.

Louis St.
Hilaire.
Cross-exam-
ination.

Q. What is that mark?—A. St. Hilaire.

Q. That is the three letters St. H. standing for St. Hilaire?—A. Yes.

Q. Have you always made the collars such as that and the collars attached to the shirts in the same manner or have you changed the manner of manufacture?—A. Always in the same manner.

CROSS-EXAMINED BY Mr. LAJOIE.

Q. Since when have you manufactured collars of that type?—A. Since the 6th of June, 1935.

Q. I understand you make these collars exclusively for the Plaintiff Company, B.V.D. Limited?—A. Yes. 10

Q. In the manufacture of these collars in question I understand you pass the assembly through two presses, one being known as a wet press and the other as a hot press?—A. Yes, sir.

Q. And that both platens of the wet press are covered with a padding made of cotton?—A. Yes.

Q. For how many seconds do you keep the collars in the wet press?—A. For nine to fifteen seconds according to the nature of the fabric used.

Q. Why do you vary the length of time according to the nature of the fabric used?—A. It depends on the nature of the material, if it is tightly woven then the time must be longer than if it is loosely woven. 20

Q. It is a question of adjustment in each case?—A. Yes.

Q. How many wet presses have you in your establishment?—A. One.

Q. What pressure is exercised by this press?—A. I do not know, because we have no indicator on the machine.

Q. Can you state in a general way what it is?—A. Oh, we regulate the machine by means of a screw to adjust it and give more or less pressure.

Q. Will there be more or less solvent on the collar according to the greater or lesser pressure?—A. As to the practice, for me I am not able to answer.

Q. Upon being withdrawn from the wet press are the collars transferred to the hot press?—A. Yes, sir. 30

Q. Are they so transferred immediately from one press to the other?—A. Yes, sir.

Q. For how long do they remain in the hot press?—A. About twenty seconds.

Q. I understand that the hot press is composed of two platens, the top one of which has a metallic surface and the lower one of which is a platen covered by padding?—A. Yes, sir.

Q. The upper platen is heated by steam?—A. Yes, sir.

Q. At what temperature?—A. I do not know the temperature; it is at 20 pounds steam pressure.

Q. You know, I presume, at all events, that it is at a temperature higher than boiling water?—A. Yes, sir. 40

Q. For how long do you keep the collar in that hot press?—A. About twenty seconds.

Q. How many hot presses have you in your establishment for this business?—A. Three.

Q. Those three hot presses represent the required number to meet the work of the single wet press?—A. Yes, sir.

Q. So as to transfer at once, as you have explained, the collars from the wet press to the hot presses?—A. Yes, sir.

Q. Have you ascertained the effect of the solvent and the cellulose acetate yarns after the assembly is withdrawn from the wet press and before being put into the hot press?—A. Yes, sir, it is clear that the cellulose forms a glue which sticks the fabrics together.

10 Q. Have you ascertained if the fabrics at that moment whilst the assembly is still wet with the solvent, whether the fabrics stick to each other or whether they can be easily separated?—A. Yes, the material adheres and they remain stuck together.

Q. Do you claim that immediately upon coming out of the wet press, and while the assembly is still wet, there is a good adhesion?—A. I have not made any tests on that.

Q. If you have not made any tests, how can you then say there really is adhesion?—A. Because I have placed samples in acid without placing the collar in the hot press, and they remained stuck.

20 Q. Why did you place them in acid, put them in acid?—A. I have done that with collars that I had put aside.

Mr. BIGGAR: Q. That were rejected?—A. I put them aside and found them stuck.

Mr. LAJOIE: Q. When you stated you placed them in acid, do you mean apart from having passed them through the wet press?—A. Yes.

Q. What was the object of putting them into the acid?—A. They are collars which after withdrawing from the wet press I found were not good, and so I set them aside.

30 Q. But this does not answer my question. Why did you place them into acid? I think there has been a mistake there some place?—A. I now realize that I may not have understood your preceding questions.

Q. Should I understand now from you that the collars which have been so rejected were withdrawn by you from the wet press and have not been further treated?—A. Yes, sir.

Mr. LAJOIE: Q. When you state that such collars remain with the fabric stuck to each other, did you ascertain that after they had become dry or whilst they were still wet?—A. After they had become dry.

Q. After they had become dry in the air?—A. Yes, sir.

Q. What is the pressure of this hot press?—A. I do not know.

40 Q. Is it a greater pressure than that in the wet press?—A. About the same pressure.

Q. And naturally the cellulose acetate is softened, is it not, when it is introduced in the hot press?—A. I suppose so.

Q. And in this hot press the cellulose acetate is being squeezed between the two outer fabrics of the collar?—A. Yes, sir.

Q. And when the collar comes out of the hot press the three layers are completely united, are they not?—A. Yes.

In the
Exchequer
Court.

No. 12.
Plaintiff's
Evidence.

Louis St.
Hilaire
Cross-exam-
ination—
continued.

In the
Exchequer
Court.

No. 12.
Plaintiff's
Evidence.

Louis St.
Hilaire.
Cross-exam-
ination—
continued.

Q. And at that moment also there is a perfect adhesion between the three layers of the collar?—*A.* Yes, sir.

Q. Before the collar is delivered to the trade, does it undergo an additional pressing operation apart from the one that you have just referred to?—*A.* Yes, sir.

Q. Is this additional pressing operation the customary pressing operation applied to all ordinary soft collars manufactured in your establishment?—*A.* It is the same process except that the collar requires to be dampened.

Q. In the manufacturing of the ordinary type of soft collar, is there but one pressing operation?—*A.* Yes, there is but one operation.

Q. Where as for the special collars in question, known as Tex-craft, there are two pressing operations?—*A.* There is but one operation, but it must be wetter. 10

Q. You do not understand my question. I understand that in the manufacturing of the special type of collars known as Tex-craft you have two pressing operations, namely, the one in the hot press that you have referred to, and furthermore the final pressing operation before delivering the goods to the trade, as you have explained?—*A.* Yes, sir.

Q. For the ordinary soft collars there is but the single pressing operation before delivering the goods to the trade?—*A.* Yes, sir.

Q. How long does the second pressing operation for the Tex-craft collars take?—*A.* Between 12 and 15 seconds. 20

Q. For the final pressing before delivery to the trade?—*A.* Yes.

Q. What is the time of pressing for the ordinary soft collars?—*A.* Between 8 and 10 seconds.

Q. Do you know the composition of structure of the material that they use as lining in the making of the Tex-craft collar?—*A.* No, sir.

Q. Where do you obtain this material?—*A.* From the B.V.D. Company.

Q. Is it the B.V.D. Company which has had installed at your place the machines required for this process?—*A.* Yes, sir.

Q. I understand these machines are the property of that Company, B.V.D. Limited?—*A.* Yes. 30

RE-EXAMINED BY Mr. BIGGAR.

Re-exam-
ination—

Q. Mr. St. Hilaire, was this collar Exhibit 13 pressed twice or three times?—*A.* Only twice.

Q. (not translated).

Mr. CHIPMAN: My friend is leading his witness to say something different from what he said before.

Mr. BIGGAR: No one suggests that the wet press follows anything else. The wet press must be the first.

Q. The first pressing is in what press?—*A.* The first pressure was in the wet press. 40

Q. And the second?—*A.* In the hot press.

Q. Was there a third pressing?—*A.* Yes there was a third pressing after the collar has been attached to the shirt. It becomes mussed and it requires then a third pressing to make it saleable.

Q. That collar which is not attached to a shirt, was that pressed for a third time?—*A.* Yes.

Q. For what reason?—A. For the same reason, because of the sewing of the collar to the band it becomes mussed and requires to be re-pressed.

Mr. LAJOIE : I do not think he said after sewing, I thought he said after passing through the machine.

Mr. BIGGAR : That is the sewing machine was the machine to which he referred.

Q. What is the effect of the hot press, is it that the collar is softened in it or not?

Mr. CHIPMAN : The witness already answered that question in reply to my learned friend.

Mr. BIGGAR : That is the reason I am re-examining.

Mr. CHIPMAN : I do not think my learned friend can ask the same question again in re-examination.

HIS LORDSHIP : He should not. There must be a reason.

Mr. BIGGAR : I just want to get the facts.

Mr. CHIPMAN : We have the facts.

HIS LORDSHIP : I hope you are not going over a matter which you have already traversed.

Mr. BIGGAR : I think my friend got an answer from the witness which was wrong and which the witness did not intend to give, therefore I am putting the same question again in exactly the way my friend put it.

HIS LORDSHIP : Just to clear it up.

Mr. BIGGAR : Did you follow the question?

The WITNESS : You were asking what is the effect of putting it into the hot press for the first time?

Q. For the first time?—A. To dry the collar.

Q. And what is the effect which is produced on putting the collar into the hot press?—A. To iron it out.

Q. Is the cellulose acetate softened or not in the hot press?

Mr. LAJOIE : The witness answered that. As a matter of fact he is not qualified as an expert, he does not know those things.

HIS LORDSHIP : I pay no heed whatever to this witness' estimate of the process of cementing the collars. He does not know.

Mr. BIGGAR : I am quite satisfied. I thought the witness made an incorrect statement in regard to that, but if my friend says he made no statement, and in view of your Lordship's expression of opinion I have nothing more to ask him.

HIS LORDSHIP : I might inform Counsel now, in case it may affect your engagements, that when we adjourn to-day it will be until Monday. Possibly we may sit a little later this afternoon, because I should think it would not matter to the reporters.

Mr. CHIPMAN : There is one trouble as far as I am concerned ; the last train out is at five o'clock, and I have an appointment in Montreal to-morrow morning.

In the
Exchequer
Court.

—
No. 12.
Plaintiff's
Evidence.

Louis St.
Hilaire.
Re-exam-
ination—
continued.

In the
Exchequer
Court.

No. 12.
Plaintiff's
Evidence.

Louis St.
Hilaire.
Re-exam-
ination—
continued.

HIS LORDSHIP : We will have to take that into consideration.

Mr. BIGGAR : This is perhaps a convenient opportunity to say, in case my learned friends should think the reason something different, that due to something that appeared in the cross-examination of Dr. Esselen we are going to ask your Lordship to permit us to recall Mr. Loew for two reasons ; one, to cover a point with regard to the advantages of permeability in collars that I opened but which was not covered by Mr. Loew's evidence, and the other with regard to a photograph that we think will be useful to your Lordship, of the existence of which we only learned last night.

Mr. LAJOIE : If my learned friend is recalling Mr. Loew I also have a 10 question I would like to put to him, which I had forgotten, as to the construction of the lining.

No. 13.

No. 13.
Plaintiff's
Evidence.

Gustavus
J. Esselen
(resumed)
Examina-
tion.—

GUSTAVUS J. ESSELEN, EXAMINATION BY Mr. BIGGAR (resumed).

Q. Dr. Esselen, I omitted to call your attention yesterday to the United States patent to Camille Dreyfus, No. 1,634,613. Will you just indicate the relation of that disclosure to the subject with which we are dealing ?

Mr. LAJOIE : My Lord, I have to put in an objection against the filing of this patent. It is a different objection from the one that I had previously mentioned. I will have to refer to this patent to explain to your Lordship the 20 objection. It is on a different footing from the previous objections that I have made.

HIS LORDSHIP : Mr. Lajoie, would it not be sufficient to just note your objection now and discuss it fully afterwards ?

Mr. LAJOIE : Perhaps so. Then I just put in my objection, and I will give it later.

Mr. BIGGAR : Q. Yes, doctor ?—A. That process discloses a process for applying to yarns of an ordinary character, silk, cotton and that sort of thing, a permanent waterproof finish by impregnating the yarns with a solution of cellulose acetate. 30

Q. And what effect would that have on the character of the fabric ?—A. Well, it would have the effect, of course, of waterproofing the yarns and the fabric and also stiffening the yarns.

Q. And what about the effect on the stiffness of the fabric itself ?—A. The fabric woven from it, I would expect, would also be stiffer than as if woven from yarns without the impregnation.

Q. Then the next patent in order after the one we finished with last night, is a patent to Green, British Patent No. 9879, of 1889.

Mr. CHIPMAN : If my friend will not mind, I have mine in a different order. My friend is putting in now, I understand, in order of dates. 40

Mr. BIGGAR : Q. Yes, Dr. Esselen ?—A. The process disclosed in this patent is rather an ingenious one. It is specified that it is for imparting a silklike

finish. The main point of it is that they take a solution of nitro-cellulose and squirt it through spinnerettes to make filaments. By a mechanical device these filaments are laid back and forth in a criss-cross pattern over the fabric. Running the filaments criss-cross in this way in effect makes a second fabric on top of the first one, and the second fabric is united by pressure with or without heat to the fabric underneath.

Q. Will you indicate to his Lordship which are the significant passages of the specification?—*A.* Well, this reference to with or without heat is to be found on page 4 in line 4.

10 *Q.* Yes, and the general outline of the arrangement is to be found where?—*A.* Well . . .

Q. The passage beginning at line 36?—*A.* On page 3; it outlines it as well as anything; it outlines the zig-zag motion and that part of it.

Q. And that part of it for using a foundation fabric of ordinary material?—*A.* Beginning at line 36, it describes that whole process on page 3.

Q. Yes, it is all there, I think?—*A.* It says that the tubes through which the cellulose is forced are so arranged that the fabric or other article will pass under or over them and receive the cellulose; and goes on to say it is in a zig-zag motion, and so on.

20 *Q.* What would be the relation of a fabric so produced to the kind of thing described in the Dreyfus patent, the first of the two patents in suit?—*A.* It would be very similar.

Q. In what way would it differ, if at all?—*A.* The superimposed fabric, described as having fairly wide meshes in it, and the fabric described in the composite fabric patent has the interstices entirely closed.

Q. I meant with regard to its characteristics when completed, in the way of being a composite fabric?—*A.* It would be a composite fabric.

Q. And what about its being built up?—*A.* It would be made up of a layer of fabric made from a cellulose ester on top of a fabric of some other material.

30 *Q.* Then the next patent is the British patent to Millar, No. 17,549, of 1898, what is the relation of that to the first of the two patents in suit, doctor?—*A.* This patent is somewhat similar in its method of application to the one we were just discussing.

40 *Q.* Do you mean the process which it describes?—*A.* The process which it describes. Filaments are made in much the same way from a number of substances, such as rubber, gelatine, albumen, and the one that interests us particularly is nitro-cellulose. These filaments are again laid down mechanically in various types of patterns on supporting fabric. The supporting fabric may be of two types. It may be of a type of something like oilcloth, with the idea that the fabric which is being made in this way will be removed and serve as a fabric by itself; or the artificial fabric then made, as I have described, may be made directly on a cotton fabric to which it is intended to adhere. It is made to adhere to this cotton fabric by pressure.

I might explain further that the artificial fabric is made to adhere or the filaments in this artificial fabric are made to adhere wherever they cross each other by a spray of air saturated with a solvent.

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(resumed)
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tion—
continued.

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tion—
continued.

Q. Perhaps you had better, first, compare the process disclosed here with the process disclosed in the first Dreyfus patent in suit, relating the two or indicating their differences?—A. Perhaps the simplest way to do it is to compare the result. In either case we have a composite fabric made up of a cotton fabric and a fabric made up of yarns of cellulose ester, which had been combined together under pressure.

Q. So that so far as the process is concerned, what is the relation between that and the process in question?—A. The process is similar except that there is no heat used in this process. There is heat used in the other process.

Q. Then I would gather that one of the fabrics is not complete at the time that the combination is made. Would that be so or not?—A. Well, for commercial purposes, of course, the fabric made of nitro-cellulose is ordinarily denitrated. 10

Q. It is being made, as I understand you,—am I right,—by being squeezed out on to this ordinary fabric?—A. The artificial fabric is being made as it is being applied to the cotton base.

Q. I think that covers the ground, as far as that patent is concerned, or is there anything else?—A. That is all I think of.

Q. Now, the Dreyfus British patent No. 173,021—

HIS LORDSHIP: Who is the patentee? 20

Mr. BIGGAR: Henri Dreyfus, my Lord, the brother.

Q. Will you compare the process disclosed?—A. The process described in this patent, it is stated, applies particularly to cellulose ethers, but there is an opening paragraph which states that it was well known at that time to carry out the process with filaments of cellulose esters. (*but see p. 260/4.*)

Now, in the patent itself, there are several alternatives which are described, but the main idea is that a reinforced fabric is ultimately imbedded by one of several methods described, in a continuous layer of cellulose ether. One way of the several which are mentioned is to combine under heat and pressure an ordinary fabric with a web of cellulose ether. 30

Q. Which passage in the specification are you referring to on that point?—A. At page 2, at the bottom of the second column, "or the fabric may be "imbedded by heat and pressure."

WITNESS: I said line 104 at the bottom of page 2; at the bottom of the second column of page 2, going over on to page 3.

Q. How would the process there outlined compare with the one that is described in the patent in question?—A. It seems to me to be the same thing.

Q. Is there any distinction to be made so far as the materials are concerned?—A. At the moment, I do not think of any.

Q. I do not think there is. I see that ethyl and methyl cellulose are some of those suggested here with regard to the esters as you point out in the second paragraph beginning with the various proposals in the specifications?—A. Yes. 40

Q. Did you make any sample according to the disclosure in that patent with a cellulose ether?—A. No, I have not made any samples of cellulose ether.

Q. Was there any particular reason for not doing that?—A. Well, I did not happen to have any cellulose ether available in the form in which it was necessary to have it.

Q. Did you carry it out with regard to an ester?—A. Yes.

Q. And is that the sample that you prepared?—A. Yes.

Mr. BIGGAR: That will be Exhibit 41. It is a sample, and it had better be marked Dreyfus, I think. Call it Dreyfus, British No. 173,021.

EXHIBIT No. 41: Filed by Mr. Biggar: Sample of British Dreyfus patent No. 173,021.

Q. How was that sample made, Dr. Esselen? Perhaps you had better tell us exactly what was done in the preparation of that sample, Exhibit 41?—A. Well, a film of cellulose acetate which contained a plasticizer was laid on to a piece of cotton cloth similar to that used in making collars. The combination was placed in the hydraulic press and heated there for five minutes to a pressure of 600 lbs. per square inch at a temperature which varied from 160 degrees C. at the beginning to 150 degrees C. when it was removed from the press.

10

Q. How does that sample compare with Exhibit 20? Do you remember Exhibit 20 by number?—A. Yes, I remember Exhibit 20. They are practically identical.

20

Q. The next patent is the British patent of Sponholz, No. 262,034. What is the relation of that patent?—A. That patent describes a process for giving to a fabric which might fray if used after it had been cut and had no selvedge edge, a non-fraying edge, by weaving in at the places where the edges might come cellulose acetate threads. These threads are then moistened with a solvent, such as acetone, and in that way stiffened and serve as a binder so that the fabric will not fray when it is cut along those lines.

Q. What would be the effect apart from the fraying altogether of this treatment weaving in cellulose acetate yarns in the fabric?—A. I should expect at those places it would be materially stiffened.

Q. The next patent is the one of Le Faguays, a Swiss patent, No. 53,333?—A. Yes.

Q. You made some samples in accordance with the disclosure in that patent did you not?—A. I did.

30

Q. This is one of them?—A. Yes.

Q. That is made in accordance with Example No. 1 in the patent?—A. Example 1 in the patent.

Mr. BIGGAR: That is Le Faguays Example No. 1, and will be Exhibit 42.

EXHIBIT No. 42: Filed by Mr. Biggar: Le Faguays Example No. 1.

Q. Perhaps you had better describe exactly how that one was made?—A. That was made by moistening a piece of celluloid somewhat thinner than in the previous sample which I have shown. The surface of the celluloid, one surface was moistened with a mixture of acetone and butyl acetate, which is a solvent for it, and that moistened surface was applied to a piece of cotton cloth, white cotton cloth, and then pressed in the hydraulic press under 600 lbs. per square inch for three minutes.

40

Q. How would that sample, Exhibit 42, compare with Exhibit 20?—A. It was very similar except that in one case it was made with celluloid, and in the other case with cellulose acetate.

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continued.

HIS LORDSHIP: *Q.* What is the distinction between celluloid and cellulose?—*A.* Cellulose is the raw material. The purest form of cellulose that we know is bleached absorbent cotton; that is a relatively pure cellulose. That is the basic raw material for all of these things that we are talking about. If you treated the cellulose in one way with a mixture of nitric and sulphuric acid you make cellulose nitrate from which you make celluloid by mixing it with camphor. If instead of that particular mixture you used acetic acid or a derivative of acetic acid and acetic anhydride you get cellulose acetate. In other words, the cellulose is the parent substance of both. You simply treat it in two different ways. In one way you get celluloid, and in the other case 10 you get cellulose acetate.

Mr. BIGGAR: *Q.* Perhaps you had better carry that on with regard to the treatment of cellulose, the raw material, with other acids, other organic and inorganic acids with alcohol?—*A.* If instead of using acetic acid you used other organic acids, if you used butyric acid you get cellulose butyrate. If instead of using an acid you used an alcohol, ethyl alcohol, for example, or a derivative of ethyl alcohol, you can combine that with cellulose to make ethyl cellulose which is an ether; and you can make a whole series of ethers by using different alcohol.

Q. And different esters?—*A.* And different esters by using different acids. 20

Q. Then the other sample is made according to Example 2?—*A.* That is right.

Q. In Le Faguays?—*A.* That is right.

EXHIBIT No. 43: Filed by Mr. Biggar: Le Faguays Example No. 2.

Q. How was that made?—*A.* That was made in exactly the same way as Exhibit 42, except that the two sides of the celluloid sheet were moistened and a cotton fabric applied to both sides.

Q. How would that compare with Exhibit 20 with a second fabric outside on both sides?—*A.* Physically it would be quite the same.

Q. How would those fabrics compare with the fabric that we have here 30 in question from the point of view of its general characteristics?—*A.* It would be the same in its general characteristics.

Q. And what about any difference between them in respect to water proofness or gas proofness?—*A.* They would be quite the same.

Q. I was asking you to compare these fabrics in Exhibits 20 and 43 with the collar fabric?—*A.* With the collar fabric? I misunderstood you, I am sorry. They are quite different from the collar fabric, because the collar fabric is porous and not waterproof.

Mr. LAJOIE: Before my learned friend proceeds, may I ask him whether he has furnished his Lordship with an English translation of that? 40

Mr. BIGGAR: Yes. Did you not get a copy of that?

Mr. LAJOIE: No. I suppose we may arrange with Mr. Biggar in connection with all those translations? I may have a couple of remarks to make in connection with them.

Mr. BIGGAR: *Q.* There is one more patent in the book, the Swiss patent of Nachmann, 77,238. What is the relation of that to the question we have here? I think it applies only to the second patent, the stiffener patent, does it not?

Mr. LAJOIE : No, it is the opposite.

WITNESS : I think it only applies to the—

Mr. BIGGAR : To the fabric patent.

WITNESS : This discloses a process for making a composite watertight fabric.

Q. Yes, I see ; I had forgotten. For shoe soles ?—A. Yes.

10 Q. What is the relation of its disclosure to the disclosure of the fabric patent in question ?—A. Perhaps the easiest way to explain it is to outline very briefly what it covers. It has a series of steps. Pieces of fabric are first impregnated with a solution of celluloid in a volatile solvent. These impregnated pieces of fabric are then allowed to dry free from the volatile solvent. Then several pieces of the fabric thus prepared are laid up together and the pile thus made is pressed together under pressure into a single waterproof sheet.

Q. I see. And that has to be related to the fabric patent in question in what way ?—A. It is a composite fabric made up of a yarn containing a cellulose ester.

20 Q. What would you say was the relation, if any, between the first and the second patents that are involved here, assuming first that we are right in the view that I have put forward with regard to the character of the plasticizers, softening agents or solvents that are mentioned in that fabric patent ? Would there then be any relation between the two patents and, if any, what would it be ?

Mr. CHIPMAN : Between the first and second patents ?

Mr. BIGGAR : First and second patents in the suit.

WITNESS : Under your interpretation, namely, that we are limited to non-volatile materials, I do not see any direct relationship between them.

Q. But if we are wrong in that and the first patent extended to the use of volatile solvents, what would be the relation, if any, between them ?—A. Under those conditions, obviously the composite fabric patent would be stiffened by the use of the volatile solvent, and there would be that relation between them.

30 Q. You say the volatile patent would be stiffened ?—A. The fabric patent, I am sorry.

Q. But you do not mean the patent would be stiffened ?—A. No, the fabric disclosed in the composite fabric patent would be stiffened if it were treated with a volatile solvent.

Q. You mean that by following the process described in the first patent that you would or would not get what was covered by the second ?—A. You would get it. You would get a stiffened product which would be covered by the second patent.

Q. Dr. Esselen, you gave us yesterday the results of your tests for the permeability of this fabric to water vapour ?—A. Yes.

40 Q. Is there any simple way in which you can indicate to us the permeability of the collars in question to water in its liquid form ?—A. Yes, that is quite simple to do, if I may have the collar that Mr. St. Hilaire produced.

Q. That one ?—A. Yes, which I have worked with. If a drop of water is applied, which I shall do right now, to one side of the collar, it immediately goes through to the other side. In other words, there is no indication of any

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waterproof characteristic. If I may step up here, your Lordship can see this. Just put a drop of water here and turn it right over ; it has gone through. You see the spot where it has gone through.

HIS LORDSHIP : Yes.

WITNESS : It goes through immediately, you see.

Mr. BIGGAR : I think that is everything that I have to ask the witness, my Lord.

CROSS-EXAMINED BY Mr. CHIPMAN.

Q. You will have had no experience in the textile industry at all, Dr. Esselen, have you ?—A. I would not want to say that. I have had some experience in 10 the textile industry.

Q. Will you tell me what ?—A. In connection particularly with the rayon branch of the textile industry.

Q. Where was that ?—A. I beg your pardon ?

Q. Where and when was that ?—A. Well, it began in 1915 with an experimental plant for the production of cellulose acetate, artificial silk, in Boston.

Q. Was that the plant you spoke of, or is that some other plant ?—A. That is another plant ; it was associated with the one I have spoken of.

Q. How long did that last ?—A. About three or four years, I do not 20 remember exactly, I think until 1918.

Q. Were you carrying that on at the same time that you were carrying on these other operations ?—A. No, I was acting in a sort of an advisory capacity at that time.

Q. What were you advising upon ?—A. The process of making artificial silk.

Q. But simply as a chemical problem ?—A. Yes, as a chemical and mechanical problem.

Q. How far did you go on the mechanics ?—A. Co-operating in the designing of some of the machinery.

Q. How long did that carry on ?—A. As I have said, about three years. 30

Q. How frequently did you have to see them ?—A. Well, the two plants were right next door and I was in and out all the time.

Q. And you were helping in carrying on all these other businesses at the same time ?—A. Only the one, the manufacture of cellulose acetate for the other purposes.

Q. The manufacture of cellulose acetate for the other purposes of which you have spoken ; that was always in the form of a dope ?—A. No, we made the raw cellulose acetate.

Q. The raw cellulose acetate, but that had nothing to do with textile fabrics ? —A. Only in as much as we made the cellulose acetate for this rayon plant that 40 I am telling you about.

Q. The same business made the cellulose acetate for this other plant ? —A. For a year or two until they made their own, we made it for them.

Q. Can you tell me what quantities you made, how many tons ?—A. Oh, we were a small plant and made perhaps 400 or 500 lbs. a day at the most.

Q. What was your total per annum ?—A. I don't remember those figures.

Q. Roughly speaking you were generally occupied not with cellulose acetate in the form of yarns or in the textile industry, but in cellulose acetate as what you have already called a dope or a varnish in bulk, is that true?—A. Yes, and other purposes.

Q. What other purposes?—A. Making it into sheets.

Q. That is to say, in bulk instead of in thread or fibre form?—A. That is true at that time.

Q. Does the same apply to the instances that you gave yesterday with regard to the Eastman Kodak Company and some other corporation?—A. I had
10 nothing to do with Eastman's.

Q. You mentioned Eastman's yesterday, I think?—A. Simply in reply to a question as to whether other people were doing similar things.

Q. And the similar things the other people were doing to which you referred yesterday, they were all dealing with cellulose acetate not in the form of fabrics or threads or fibres or textiles, but always in the form of coherent dopes or syrups, or whatever you like to call them?—A. As to what Eastman was doing, I have no familiarity; I simply know they were making dopes.

Q. Your reference to Eastman then is purely—A. My reference to Eastman was simply that they had knowledge of cellulose acetate, were making it
20 themselves and were converting it into the films and dopes.

Q. But they had nothing to do with any textile use of cellulose acetate?—A. I know nothing about what they were doing at that time.

Q. The probabilities are that the Eastman Kodak Company would have nothing to do with textiles?—A. Well, of course, later on a subsidiary company of theirs has gone very heavily into textiles, and whether they were experimenting with it at that time in their laboratories I have no knowledge.

Q. Will you look at Exhibit 16, which you produced yesterday, Dr. Esselen? I just want to make it clear to begin with that the interstices to which you have already referred are very minute as shown by the enlarged photograph
30 represented by that exhibit?—A. Well, they are small; I would not call them very minute. They are clearly distinct here.

Q. This is a very enlarged photograph of the fabric?—A. Yes.

Q. And the interstices are extremely minute in that photograph, are they not?—A. As I said, they are small.

Q. And extremely small?—A. That is a matter of degree and definition.

Q. It is a matter of degree?—A. Yes.

Q. When you look at the fabric itself as it stands, you will admit, of course, that the interstices between any strands, either warp or woof in that fabric, are extremely minute?—A. They are small.

40 Q. They are very small?—A. They are very small.

Q. And it would not take a great deal to fill them up?—A. That is right.

Q. Then taking Exhibit 17, would you compare it with Exhibit 15 and tell me which of the two is the stiffer?—A. This, of course, is three fabrics and feels a little stiffer.

Q. Stiffer?—A. Stiffer than this one.

Q. Instead of taking the three fabrics—A. I am comparing it with the three fabrics.

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Q. Instead of comparing three fabrics with one, will you please compare one fabric with one and tell me whether the centre fabric in Exhibit 17 is not considerably stiffer than the single fabric in Exhibit 15?—*A.* It is more harsh to the feel. I am not prepared to say that it is stiffer.

Q. What is your definition of stiffness?—*A.* Resistance to bending.

Q. Would you not consider that the centre ply in Exhibit 17 resisted bending considerably more than the single ply in 15?—*A.* It is hard for me to distinguish between the harshness and the feel.

Q. And the stiffness of the fabric. Does that difficulty exist in every case where you talk about stiffness?—*A.* Oh, no. 10

Mr. CHIPMAN: I would ask your Lordship to see what I am getting at. Exhibit 15 is the unprocessed fabric, and Exhibit 17 is the processed fabric. I am asking whether the centre ply of Exhibit 17 is not considerably stiffer than the single ply in Exhibit 15.

Q. And your answer is "no," or what is it?—*A.* My answer is that it is hard for me to distinguish between the harshness of the fabric and the stiffness.

HIS LORDSHIP: *Q.* One is smoother than the other. *A.* One is smoother than the other distinctly smoother and softer feeling.

Mr. CHIPMAN: *Q.* I think you referred yesterday to curtains, curtains that were created in order that they could be stiffened and neatly folded? 20
—*A.* Yes.

Q. I suppose you will admit that curtains made with the untreated fabric shown in Exhibit 15 would fold softly and easily, far better than the central ply or any one of the plies shown in Exhibit 17?—*A.* I think they would fold and drape more easily.

Q. Fold and drape much more easily?—*A.* More easily. I am not prepared to say—

Q. But properly speaking, do you not think you could fairly admit that any one of the plies in Exhibit 17 is stiff compared with the ply in 15?—*A.* From those tests, I have tried to be fair. Comparing them in my fingers it is difficult 30 to say whether it is stiffer or not. It is confused by the harshness. I folded them between my fingers here, and from that rough test which is all I can do here, I can easily feel the harshness. I am not prepared to say that one is stiffer than the other.

Q. And all the evidence that you have given up to date, comparing one fabric with another and making any statements on the basis of comparative stiffness—all that evidence, I suppose, is subject to the same factors as apply to the comparison of these two exhibits?—*A.* Well, a great many of the fabrics have been quite smooth that we have been comparing, and they have not been anywhere nearly so close together. It has been very much easier to distinguish. 40

Q. Now you will notice in Exhibit 17 that you have two squares marked, one on the centre ply on one side, and one on the inner side of a corresponding ply?—*A.* Yes.

Q. Which of those two did you photograph?—*A.* Both.

Q. Do the exhibits you have shown already include both?—*A.* I think only two photographs have been put in evidence. One the untreated fabric—

Q. That is Exhibit 16, and the other the treated fabric which is Exhibit 18 ?
—A. Yes.

Q. Exhibit 18 is a photograph of which ply of Exhibit 17 ?—A. The inner ply.

Q. Did you take a photograph of the other ply ?—A. Yes.

Q. Have you got it here ?—A. I think I have.

Mr. BIGGAR : This is a copy of it.

The WITNESS : I think I did not bring that to Court this morning, but I can give it to you after lunch.

10 Mr. CHIPMAN : We will speak to this one, and you will have a duplicate of it for me afterwards. I ask you to produce this photograph as Defendant's Exhibit A.

EXHIBIT " A " : Filed by Mr. Chipman : Photograph of outer fabric—the inside—of sample No. 8 in Exhibit 17.

Q. Now do the warp and woof in Exhibit " A " correspond to the warp and woof in Exhibit 18 as one holds them on the length, or are they reversed ?—A. I think the directions are the same.

Q. As far as you know at present one can hold these two exhibits side by side ?—A. And have corresponding directions.

20 Q. Could one then superimpose these two exhibits one on top of the other and get some idea of the equivalence of the two plies of stuff shown in Exhibit 17 ?—A. Yes, with this reservation ; the areas photographed are so small that I cannot be positive they exactly coincide, but they approximately coincide, as these squares on the fabric show.

Q. Coming to Exhibit 18, I take it all the black in that exhibit represents cellulose acetate ?—A. Yes.

Q. And similarly all the black in Exhibit " A " represents cellulose acetate ?
—A. Correct.

Q. Then you dyed these three sheets in Exhibit 17 ?—A. Yes.

30 Q. At what stage ?—A. After they had been opened up as you see them there.

Q. I think the object of the dye was to show in red cellulose acetate ?—A. Correct.

Q. Wherever we have anything red on any of these three sheets we have cellulose acetate ?—A. Right.

Q. Of course on the outer two plies in Exhibit 17 there is no cellulose acetate to begin with ?—A. Right.

40 Q. It appears from Exhibit 17 itself that a very considerable quantity of cellulose acetate has gone on the upper and lower ply ?—A. Yes, the inside surfaces.

Q. Did you happen to take any photograph of the other outer layer as shown on Exhibit 17 ?—A. I did not.

Q. Why ?—A. Because I thought one photograph served my purpose.

Q. It appears then that when you pulled these three sheets apart cellulose acetate, which began on the central ply only, adhered to each of the upper and lower plies ?—A. In spots, yes.

Q. Well practically all over, isn't it ?—A. No, it is shown by the photograph, there are areas where it has not adhered.

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Q. In fact what happened when you pulled these three plies apart was you tore off some of the cellulose acetate from the middle ply, finding it on the upper ply and the lower ply in each case?—A. Right.

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Q. In fact even looking with the naked eye at Exhibit 17 you see that where you have a blanker spot in the centre ply you have more red on the inner side of the other ply?—A. That is right.

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Q. Why did you choose that particular square?—A. I really do not remember. If I can see the fabric it might remind me of something.

Q. (Showing sample.)—A. It seemed to be a fairly representative square, without any extreme one way or the other of the situation as I found it when I opened up the collar. 10

Q. I suppose it is pretty hard to tell the original state by what happened after you had pulled the three plies apart, but does it not seem to you that that particular square has less cellulose acetate in the centre than some other portions of the fabric?—A. No. If I may call your attention, here is a place I avoided for that reason. I avoided these places which are obviously not typical, avoided these blank spaces. I tried to select as typical a space as I could.

Q. There is considerably more cellulose acetate towards the bound portion of the innerside of one of these outer plies than there is in the square chosen by you for the photograph?—A. I really would not say there was considerably more. I think that is a fair sample, comparing that and the other places. 20

Q. Then would you agree that you really have as a result of your tearing operation very considerably more cellulose acetate on the inside of the upper surface than you have on the centre ply?—A. Yes, in this sample on that side there seems to be more. On the other side the reverse seems to be true.

Q. Can you explain the difference?—A. No at this time I cannot. Of course one must be the side which was up in the hot press, next to the metal plate, and one was down. Which was which I cannot tell.

Q. Perhaps this is a good time to make clear, in that hot process you have a metal plate on one side?—A. Yes. 30

Q. And what on the other?—A. A padded platen on the other

Q. Do you know exactly what the padded platen is like?—A. I have seen the outside. It is a resilient pad made apparently of layers of cotton cloth.

Q. Anything on top?—A. A layer of cotton cloth.

Q. Gauze?—A. No, it looks more like this cotton cloth.

Q. It is not metal gauze?—A. No. It looks like that fabric (Exhibit 17).

Q. Your suggestion is that one of the two outer plies which shows more cellulose acetate on the inside is the one that was nearer the hot metal plate?—A. No I am not suggesting that. I really do not know which is which. There is a difference, and you asked if I could explain it. The only difference I can think of to account for it is that one of these plies was next to the metal plate and one next the pad. I do not know which. 40

Q. What do you think the probabilities are?—A. Well there are so many pros and cons. Offhand I should be inclined to think that the one that shows the more acetate on the outer fabric was near the pad. But I am not at all sure of that.

Q. There is nothing scientifically that would come into your mind to decide that question?—A. Well my thought was that the pad, being more absorbent, would have a tendency to draw the cellulose acetate in solution towards the lower layer.

Q. You referred to the knuckles, and it seems pretty clear, does it not, from Exhibit 17 and from the photograph Exhibit 18 that what has happened to the knuckles is that they have been pulled into the inner surface of the outer layer of stuff?—A. I would not say they have been pulled into it, they have been stuck to it.

10 Q. And what has remained, or the greater portion of what has remained, is not on the knuckles, but in the valleys between the threads?—A. Yes.

Q. That is pretty clear, is it not, that there has been a spreading effect, both upward and downward and sideways, as a result of the treatment, the process? That appears pretty well from the two photographs, 18 and A?—A. Yes I think that is a fair statement.

Q. And any spreading effect would naturally have a tendency to fill up the interstices?—A. Yes.

Q. Of course you cannot tell what the picture was inside these three layers when they were all stuck together and before you pulled them apart?—A. No.

20 Q. You cannot possibly tell us what happened to the knuckles at that stage?—A. Except from the indications of what we find after we have torn them apart.

Q. And they must have been pulled apart, of course, when they were stiff and hard, not when they were soft with the solvent?—A. They were pulled apart after the collar was finished.

Q. And everything was dry?—A. Yes. That is a collar that had been made some time before.

Q. That is after the collar was in the ordinary state for sale?—A. Yes, in the same state that it is now.

30 Q. Then to make this clear, I notice in Exhibit 18 there are two halves in the picture. That is purely for stereoscopic effect?—A. Yes.

Q. There are two representations.—A. Purely a matter of the printing.

Q. The same applies to Exhibit A?—A. In order to make that stereoscopic they are taken from slightly different angles, just the way your two eyes look at it.

Q. Then you produced Exhibit 19 showing some diagrams. Did you prepare that?—A. No.

Q. Do you know who prepared that?

Mr. BIGGAR: I prepared it.

40 Mr. CHIPMAN: That is simply adopted by you.

The WITNESS: Yes. I thought that was made clear at the time I presented it.

Q. You produced a metal container yesterday. Can you tell me, where you got the idea of the test with that container?—A. That is so mixed up with my general experience that I am not sure that I can tell you.

Q. How long have you had it?—A. Oh it is a test which I have used a number of times for the last few years. I was interested at one time in

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Plaintiff's
Evidence.

Gustavus
J. Esselen.
(resumed)
Cross-exam-
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(resumed)
Cross-exam-
ination—
continued.

comparing the passage of moisture through cellophane, for example, which had been treated with various surface treatments to make it water resistant.

Q. Is this a regular test for the passage of water through cellophane?—

A. It is a test which has been used in my laboratory, and similar tests have been published in the literature.

Q. When you speak of moisture do you mean gas?—A. Moisture vapour.

Q. You do not mean water?—A. No. I am under the impression, but I am not sure, but that the United States Bureau of Standards has issued a publication describing a similar test. But I remember distinctly an article describing a similar piece of equipment in a similar test. 10

Q. I do not think you gave the temperature at which you made this test. Have you got that?—A. I think I said the water was at room temperature. As a matter of fact it was 22°C.

Q. And what about the amount of water?—A. In each container there were 200 c.c. or 200 grammes of water.

Q. Did you control the outside humidity at all when you were taking the test?—A. I did not. I ran three tests side by side under exactly the same conditions so that it was not necessary to control the humidity. They were for comparative purposes only.

Q. Have you any notes of those tests?—A. Yes I think I have. 20

Q. Will you let me see them?—A. (Shown).

Q. I may be wrong, but I think there are some figures given in this memorandum which we did not have yesterday, is that correct?—A. That is correct. The middle set of figures are the figures I gave yesterday.

Q. Can you spare this memorandum?—A. I would like to make a copy of it. I will make you a copy of it.

EXHIBIT B: Filed by Mr. Chipman: A copy of Dr. Esselen's notes as to permeability tests.

Q. What was the date of this test?—A. Well, it was last week sometime—I think it was last week, Wednesday. 30

Q. In New York?—A. No, in my laboratory in Boston.

Q. I think you said you had two processed samples which you compared with one unprocessed?—A. Yes.

Q. One of those processed samples showed two and a half times and the other three and a half times the amount of vapour going through as compared with the unprocessed. How do you account for that?—A. It was about two and a half and three. I have really no way of accounting for it, unless there is that slight natural variation between two samples made in a commercial way.

Q. Have you the samples which you used?—A. I may have. I am not sure whether I brought them or not. 40

Q. May we have them?—A. If I have them, you may have them. Yes, these are the samples.

Q. Perhaps you might look at them and mark them, so that I do not get them mixed?—A. These two are marked, and this one, which I will put together, I have now marked.

Q. You now produce, and I file this as Exhibit C. Which is the unprocessed?—A. This is unprocessed, the three pieces.

Q. The three sheets of fabric of the unprocessed type will be Exhibit C.

EXHIBIT C: Filed by Mr. Chipman: Sample of fabric, unprocessed type.

Q. Now, which is the two and a half and which is the three and a half?
—A. "A" is the one that was about three times; and that "B" was two and a half.

Mr. CHIPMAN: As Exhibit D-1, a sheet showing two and half times the amount of vapour escaped; and as D-2, the fabric showing three and a half times the amount escaped.

10 WITNESS: I do not think I said three and a half yesterday; I think I said about three.

Q. Well, about three?—A. Yes.

EXHIBIT D-1: Filed by Mr. Chipman: Sample of fabric used on test showing two and a half times amount of vapour escaped.

EXHIBIT D-2: Filed by Mr. Chipman: Sample of fabric showing three times the amount of vapour escaped.

20 Q. Where did you get the material which we have now put in as these three exhibits?—A. Those were made in my presence at the plant at Cohoes, that is regularly producing collars by this process. Those were made by two of the regular operators while I was there, in my presence, in the way the collars are ordinarily made.

Q. And they are all exactly the same?—A. The two processed samples were made one after the other, and the unprocessed sample is part of the same fabric, simply cut up and not processed. They are all exactly comparable.

Q. But the two processed samples were not taken off the same cloth?
—A. They were taken off the same cloth, but not in the press at the same time.

Q. You have dealt with organic cellulose esters, yesterday, and I understood you to divide them into three classes: the first class, as I understood it, was what we might call the theoretical possibilities, which you said were extremely numerous. Is that correct?—A. Yes, a great number.

30 Q. Those we do not need to concern ourselves with at all, do we?—A. I do not know.

Q. You have never met them?—A. No, I have never met them.

Q. And you are not likely to meet them, are you?—A. I do not know whether I shall have to conduct an investigation along that line or not.

Q. Perhaps in another world?—A. Or it may be here.

Q. What about the second class, which might be called the laboratory possibilities—you mentioned something like 15 to 20. Can you give us their names?—A. Cellulose butyrate, cellulose propionate, cellulose valerate and cellulose benzoate—that is perhaps a few that might be mentioned.

40 Q. What about the rest of them—you said something like fifteen to twenty of them, although you have never counted them?—A. No, I have never counted them.

Q. Have you ever met them?—A. Some of them.

Q. Have you ever met the four which you have just mentioned?—A. I have not yet met even those four.

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ination—
continued.

Q. What have you met?—*A.* I have met the cellulose butyrate, cellulose propionate and the cellulose benzoate. I could look them up in a book.

Q. In what book?—*A.* Oh, a book on chemistry.

Q. Can you mention any others?—*A.* Cellulose caproate.

Q. What is that?—*A.* As I say, I have read about it, but beyond that I do not know anything about it.

Q. Scientifically, what would it be?—*A.* A cellulose ester. The ester of caproic acid. That is one of the so-called fatty acids, a higher member of the series.

Q. You do not know the others?—*A.* I do not happen to recall them at 10 the moment. I do not carry them around in my head.

Q. And you have never met them?—*A.* Personally, no.

Q. Then that leaves us with what you call the actual, which was what?—*A.* You mean the ones which are commercially available of cellulose esters?

Q. Yes?—*A.* Well, the cellulose nitrate and the cellulose acetate, and a mixed ester of butyric and acetic acid, on the one hand, a mixed ester of acetic, and caproic on the other.

Q. Then turning to the inorganic which you spoke of, what were the ones which you described as unstable and not useful?—*A.* I had in mind cellulose sulphate. 20

Q. Is that the only one?—*A.* That is the only one I had particularly in mind.

Q. Then coming to the ethers, you referred to methyl in connection with waterproofing, and I understood you to say that methyl would not do because it was soluble in cold water?—*A.* Quite.

Q. Have you proved this yourself?—*A.* Oh, I have dissolved methyl cellulose in water at around ordinary temperatures.

Q. At what temperature?—*A.* I do not think I measured the temperature exactly, but it must have been in the neighbourhood of 15 to 20° C.

Q. You have done that yourself?—*A.* Yes. 30

Q. When?—*A.* I cannot tell you when, but some time back.

Q. I understood that it was shown that you could only dissolve it in water at about 5° C.—what do you say about that?—*A.* I am quite sure I dissolved it in water with higher temperature than that.

Q. When do you think you did that?—*A.* Oh, I cannot tell you. It was a year or so ago.

Q. In what connection?—*A.* Experimenting with a material as a textile finish.

Q. Where was that?—*A.* In my laboratory at Boston.

Q. Have you got any reports on that?—*A.* I really do not know. They 40 were more or less cursory experiments to see what the possibilities were, and whether I have any reports on it or not I do not know.

Q. Will you agree that one may accept it that methyl is soluble in water only of about 5° C. in temperature?—*A.* No, I do not think it. We seldom have water as cold as that in my laboratory.

Q. Would it be insoluble in hot water?—*A.* Yes, sir.

- Q. At what temperature ?—A. Oh, if you get up 30 or 40° C.—
- Q. What is that in Fahrenheit ?—A. 86° F.
- Q. That is almost room temperature ?—A. On a hot summer's day, yes.
- Q. Then you have talked about the scorching of the fabric, a sample of which you exhibited. The figure you mentioned was something like 160° C. was it not ?—A. One set of samples, it was around 160° C. ; there were two sets.
- Q. There was only one set that was scorched, was there not. Look at the two Exhibits 30 and 31. Only one was scorched, was it not ?—A. Of this pair only one was scorched, yes. I think I put in another pair.
- 10 Q. And then there was another pair which was given at a somewhat higher temperature—Exhibit No. 29 ?
- Mr. BIGGAR : No, at a lower temperature ; this is the higher.
- Mr. CHIPMAN : Q. I want to get this clear. One of these pairs was in from three to five minutes, and another was in for a longer time, is that right ?—A. Five minutes was the maximum time of either one. If I can see the samples I can check it up, I think.
- Q. I notice you have notes on all your evidence. I wonder if I might have the original notes ?—A. That is up to Mr. Biggar.
- 20 Mr. CHIPMAN : The Witness has been reading from notes right through, and I think I am entitled to see them. I have been watching around the corner and seeing the notebook.
- HIS LORDSHIP : Oh, I do not think so. There might be some reason for allowing that, some time, but I see no reason for it now anyway.
- Mr. CHIPMAN : Then will you tell us about those exhibits ?
- WITNESS : These two samples here, Exhibits 30 and 31 ?
- Mr. CHIPMAN : Q. What was the time for Exhibits 30 and 31 ?—A. Five minutes.
- Mr. BIGGAR : For both ?—A. No, one was not heated at all and one was.
- Mr. CHIPMAN : Q. Which one was subjected to 5 minutes ?—
- 30 A. Exhibit 30.
- Q. What about Exhibit 21 ?
- Mr. LAJOIE : Exhibit 29.
- Mr. CHIPMAN : Q. You have it, Exhibit 29. What was the time for that ?—A. That was 5 minutes also.
- Q. Both 5 minutes. There is no scorching visible on Exhibit 29 ?—A. I would have to have the original fabric to compare it with.
- Q. Have you got the original fabric ?—A. I do not know ; I will look and see. I do not seem to have it here.
- Q. Well, of course—A. I beg your pardon, wait a moment ; here is
- 40 a sample of it.
- Q. If you compare with Exhibit 29 a sample which you now show me of the unprocessed fabric, which is the same fabric and which I produce as Exhibit E, will you tell me if there is any difference between the two ?—A. Yes, there appears to be a slight scorching, the one that has been heated as compared to the one that has not been.

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EXHIBIT E : Filed by Mr. Chipman : Sample of material used for Exhibit 29 before processing.

Q. Very slight?—A. Well, it is slight.

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Q. How does it compare with the scorching to which you referred in the other two exhibits?—A. Perhaps not quite as much, but about the same order. Not quite as much I think.

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(resumed)
Cross-exam-
ination—
continued.

Q. And you are perfectly sure that is the same stuff?—A. So far as my records show, that is the same stuff.

Q. Does it not seem to be rather coarser?—A. No, it should be the same material. One, you must remember, has been subjected to pressure and one has 10 not.

Q. What is the significance of that?—A. I think the slight difference in smoothness which you will notice there is the result of the pressure.

Q. That is a sample of the material used for Exhibit 29 before processing?—A. Yes.

Q. Five minutes, Dr. Esselen, is not a practical time for any test of any collar that would be in commercial use, is it?—A. You mean that it would be impossible to use that?

Q. Nobody would ever dream of subjecting a collar to a pressure at that heat for five minutes?—A. No, but that was not the purpose of the test, 20 of course.

Q. What was the purpose of the test?—A. To follow—

Q. Was it a scorched collar?—A. The purpose of the test was to follow out the procedure outlined in the patent.

Q. Did you find in the patent any reference to five minutes?—A. I found no reference to that time in that patent, but in a patent owned by the same Company and of similar wording, there was a mention of time, and that was why I selected that time.

Q. You found out the time in this patent took five minutes?—A. No, 30 I had to have some kind of a guide.

Q. But you would never dream of subjecting a collar to that heat and pressure for five minutes would you, if you wanted to use it for that purpose?

Mr. BIGGAR: The purpose of this experiment was to find out whether cellulose acetate could be made thermoplastic. That was the reason it was kept under for five minutes until it nearly scorched, and, notwithstanding, it would not stick. It was not thermoplastic. That was the purpose of the experiment, not to make a collar.

WITNESS: Not for making a collar, no.

Mr. CHIPMAN: Q. Did you try the same experiment with other times than five minutes?—A. I don't recall that I did. 40

Q. That was the only experiment you made for that purpose?—A. Yes.

Q. It is true, then, is it not?—A. I beg your pardon, I have tried that same experiment on more than one occasion; in fact, in two different laboratories I have tried a similar experiment. I had forgotten about them.

Q. Have you got any notes of those experiments?—A. I think I have.

Q. Would you let me see them?—A. The only point is that they contain, that page contains other material. I will be glad to copy off the notes of these particulars from that.

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Q. Do they relate to this case?—A. It does not relate to anything that is in evidence.

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Q. Does it relate to the experiment at all in any way?—A. It relates to the things on which I had to obtain information, to guide myself, yes.

Q. For the purpose of this experiment, you mean?—A. For this experiment, no, it has nothing to do with it.

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(resumed)
Cross-exam-
ination—
continued.

10 Q. For the purpose of this test?—A. The point is, I have tried to inform myself in a rather broad way as to the whole general situation, and I have run many experiments.

Mr. CHIPMAN : I think I am entitled to that sheet.

HIS LORDSHIP : They were experiments made not in connection with this case or for the purpose of this case, as I understand it.

WITNESS : It was for the purpose of this case, but not in relation to anything that is in evidence.

Mr. CHIPMAN : My Lord, they were made for the purpose of this case and I am entitled to see the experiments. Will you produce those for me ?

20 Mr. BIGGAR : I do think that is going a little too far, not that I object, but why should we load up this record with things that my friend does not really want? I do not want them. If he wants some information and the Witness says I have some information in writing on a particular point, my friend is perfectly welcome to it, but to say generally, "Give me all the written notes that you made on that subject that might possibly come up in the course of "this trial," seems to be ridiculous. That is what he is doing.

Mr. CHIPMAN : No, no.

Mr. BIGGAR : We have nothing whatever to conceal.

30 Mr. CHIPMAN : I am dealing now for the moment with a particular sheet on which there are notes of some other experiments.

Mr. BIGGAR : You have been offered a copy of them. It has been pointed out that they cannot be given to you at the moment without giving you something that has not been raised at all.

Mr. CHIPMAN : I am entitled to the original.

HIS LORDSHIP : Let the Witness answer the question.

Mr. BIGGAR : But my Lord, it is my objection ; I say it is not the proper thing to do. It is not proper in cross-examination of a witness to ask him to produce generally every note that he may have made in connection with the case.

40 HIS LORDSHIP : I have already stated that, and here is a concrete point.

Mr. BIGGAR : The Witness has made the objection. He said on the particular page upon which the notes that you refer to are recorded are also other notes that have no relation whatever to the subject. Now I am quite

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willing, as the Witness already said, to supply a copy of the relevant part of the notes to my learned friend.

HIS LORDSHIP : Yes. I did not know the Witness said that.

Mr. BIGGAR : We will give it to my learned friend after lunch.

Mr. CHIPMAN : You say the other material to which my friend has just referred has nothing to do with this case ?—*A*. I did not say that ; I said they are not in evidence.

Mr. BIGGAR : They have nothing to do with the particular subject to which you are directing your question.

Mr. CHIPMAN : *Q*. But it has to do with the preparation of your evidence 10
for this case ?

Mr. BIGGAR : Yes, for the purpose of the experiment.

The WITNESS : That is right.

Mr. CHIPMAN : My Lord, is that not relevant ?

HIS LORDSHIP : Not the whole of it. He says part of it is.

Mr. CHIPMAN : But this particular sheet—

HIS LORDSHIP : You are not entitled to get from a witness in a *depon* case, an expert witness, all the notes which he makes in preparation for the trial.

Mr. CHIPMAN : I appreciate that ; I would not ask for such a thing.

HIS LORDSHIP : The Witness must be protected. I understand he is 20
willing to give you the result of these tests which you mentioned.

WITNESS : I am quite willing to copy this off during lunch time and give it to you after lunch.

Mr. CHIPMAN : We will see if that will be sufficient.

WITNESS : Will you tell me what you would like ?

Mr. CHIPMAN : I want to have anything on that sheet.

WITNESS : My I see those samples ? You want what has to do with these samples that we have just been talking about ?

Mr. CHIPMAN : That has to do with the experiment.

WITNESS : I see two there. This small one, this scorched one, was it not ? 30
Is that not what you wanted ?

Mr. CHIPMAN : That is it.

(At 1 p.m. Court adjourned until 2.15 p.m.)

AFTERNOON SESSION—2.30 p.m.

January 10th, 1936.

GUSTAVUS J. ESSELEN, CROSS-EXAMINATION BY Mr. CHIPMAN
(Resumed).

Q. You have not got that other that I was asking for ready yet ?—*A*. You can use the original.

Q. But you have already undertaken to produce a copy ?—*A*. I am working 40
on it now.

- Q. Then you were going to look up other experiments—
- HIS LORDSHIP : Mr. St. Hilaire gets his fabric from the Plaintiff Company.
 In what shape is it, is it like a bolt of cloth.
- Mr. STEWART : It is just regular piece goods, big long bolts of cloth.
- HIS LORDSHIP : Just like an ordinary bolt of cloth ?
- Mr. STEWART : Yes.
- HIS LORDSHIP : Does the Defendant Company manufacture the same
 thing for use ?
- Mr. CHIPMAN : Yes, we can get that.
- 10 HIS LORDSHIP : Is celanese a name for artificial silk ?
- Mr. LAJOIE : No, it is a trade mark designating cellulose acetate.
- Mr. CHIPMAN : Our make of cellulose acetate as a fabric. Q. I was asking
 you if you had other notes of other experiments in regard to permeability. You
 were going to look those up.
- The WITNESS : I do not remember that question. I agreed to give you
 a copy of these notes. I made no other experiments on permeability by water
 vapour. At numerous times I made that experiment which I performed before
 the Court of the drop of water, but have not made records of it.
- 20 Q. Just before adjournment I think I was asking you whether the finish
 of cotton fabric might also affect one way or the other the likelihood of its being
 scorched ?—A. I should think it might.
- Q. Then coming to Exhibit 20, you used a plasticiser with that, didn't you ?
 —A. Yes.
- Q. What was it ?—A. That was a plasticiser known as santiciser 8 made by
 Monsanto Chemical Company.
- Q. What is that ?—A. They put it out as a mixture of special sulphonamides.
- Q. That is not a softener of any of the kinds mentioned in patent No. 1 ?
 —A. I am not sure that specific one is, but it is of the same general class as the
 plasticisers mentioned in that composite fabric patent. That patent refers to
 30 a number of sulphonamides, and if this is not in the list it is very closely related
 to it chemically.
- Q. Then taking the material in Exhibit 20, was that cellulose acetate
 threads ?—A. The layer which is now a continuous glossy layer was of cellulose
 acetate threads.
- Q. And that contributed I suppose, to a certain extent to the glossiness ?—
 A. The threads lost their identity and formed this film which is now on the
 surface of the cotton cloth.
- Q. There again I think you said you subjected this to a test for about five
 minutes ?—A. That is as I remember.
- 40 Q. Again that would not be the sort of test would apply to fabrics if you
 were making them into collars ?—A. No, that was made for the purpose of
 carrying out the instructions of the patent.
- Q. The patent never gave any instructions as to the time getting as high
 as five minutes ?—A. True, therefore it was left to my judgment.
- Q. And imagination ?—A. Well I still say it was left to my judgment.

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 (resumed)
 Cross-exam-
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Q. And you chose five minutes because that would give extreme results ?—
A. I was anxious to see whether it would adhere and film over as the patent said. I wanted to give it every fair chance to do so.

Q. That being an extreme case you got an extreme impermeability ?—
A. I would not call five minutes an extreme case.

Q. What would you call an extreme case ?—*A.* Over an hour. I thought this was a fair length of time, everything considered.

Q. Now, coming to Exhibit 21, the substance of which I think is represented on Exhibit 28 ?—*A.* Exhibit 21 I think it is the first fabric referred to in that table. 10

Q. Yes, and I understood from you that that was subjected to twenty pounds steam pressure ?—*A.* That is right.

Q. What is that in terms of centigrade ?—*A.* As I remember, it is about 125.

Mr. BIGGAR : 120 Centigrade, and 250 Fahrenheit is my note.

Mr. CHIPMAN : I am informed that it is 126.

The WITNESS : I was not very far off.

Q. Then if you turn to the copy of No. 28, what is the figure 6 in the last column ?—*A.* That is the sum of 3.1 and 2.9 in the two preceding columns.

Q. What is the unit of measurement ?—*A.* It is pounds per 10 inch width.

Q. What is the instrument you used in estimating it ?—*A.* It is a spring balance which is attached by a clamp to one of the plies. 20

Q. And then you pull against this spring until—*A.* Until the fabric tears.

Q. Separates ?—*A.* Separates.

Q. That will always be a bit of an approximation ?—*A.* It is a bit of an approximation.

Q. The quickness or slowness of your pull might make a difference ?—*A.* We try to regulate that. These tests were all made by the same man in my presence, the man who makes them regularly in the factory, that is done to eliminate the personal element as far as possible. It is not strictly accurate to an ounce. It is used because it is practical, it is used right along in the plant. 30

Q. You have in the second and third columns the words " front " and " back. " What does " front " mean ?—*A.* It means the part of the collar that is exposed when worn.

Q. Does it also mean the part that is towards the metal plate in heating ?—*A.* It is towards the metal plate, because it gives the smooth finish to it.

Q. Apparently the part of the collar which is against the metal plate or towards the metal plate is always the final outside of the collar ?—*A.* That is right.

Q. Then what was the material in all these seven samples ?—*A.* They are in evidence here, they were the regular collar materials being run in that factory at the time I was there. 40

Q. Where did it come from ? Was it made by you ?—*A.* No I simply took it from their regular stock of fabrics which they were running in collars at that time.

Q. You mean the B.V.D. Company ?—*A.* No, these were made in the Cohoes plant in New York, but made by the same process as described for the B.V.D. Company.

- Q. What were the relative number of threads?—A. In that lining fabric? In the
 Q. Yes.—A. Two cotton and one cellulose acetate threads in the warp, Exchequer
 and the filling was of cotton. Court.
- Q. You might clear up this point for me. Tell me whether this is an
 accurate statement of the material produced by the plant, that the finished
 count is 120 by 84, per inch I take it?—A. I do not know the count. No. 13.
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- Q. You would not be able to speak as to the finished count or the filling?—
 A. I have not made any tests as to the number of counts. I was under the
 impression that it varied, but I never made any count. Gustavus
 J. Esselen
 (resumed)
 Cross-exam
 ination—
 continued.
- 10 Q. You were not sufficiently familiar to be able to tell us that?—A. I never
 made the test. If I made the test I could tell you.
- Q. That has not been in your department?—A. Well I do not know that
 department is the right word. I have never made that test.
- Q. That is a part of the textile industry with which you have not been able
 to familiarize yourself?—A. I know a lot about it, I have made it for other
 people but not in this instance. I used the particular fabric being used in the
 factory at that time without making any special selection.
- Q. In Exhibit 28 you summarized four experiments showing the effect
 of increased time. Will you tell me whether these were all the experiments
 20 you made?—A. Those were all I made for that purpose of varying the length
 of time.
- Q. And the same applies to the other three showing the effect of
 temperature during drying, that those were all the experiments you made?—
 A. Yes. I made some preliminary experiments in connection with the
 experiments at room temperature to work out a technique, but did not test them.
 These are the only ones in which I made tests.
- Q. I understood you to say that the Plaintiff uses heat to harden. By
 "harden" do you mean to stiffen, or what do you mean?—A. To evaporate
 the solvent, the acetone, the volatile solvent.
- 30 Q. Do you say it is the same as hardening?—A. It results in the hardening
 of the cellulose acetate in the same manner as when the cellulose acetate threads
 are originally made.
- Q. When you make that statement you do not know as a matter of fact
 whether in the B.V.D. process the heat does act as the hardening agent? That
 is your conclusion from some general information or general deduction?—
 A. I have watched the process.
- Q. But you could not see the heat hardening?—A. No, but I knew that
 the acetate was in solution when it went in and it was hard when it came out,
 so I naturally concluded that the heat hardened it.
- 40 Q. Well the heat might have done several other things too, might it not?—
 A. Perhaps it might, but I do not know that it did anything else.
- Q. Might it not have had some effect on permeability?—A. It might have
 increased the permeability owing to the presence of the volatile solvent.
- Q. It might have decreased it too?—A. Not under those conditions.
- Q. Under what conditions?—A. Twenty pounds steam pressure.
- Q. Why?—A. Because cellulose acetate without plasticiser is not affected
 by heat at that temperature.

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Q. That is your general statement?—A. Yes.

Q. Do you base that on some experiment?—A. On my general knowledge of cellulose acetate and on specific experiments.

Q. When you say specific experiments what experiments do you refer to?—

A. I made a series of experiments at one time with cellulose acetate in the dry form to get a rough idea whether it was thermoplastic without plasticizer and if so at what temperature.

Q. When was that?—A. Last fall some time. I cannot recall the exact date, it may have been September or October.

Q. Was that in connection with this case?—A. It was. 10

Q. You have not produced the results here?—A. No.

Q. Would not that solvent soften the lining—or that stiffener?—A. The acetone?

Q. Yes.—A. I presume it would.

Q. I am trying to get the situation with regard to this Exhibit 17. If you will just try to fit Exhibit 17 into the collar which is Exhibit 13, you will find that the ply which has the most cellulose acetate upon it, the outer ply, the inside of which has upon it the most cellulose acetate, that is the outer ply of the collar, the one next to the heated plate?—A. That is right. When I spoke of it this morning, you asked me to theorize about it, but— 20

Q. In fact—A. In fact this is the situation.

Q. I had not tried fitting it in when I asked you this morning, but that seems to be the case?—A. That is the case.

Q. Would not that suggest that the heat has had some effect on that side different from the effect of the lack of heat on the other?—A. Oh but there is heat on the other side.

Q. Not very much?—A. Practically the same temperature as on the top side.

Q. You have explained, have you not, that the heat is on the metal side of the plate? The only heat on the other side is what comes indirectly, is it not?— 30

A. The upper platen is heated and the lower, they are both heated with steam, with the same steam.

Q. Are you speaking of the St. Hilaire process?—A. I am speaking of the process described by Mr. Loew the other morning.

Q. I thought it was the reverse, I thought only one side was heated.—A. I think I am right. I think the upper and lower platens are both heated.

Mr. CHIPMAN: Perhaps Mr. Loew might be asked.

Mr. SMART: I am informed that the lower platen is heated indirectly, that the platen itself is not hollow, but there is a steam box beneath it which heats the lower platen by conduction. The upper platen is hollow and is self 40 heated.

Mr. CHIPMAN: You used the word "practically" in comparing the heat of the upper and lower. In fact the metal one is hotter than the other, is it not?—A. Well I made no measurements, but there cannot be an awful lot of difference.

Q. But if there is any difference it would be in favour of the directly heated metal plate?—A. If there is a difference the metal one would be a little warmer.

- Q. Now you criticized paragraph 12 of the first patent in connection with heated plates and surfaces. Was your criticism based upon the assumption that "plates" and "surfaces" both meant the same thing?—A. I have forgotten just what I said in connection with that.
- Q. You can check that easily, at page 251 :
- 10 "Of course, if you were to use heated rollers, the volatile solvent would evaporate very quickly—a heated roller and a heated or cold plate or surface—that implies that. Those are metallic. It would be very difficult to see how the volatile solvent would have a chance to escape there, and I think it would be difficult to carry out the plaintiff's process with such equipment."
- Now was that criticism based upon the assumption that both the plates and the surfaces mentioned in paragraph 12 of the first patent meant the same thing?—A. Same flat surface, yes.
- Q. Flat metal surface?—A. Yes.
- Q. And if those two did not mean the same thing, that criticism no longer holds?—A. That is right.
- Q. Then you also refer to camphor as a solvent of nitro-cellulose?—A. As a plasticiser.
- 20 Q. Or softener I suppose?—A. That term is sometimes used.
- Q. Or solvent?—A. I would not refer to camphor as a solvent of nitro-cellulose because I do not think it is.
- Q. Would you call it volatile or non-volatile?—A. Comparatively non-volatile.
- Q. Are volatility and non-volatility relative terms?—A. To a certain extent.
- Q. You must always speak comparatively when you speak of those two, must you?—A. Yes.
- 30 Q. Someone else might call camphor relatively volatile, I suppose?—A. In connection with its use as a plasticiser of nitro-cellulose I do not think they would call it volatile.
- Q. Well camphor itself is obviously volatile, isn't it?—A. Camphor itself, not in conjunction with nitro-cellulose, is volatile.
- Q. We all have experienced watching it disappear day by day?—A. Yes.
- Q. And when it is combined with nitro-cellulose it would still have that characteristic?—A. Yes, to a very much less degree. We are all aware of the fact that celluloid retains its camphor almost indefinitely. The property of volatility is entirely different when it is combined with nitro-cellulose than when it is by itself.
- 40 Q. Then are you saying that the quality of volatility is very much affected in accordance with the ingredient.—A. I am merely making that statement in connection with camphor, not a general proposition.
- Q. Now in regard to Exhibits 32 and 33, were you using yarns there or solutions or coatings or what you call dopes?—A. Dopes, which are solutions similar to a varnish.
- Q. And quite a different order of things from yarns?—A. Right.
- Q. Now with reference to Patent No. 2, paragraph 8 (page 3, line 18)

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you criticized the statement that these yarns form fabrics that are stiffer than those formed of yarn made of continuous filaments of cellulose acetate?
—*A.* Yes.

Q. I thought you said it was not stiffer?—*A.* Yes as I remember.

Q. On what do you base that statement?—*A.* I have seen and handled such yarns and I have taken the pains to look up in the literature a number of statements to find out what the literature has to say about it and form my own judgment.

Q. Would that statement be subject to the same factors as affected your comparison of Exhibits 17 and 15?—*A.* As to whether—? 10

Q. One was stiffer than the other?—*A.* No, because there you are dealing with two yarns or threads of approximately the same surface feel. Here one is distinctly harsh that you gave me to compare, and the other smooth. That is very confusing. What you have to decide there is whether one offers more resistance to bending than the other. I said as far as I could tell by feeling they are about the same.

Q. Supposing you had before you a yarn which had been treated in the way described on the 16th line of this page, to compare it with another yarn which had not been so treated?—*A.* Of the same size?

Q. Of the same size, would you be considering questions of stiffness or questions of feel?—*A.* I would be considering questions of stiffness, as I was here. 20

Q. As in your comparison between 17 and 15?—*A.* Yes, but there would be no confusing element, it would be easy to distinguish stiffness there because there would be no confusing element of harshness.

Q. Have you ever tried it?—*A.* I do not know that I have had side by side at the same time two yarns of exactly the same size, but I have many times felt yarns made of spun rayon or spun acetate.

Q. Have you ever had in your hands a yarn made in the way set out in patent No. 2?—*A.* A yarn claimed to be made that way, yes. 30

Q. Who claimed it so?—*A.* It was supplied to me as such. It was probably supplied by a dealer who in turn had obtained it from a manufacturer.

Q. When was that?—*A.* I cannot tell you.

Q. Do you remember the name of the dealer?—*A.* No, I do not remember that.

Q. Or the manufacturer?—*A.* No, because I do not think I knew the manufacturer.

Q. Do you remember the feel?—*A.* I remember the feel.

Q. But you did not compare it with anything else?—*A.* Not at that time directly. 40

Q. Now turn to the next page of patent No. 2, line 7. Will you tell me the boiling point of ethylene dichloride?—*A.* I cannot tell you that from memory. It is a relatively volatile liquid, if that is what you mean.

Q. Then, turning to the remarks in connection with claim No. 6 in that second patent, I think you said that there were no solvents or softeners for cellulose acetate that were not organic?—*A.* Yes.

Q. Will you please tell me whether or not concentrated aqueous solution of zinc chloride is a solvent?—*A.* I think that is a solvent.

Q. For cellulose acetate?—A. I am not sure whether it dissolves cellulose acetate or not. It dissolves cellulose itself, and it may dissolve cellulose acetate. It may.

Q. The probabilities are that it would?—A. I think it would dissolve cellulose acetate and decompose it at the same time.

Q. Is that organic or inorganic?—A. It is inorganic. It is a solvent, rather than a softener or plasticiser.

Q. I am sorry, but I would like you to turn back to line 10 of the preceding page, in connection with your criticism of the use of water as a diluent. Are you using the word dilute in the same sense as the word mix?—A. Yes.

Q. Do you think of that as an accurate use of the two words?—A. I do not see how you could dilute a thing—let me put it in this way; I do not see how you could dilute one liquid with another unless you can mix them.

Q. I may be wrong, but I have once or twice been in the unfortunate position of having in front of me some very greasy soup. The grease is there and the water is there, and I would suggest that the grease is diluted with the liquid contents of the soup?—A. You mean that the grease is separated on the top of the soup?

Q. That is diluted, is it not?—A. No, the grease itself is in full concentration.

Q. But the grease is there and the soup is there?—A. That is right, as two.

Q. They are together, are they not?—A. No, they are separate layers.

Q. Each separate globule of grease being separate on the actual liquid.—A. That is why I asked you if it was floating on the top.

Q. If you have ever had the same unfortunate experience, you have stirred up the soup, have you not, and caused the greasy top to be diluted?—A. I do not consider it was diluted. It was divided into smaller globules and did not contain any more or less water than in the first place.

Q. But the total content was a dilution of the grease, was it not?—A. No.

Q. My learned friend suggests to me that milk itself is a mixture of fat and water, is it not?—A. Yes.

Q. The fat is diluted in the water, is it not?—A. But there you have an emulsifying agent.

Q. What is it?—A. The casein.

Q. What is the emulsifying agent in my basin of soup?—A. Apparently there was not any.

Q. I now simply want to run over some of these pages to which you referred, the first being the patent to Kennedy?—A. I will get those out.

HIS LORDSHIP : Mr. Biggar, will you explain to me what you meant by the dampening of the collars, after they are sewn together, with the solvent?—How is it done? It is not done in the wet press?

Mr. BIGGAR : Yes, that is the only way.

HIS LORDSHIP : Entirely there.

Mr. BIGGAR : Yes, my Lord, that is the only way.

HIS LORDSHIP : I understood from Mr. Loew that he meant dampening first.

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Mr. BIGGAR : No, the only dampening is done between those two pads on the press.

Mr. CHIPMAN : *Q.* First of all, in connection with Kennedy, you have seen the German patent to Marsden, No. 103,506, published June 6, 1899, have you not?—*A.* Yes.

Mr. CHIPMAN : That is one of my learned friend's original references, my Lord, which I do not think was put in. I think it should be put in side by side with Kennedy.

Mr. BIGGAR : You may put in anything you wish.

Mr. CHIPMAN : *Q.* Marsden is the corresponding German patent to 10 Kennedy, is it not?—*A.* I think it is, yes.

Mr. CHIPMAN : I file this as Exhibit F. We will file a translation of it afterwards, and if we can get a better copy it had better go in. This is with the English translation attached. They may be all made part of the one exhibit.

EXHIBIT No. F: Filed by Mr. Chipman: German Patent to Marsden, No. 103,506, published June 6, 1899, with English translation.

Q. In Kennedy there is no uniting of several layers of fabric together?—*A.* Except in the example of the rope; there is in the rope.

Q. Those are two strands?—*A.* Yes, two strands.

Q. Not a fabric?—*A.* No.

Q. And again there is no heat and pressure?—*A.* As I remember it, there is no heat and pressure.

Q. And at that time, am I right, cellulose acetate was unknown?—*A.* I do not see how it can be, because it is specifically mentioned in the patent.

Q. It was unknown for any practical purpose—was not that a nice little prophecy?—*A.* Well, I am sorry to say in 1897 I was not familiar with whether there was this cellulose acetate or not.

HIS LORDSHIP : It speaks of acetate of cellulose.

Mr. CHIPMAN : And we are going to prove, I think, that that was a chemist's prophecy at that time.

Mr. BIGGAR : That is a rather large undertaking, that nobody in the world knew of it in 1898.

Mr. CHIPMAN : It might be.

WITNESS : I can say of my own knowledge that history records that cellulose acetate was known prior to that—it had been discovered prior to that, if that will help you any.

Mr. CHIPMAN : *Q.* But not a as commercial product?—*A.* That I do not know.

Q. And there is no disclosure in this patent of what solvent was used, is there?—*A.* I do not recall any, Mr. Chipman; and at the moment I do not see 40 any. It says "a suitable solvent."

Q. But it does not tell us what, and does not tell us how long to apply it?—*A.* I think it says to spray it.

Q. I said how long to apply it?—*A.* No.

- Q. Or whether to remove it subsequently or not?—A. No, I do not see that.
- Q. And then there is no reference to stiffening?—A. I see no reference there.
- Q. Do you know of any use that has ever been made of this patent?—A. No.
- Q. Now, the next one is Oliver, U.S. patent No. 607,454. There are no yarns in Oliver, are there?—A. Well, the various plies must be made up of yarns.
- Q. How is that?—A. Well, it is a fabric.
- 10 Q. Let me put in in this way: there are no yarns of any cellulose acetate or any derivative of cellulose?—A. The yarns are not made of that, but they contain it before they get through.
- Q. But originally they have not got any?—A. That is right.
- Q. With regard to a number of these patents, it is true, is it not, that they are all dealing, whenever they do deal with cellulose acetate they are dealing with it in the form of this dope or film and so on, but they are not dealing with it in the form of threads, fibres or filaments?—A. That is true of some of them, but not all.
- 20 Q. There is no reference in this patent, either, to the use of heat for uniting these several layers?—A. No, I think there is no reference to heat in this patent.
- Q. And of course it could not be used for a collar?—A. A fabric of this sort of course could not be used for a collar.
- Q. I beg pardon?—A. A fabric as heavy as is described here. But I would not say that a fabric could not be made by this process—excuse me, I think collars very closely resembling this have been sold, and I thought had been put in here—a celluloid collar.
- Q. That is a very different thing, is it not?—A. It refers to celluloid here, does it not?
- 30 Q. Celluloid as an inter-layer, is it not?—A. As I remember it, these fabrics were entirely impregnated with a solution of celluloid, saturated with it in other words—a liquid celluloid.
- Q. And all the claims refer to canvas?—A. Yes, they all refer to canvas.
- Q. And canvas has a very definite meaning of something very much coarser than anything we are dealing with in this case, has it not?—A. Well, my idea of canvas is a fabric of rather wide variation of thicknesses. I have seen some lightweight canvasses.
- Q. But you would never dream of calling the ingredients that are on this table and which make up most of the exhibits which have been filed by you, 40 canvas?—A. No.
- Q. The next is Crowell, U.S. patent No. 965,966. There are no yarns of cellulose acetate in Crowell?—A. No.
- Q. You spoke of “size” and I think you compared Crowell with the Defendant because of the use of a size in Crowell?—A. Yes, a waterproof size was mentioned, as I remember.
- Q. That size would completely disappear in the laundry, would it not, if Crowell were used for making a collar?—A. No, I do not see why it should,

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because as I remember this patent, it said that one of the purposes of the size was to make it waterproof.

Q. And you do not think that the glue which Crowell uses would disappear in the wash?—*A.* I understood you to refer to the waterproof size. Of course the glue would disappear in the wash, leaving the waterproof size.

Q. What else do you find there which would not disappear?—*A.* In line 45 on page 1, beginning with line 43 :

“I apply to each web or cloth separately a composition which fills up all interstices thereof. This composition is in the nature of a waterproof size.”

Q. And you think it would not disappear?—*A.* That size would not disappear.

Q. It was really used for the fillers of boots and shoes, which would be quite protected from the external influence of rain or washing or things of that kind, was it not?—*A.* It was a stiffening fabric, and I forget the purpose for for which it was intended.

Q. It was intended to be used for the manufacture of tip and counter stiffeners for boots and shoes. It is capable of being molded to any shape of toe or heel stiffener that is required—on the second page, at line 11?—*A.* Yes, in the manufacture of boots and shoes ; that is right.

Q. And it was the intention of this patentee to have that material so made inside a shoe?—*A.* Yes, that is what he says.

Q. He never thought of subjecting that to a damp atmosphere?—*A.* Or a laundry.

Q. Or a laundry?—*A.* No.

Q. And do you not think we are accurate in saying that that would never be applied to a balloon or an aeroplane wing, or a collar?—*A.* You are quite right, it would not be applicable to any of those three things with the glue on it.

Q. And any uniting that there is in Crowell results from the application of some external coating to the material, in the form of glue?—*A.* Yes, he sticks them together with glue ; that is right.

Q. There is an external ingredient brought into play?—*A.* That is right.

Q. There is not much advantage taken of anything that is in the ingredient which you begin with?—*A.* That is right.

Q. The next is Weidig, U.S. patent No. 696,123. Now, is there any organic derivative of cellulose in Weidig, or cellulose acetate?—*A.* No, there is a cellulose ester.

Q. But that is not a cellulose acetate?—*A.* No, that is not a cellulose acetate.

Q. And there is not uniting of several plies by heat?—*A.* Not by heat.

Q. And as a matter of fact when you do use Weidig in the way mentioned to form a bandage, you would have a solid mass, would you not, around the wrist or leg or wherever you use it?—*A.* That is right.

Q. It was not plastic at all?—*A.* No.

Q. You would never use Weidig for making a collar for making the fabric of a balloon, would you?—*A.* I do not think you could use it for making the fabric of a balloon. but I do not see why you could not use it for making a collar.

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Q. If you made a collar with it, you could not sell it, could you?—A. It certainly would not be like the fine collars put in. In the
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Q. It is not like any of the collar materials put in?—A. It would be possible to make a collar which would look like them, yes.

Q. Would it behave like them?—A. In what respect?

Q. Would people wear them?—A. No,—wait a minute. I think the persons who might wear a celluloid collar might wear them.

Q. Those are very few nowadays?—A. Yes.

10 Q. You do not think Weidig had much relation to this case?—A. Why, yes, I think it is a very proper anticipation.

Q. On general lines, to make a collar.

HIS LORDSHIP: I have to decide that.

Mr. CHIPMAN: Very well, my Lord. I was probably transgressing there.

Q. The next is Lehner, U.S. patent No. 713,999. There again there is no cellulose acetate?—A. No. There is cellulose nitrate.

Q. And he is dealing with the manufacturing of horsehair?—A. Yes.

Q. He is not dealing with the imparting of stiffness to something?—A. That is just what he is doing. He is taking a group of artificial threads and stiffening them to make artificial horsehair.

20 Q. But he is not adding stiffening to anything?—A. As I remember it, he takes an artificial silk which is already formed and stiffens it.

Q. Is he adding it to artificial silk as a fabric?—A. No, he is simply taking the individual threads and stiffening the individual threads.

Q. The next patent is Kempshall, U.S. patent No. 768,129. You have not got any yarns of a derivative of cellulose in Kempshall?—A. There are no yarns of it, no.

Q. Then Segall is the next patent, is it not, and in Segall again you simply have sheets of celluloid?—A. That is right.

30 Q. You have got no yarn or textile fabrics at all?—A. Oh, yes, you have textile fabrics.

Q. But the main use that is made of any ingredient to unite one fabric to another is the use of a celluloid sheet, is it not?—A. That is right.

Q. And that celluloid sheet is not a fabric in itself comparable to a textile?—A. It is not a woven fabric, no.

Q. The next one is Dryen, and Dryen, again, I think, has to do with a dope, has it not?—A. No, he is making artificial horsehair from artificial silk, again.

40 Q. I thought you said Dryen had to do with a nitro-cellulose dope?—A. Of course in the manufacture of the rayon or artificial silk from the cellulose, he squirts it out. He says that he can make artificial horsehair and artificial straw, which is heavier again than artificial silk.

Q. But again he does import from outside the means of uniting the fabrics does he?—A. No, he does not import it from outside; it is inherent in the material with which he is working, that is, nitro-cellulose.

Q. Does he deal with an organic derivative of cellulose?—A. Not an organic derivative. He deals with a cellulose ester.

Q. Now your next patent is Van Heusen, I think, No. 1,479,565?—A. Right.

Q. In Van Heusen is the nitro-cellulose in the form of yarns?—A. No, it is in the form of a solution applied to yarns.

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Q. As a coating?—A. Yes.

Q. Then your next patent was Schloss?—A. May I say another word about Van Heusen. This is not merely as a coating. It is in part absorbed by the fibres.

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Q. But it comes from outside?—A. Yes.

Q. Now, the next is Schloss, U.S. patent No. 1,614,258. Does that apply to yarns and organic derivatives of cellulose?—A. Indirectly, yes.

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Q. Where do you find that?—A. Page 1, lines 60 and 61, it says: "preferably resilient cellulose material such as viscose, nitro-cellulose, pyroxylin, or the like," includes certainly an organic derivative of nitro-cellulose.

Q. But you are depending upon the words "or the like"?—A. It is 10 a question as to how to define the word "viscose." It is organic, and it is made from cellulose.

Mr. CHIPMAN: Q. Then Neidich, United States patent, No. 1,651,401. Was Neidich left in?

Mr. SMART: Neidich was left in.

Mr. CHIPMAN: Q. I gather that Neidich is not of very great importance?—A. It refers to the fact that artificial horsehair may be made from filaments, and so on.

Q. Would viscose be resistant to humidity?—A. Just what do you mean by resistant? 20

Q. Well, what do you mean, what do you think it might mean?—A. Well, it would resist a certain amount of humidity. Of course, it is well known that viscose becomes weakened on exposure to atmospheres of high humidity. It is also known that filaments of cellulose acetate also become weakened on exposure to humidity.

Q. The same sort of humidity?—A. Yes. Viscose is affected a little more by the same humidity than cellulose acetate.

Q. Only a little more?—A. I will say somewhat more; it all depends on where you pick your humidity.

Q. Well, generally speaking, you would never take viscose as a resistant 30 to humidity, would you?—A. Well, I don't want to quibble with you; it all depends on what you mean, Mr. Chipman.

Q. Now, then Berard.

Mr. LAJOIE: I am just asking, my Lord, to clear up perhaps a matter of detail. The Woodman, Dickie patent has not been mentioned by my learned friend. I do not know whether your Lordship has the Woodman and Dickie patent.

HIS LORDSHIP: The Woodman and Dickie?

Mr. LAJOIE: I thought your Lordship had mentioned it.

Mr. SMART: It is in the binder. 40

Mr. LAJOIE: Oh, it is?

Mr. SMART: Yes.

Mr. CHIPMAN: It has not been spoken to.

HIS LORSHIP: Was it referred to?

Mr. SMART : It was not referred to by the witness.

HIS LORDSHIP : Well, it is not in evidence.

Mr. BIGGAR : We are putting the patents in, my Lord. I need not do it if your Lordship does not want it in now. It is going in either now or later.

Mr. LAJOIE : That is the point. We made an objection about the way the binder was going in.

HIS LORDSHIP : My understanding was that these patents were to go in as mentioned by the witness.

Mr. BIGGAR : I did not understand that.

10 HIS LORDSHIP : Because they were all put in and marked as an Exhibit.

Mr. BIGGAR : There was not any question that I wanted to ask this witness about that particular patent, that was all.

HIS LORDSHIP : Then, Mr. Chipman, you had better examine the witness on the patent.

Mr. LAJOIE : May I ask, my Lord, is that the only patent that we have not heard about, which apparently has not been referred to and which we just learned this very moment is in your Lordship's file.

HIS LORDSHIP : There cannot be any patents introduced in this trial except by leave of the court other than those mentioned in the Pleadings and
20 the Particulars of Objection.

Mr. SMART : This is mentioned in the Pleadings.

Mr. LAJOIE : It is mentioned but my learned friend has dealt with 19 patents of which he has given us the names. We prepared for those 19 patents. Now we just learn that there are patents—

HIS LORDSHIP : Those are all that are going in, the whole 19. Mr. Biggar apparently wants to examine another witness on this particular exhibit.

Mr. LAJOIE : He has just stated that he does not need to examine anybody.

HIS LORDSHIP : I understood him to say he did propose to examine.

30 Mr. BIGGAR : I am proposing to offer it in evidence. I really cannot understand this difficulty on the other side. My friends have had the Pleadings in this action before them for months, and this patent has been pleaded against the fabric patent that is in question. Now, my friends asked me, as a matter of courtesy at the beginning of the trial, to indicate to them which of the patents referred to in the pleadings we were not likely to attach much importance to, and as a matter of courtesy I gave them a list of those patents. The Woodman and Dickie patent was not one of those that I told them we were not likely to rely upon. But the fact that it has not been referred to in the evidence of this Witness is surely not to be taken as having withdrawn it.

Mr. LAJOIE : That is not at all the point I was submitting.

40 HIS LORDSHIP : We are spending more time on this than is necessary. The Woodman patent is in the particulars of Objection and you must meet it.

Mr. LAJOIE : I want to know if there are any other patents outside of the Woodman and Dickie patent which my learned friend filed in evidence and of which I am not aware ?

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HIS LORDSHIP : The only patents, as I understand it, which are to be introduced are in this file.

Mr. LAJOIE : I have not seen them. We were under the impression that Woodman and Dickie was not in it. My learned friends have passed it by in silence.

Mr. CHIPMAN : My learned friends stated, my Lord, that they gave us a list of patents which had been cited by them, and here is the letter :—

“ We are likely to rely on all the patents cited in the particulars of objection but enclose a list of those which as at present advised seem likely to be of less importance than the others, in case this information may be of use to you.” 10

And here follows a list which included Woodman and Dickie. The natural conclusion is, my Lord, that when we did not hear Woodman and Dickie mentioned by this witness—

HIS LORDSHIP : I can quite understand how you would be misled.

Mr. BIGGAR : I am sorry my friends have been misled, but I shall have to be careful in dealing with my learned friends in future not to be courteous.

HIS LORDSHIP : But still there is a statement which says you were not likely to refer to it.

Mr. BIGGAR : No, my Lord, that is not what it says at all—“ A list of 20 “ the patents which do not seem likely to be as important as the others ”— those are exactly the words. In other words, it said in terms that we were going to rely on Woodman and Dickie, but it might not be as important.

HIS LORDSHIP : Then the fact that you passed it over, and that is the only one not filed, would naturally lead them—

Mr. BIGGAR : They have not suffered at all. That was only an hour or two ago.

HIS LORDSHIP : Do you propose examining somebody on this Woodman patent ?

Mr. BIGGAR : No, I do not propose to examine anybody on it. 30

Mr. LAJOIE : My Lord—

HIS LORDSHIP : Please go on ; do not let us waste any more time.

Mr. LAJOIE : I merely wish to register an objection against the filing of the Woodman and Dickie patent, because there are several reasons which we will argue at the final argument that apply specially to the Woodman and Dickie patent. I did not have a chance to put in separate objections. I am merely now making this objection, and I presume your Lordship will give me an opportunity of arguing the matter later.

HIS LORDSHIP : As a matter of fact, as the matter stands now, the Woodman patent is not in at all. 40

Mr. CHIPMAN : Oh, I see, all right.

Q. The next one is the Berard patent, 607, that is the British patent, and in Berard the material is comparable to celluloid, is it not ?—A. Comparable, yes.

Q. It is dealing with a coating and not with cellulose acetate threads or fibres?—A. It is not dealing with cellulose acetate fibres or threads, that is right.

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Q. Then the Dreyfus patent No. 163,465, was the next.

Mr. LAJOIE: No, number 1,634,613.

WITNESS: What was that number again, please, Mr. Chipman?

Mr. CHIPMAN: No. 1,634,613.—A. Oh, a United States patent?

Q. A United States patent.—A. Yes, I have it; that is the United States patent.

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10 Q. And that again is an impregnation from without, is it not?—A. It is impregnated with cellulose acetate.

Q. Cellulose acetate again in the form of a dope?—A. Or solution, yes.

Q. Next is Green, Great Britain, No. 9,879. In Green there is no uniting of the various layers by heat and pressure, is there?—A. Yes, there is.

Q. In what way?—A. Well, on page 4, line 4, we discussed that this morning, I think. Was that the one that your copy did not agree with?

Q. That is what I was trying to follow, yes?—A. In that line it says, "it may be combined by pressure with or without heat in order to ensure the more perfect union of the filament or ribbon to the fabric."

20 Q. In any event, we are dealing with a coating?—A. No, you are dealing with two fabrics combined together with pressure and heat, one of the fabrics being made of a cellulose ester.

Q. And what do you do with the cellulose ester in Green?—A. Well, it is combined with some other fabric that does not contain cellulose ester by pressure and heat.

Q. Now Millar, 17,549. There is no uniting of layers in Millar?—A. Yes, there is uniting of layers.

30 Q. Are you not squeezing the material there?—A. The specification says that there are two alternatives, one is to make this fabric from nitro-cellulose, then apply it to a web or base from which it can be stripped, and the other alternative is to apply it to a woven fabric with which it is combined.

Q. Yes. Again you are just squeezing down this filament or thread upon the other fabric?—A. Well, in the presence of a solvent.

40 Q. Yes, but you do not unite fabric and fabric together, you have not got a fabric attached to the other fabric, you have simply got this extruded material in a fine spray or jet?—A. Yes, but he so arranged them that he actually makes a fabric by making them go criss-cross on the base fabric and squirts a little jet of solvent to make them stick, so that he has an equivalent of a woven fabric which he produces on top of another one; and in the presence of this solvent he sticks them together.

Q. But he has not got any independent upper fabric to begin with, he makes his fabric through this extrusion through this travelling backwards and forwards and pressure?—A. Yes, and having made it he sticks it to the one end.

Q. Have you ever heard of it in use by Millar?—A. I do not know; it may have well been.

Q. You mentioned the other Dreyfus, that is No. 173,021, the British patent?

HIS LORDSHIP: What is the name of the patentee?

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Mr. CHIPMAN : That is Henri Dreyfus, the brother, my Lord.

Q. There are no yarns in this ?—A. Yarns ?

Q. Yes ?—A. There may be as one of the alternatives.

Q. Where do you find that ?—A. It is in more than one place, but on page 3, I just happened to see it, it goes back to the bottom of page 2, line 104 :—

“ Or the fabric may be embedded by heat and pressure, for example by means of heated rollers or other surfaces, into a solidified film, sheet, web, plate or the like”

Now a web might well mean a woven fabric.

Q. But you are putting something into this woven fabric that you are suggesting ?—A. No, the web here is made—I should have read a few words farther on—

“ or the like of the ether or ether composition.”

In other words, the cellulose derivative there, in this case cellulose ether, is made into a woven web. That is one of the possibilities.

Q. That is your gloss upon the patent or your interpretation of that word “ web ” ?—A. I am merely reading what it says.

Q. Now, Sponholz, that is Great Britain, 262,034. Sponholz is like the other patent that we looked at a moment ago, for a bandage, is it not ?—A. Well, it is for a bandage, but it is quite different from anything that we have looked at. 20

Q. In what way ?—A. What Sponholz is doing is taking an ordinary cotton bandage which, if it were cut away from the selvedge, might fray, and he weaves in cellulose acetate threads and then applies a solvent to stiffen them so that it will not fray at that point.

Q. Sponholz does not refer to any stiffening of the fabric, does it ?—A. I do not recall whether it does or not, but the effect produced would be a stiffening.

Q. You produced in connection with Dreyfus, Exhibit 41, and there you have material made up of a plasticiser ; can you tell me what that plasticiser was ?—A. The same one I have testified to early this morning, known as anticiser No. 8. 30

Q. Why did you leave that for five minutes ?—A. So as to make all the tests as nearly comparable as possible.

Q. Did you find any suggestion in Dreyfus, No. 173,021, about five minutes ?—A. No.

Q. The next is Le Faguays which is a Swiss patent, No. 53,333. There again I think you put in an Exhibit of a sample as Exhibit 42. Why did you choose three minutes time in that case ?—A. It was sufficient to unite the fabrics together and produce the result.

Q. And this patent has to do with cellulose ?—A. Yes.

Q. And while you said, I think, that you wound up with something which was similar to the defendant's patent, you again found something of a very substantial difference ?—A. Yes. 40

Q. In all cases ?—A. You mean so far as Le Faguays is concerned ?

Q. Yes.—A. Yes, I began with celluloid in this case.

Q. Then Nachmann, a Swiss patent, No. 77,238. There is no cellulose acetate in Nachmann in the form of yarns ?—A. No.

Q. And there is no heat ?—A. No, just pressure.

Mr. CHIPMAN : That is all.

RE-EXAMINED BY Mr. BIGGAR.

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Q. Dr. Esselen, my friend asked you this morning about your textile experience. Did you have any textile experience other than that of which you spoke in connection with rayon?—A. Yes.

Q. What other textile experience have you had?—A. Well, I was retained for a number of years, I cannot say at the moment just how many but I think at least four, by the Corticelli Silk Company in connection with their operations in manufacturing natural silk and artificial silk and in trying to develop a new form of artificial silk. I have had occasion, in connection with other cases
10 where I have appeared as an expert, to study rather closely the manufacture of artificial silk by several different processes including the cellulose acetate process. I have been retained by a cotton mill helping them with some of their problems. Those are instances that I think of at the moment. I also was associated for two years or a little longer with the development of improvements in the manufacture of artificial silk by the viscose process. There may have been others, but those are the only ones I think of now.

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Q. And in connection with your experience with cellulose acetate that you spoke of, was that in connection with the use of it in threads as woven material or just with the material itself?—A. Oh, no, in connection with its
20 manufacture into the forms of artificial fibres, artificial silk if you like, also the weaving of it into fabrics.

Q. My friend asked you something about the number of threads in this particular material, I am not sure whether it was 120 or something like that, but would you have any difficulty in ascertaining that provided you had a proper magnifying glass?—A. That can be done in my laboratory.

Q. My friend asked you about cellulose esters and particularly organic cellulose esters. I have a book here, Bloxam's Chemistry, 1923. I understand it is more or less a primary?—A. Elementary.

Q. Elementary book. And I have a list of some of the organic acids taken
30 from it; perhaps you can tell me which of them you know?—A. Acids?

Q. Yes. You said you could not remember the names of some of them?—
A. I gave quite a list.

Q. Yes, but I will just give you the list that I found, and you can tell me which of them, as far as your knowledge goes, have been used for the production of organic cellulose esters. There is formic acid?—A. That has been used.

Q. Acetic acid?—A. Yes.

Q. And you mentioned propionic, butyric and valeric?—A. Yes.

Q. Then there is hexoic or caprioc. You mentioned caproic?—A. Yes,
I think that esters have been made in the laboratory.

40 Q. Then there is heptoic?—A. I do not know whether that has been made; I would not be surprised if it had.

Q. And octoic?—A. I do not know.

Q. And nonoic?—A. I do not know.

Q. Then we have decoic?—A. I do not know as to that.

Q. Undecoic?—A. I do not know as to that.

Q. Laurate?—A. I think cellulose lauric has been made.

Q. Tridecoic?—A. I do not know.

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- Q. And myristic?—*A.* I think that has been made.
- Q. Pentadecoic?—*A.* I do not know.
- Q. Palmitic?—*A.* I think that has been made.
- Q. Margaric?—*A.* I do not know.
- Q. Stearic?—*A.* That has been made.
- Q. Arachidic?—*A.* I do not know.
- Q. Behenic?—*A.* I do not know.
- Q. Cerotic?—*A.* I do not know.
- Q. Melissic?—*A.* I do not know.
- Q. Acrylic?—*A.* I do not know. 10
- Q. Crotonic?—*A.* I do not know.
- Q. Angelic?—*A.* I do not know.
- Q. A very nice name for an acid. Pyroterebic?—*A.* I do not know.
- Q. Hypogaeic?—*A.* I do not know.
- Q. Oleic?—*A.* I think that has been made.
- Q. Then I will skip some and just pick out the ones that I think may have been made. Benzoic?—*A.* Yes, that has been made.
- Q. Oxalic?—*A.* That has not been made.
- Q. Phthalic?—*A.* That has not been made.
- Q. Xanthic?—*A.* That has been made; that is, the sodium salt of that 20
has been made.
- Q. Erucic?—*A.* I do not know.
- Q. Cinnamic?—*A.* I do not know.
- Q. Glycollic?—*A.* I do not know.
- Q. Lactic?—*A.* I do not know.
- Q. Ricinolic?—*A.* I do not know.
- Q. Gallic?—*A.* I do not know.
- Q. Tannic?—*A.* I do not know.
- Q. Mucic?—*A.* I do not know.
- Q. Citric?—*A.* I do not know. 30
- Q. Malonic?—*A.* I do not know as to that.
- Q. Mallic?—*A.* No, I do not know.
- Q. I do not know whether this is a different one, maleic?—*A.* Well, it would be but I do not think it has ever been made.
- Q. Succinic?—*A.* I do not know.
- Q. Fumaric?—*A.* I do not know.
- Mr. BIGGAR: *That is the list I have got out of Bloxam.*
- Q. Do you know what the relation of that plasticiser santiciser eight is to the class of alkylated sulphonamides?—*A.* It belongs to the general class of sulphonamides. It is not a xylene but a toluene sulphonamide. 40
- Q. You spoke of the decomposition of cellulose derivatives. What does that mean?—*A.* It means that the material decomposes into something else and is no longer the cellulose derivative it was to start with.
- Q. What about the inclusion or exclusion from the classes of cellulose derivatives with which we have been dealing here of a decomposed cellulose derivative?—*A.* Well, if it were decomposed it would not be a cellulose derivative any more.

Q. It is not within that class?—A. No.

Q. Is there as far as you know any reason in the nature of the materials why a process of the kind described by Oliver and a result such as that described by Oliver should be any more difficult to carry out with a material of the class we have been dealing with here, cotton materials, than the material of the class covered by the word "canvas"?—A. No, in fact I think it might be a little easier to carry it out with material of the sort we have been dealing with, cotton cloth.

10 By Mr. CHIPMAN: I suppose all chemicals might decompose at one stage or another in their careers.

Mr. BIGGAR: I do not think of anything at the moment which does not decompose if you treat it right.

Q. Then I suppose you would say it ceases to be, it is dead and buried?—

A. Yes, if it was decomposed.

Q. And then most of these chemicals that my friend read out—

Mr. BIGGAR: Organic acids.

Mr. CHIPMAN: Are chemists' visions, dreams and visions.—A. You mean the acids themselves?

20 Q. The names in this list are pious terms?—A. No, I have had a lot of these acids in my possession.

Q. Did you keep them for long?—A. Yes, I have some of them in my laboratory now.

HIS LORDSHIP: I suppose a great many of them are used in laboratories?

Mr. CHIPMAN: But a good many of the names, such as a series like hexoic, heptoic, octoic, nonoic, decoic, suggest that the chemists think there might be something along a certain order?—A. Hexoic, as a matter of fact, has recently become of considerable significance in commerce.

30 Q. But a good many of these things are guesses at what may be?—A. Excuse me, all these acids read by Mr. Biggar are known and their properties known. They are not available by the ton, but I can order them of a chemical supply house and buy them.

Q. But no one ever dreams of referring to those in any practical way.

HIS LORDSHIP: I do not think you get anywhere with that.

Mr. BIGGAR: My questions to the witness were not directed to the acids, they were directed to the esters produced by combination of cellulose with those.

Mr. CHIPMAN: The point is the acids are known but not the esters?—A. Well to the best of my knowledge I answered Mr. Biggar's questions indicating those I knew were known and those I know nothing about.

40 Q. But you did not quite answer my question. You know the acids and do not know the esters?—A. In most instances.

Q. And the esters are, as I say, dreams or visions?—A. The esters in many cases have not been made as far as I know.

Q. I started out by asking whether they were not chemists' dreams or visions, and I ask that again. The names suggest it, do they not?

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Mr. BIGGAR : Our point is they were Dreyfus' dreams or visions and he had no business to dream or vision for the purpose of a patent.

HIS LORDSHIP : I think he cannot very well answer that question. Some chemist in Petrograd or Portugal discovers some new acid, the witness cannot say whether it is a dream.

Mr. BIGGAR : But these acids are all known acids. The witness' evidence was directed to whether cellulose esters had been made in combination with them. The cellulose esters have been made only in combination with a comparatively few of them as far as the witness knows.

Mr. CHIPMAN : You referred to expert evidence, do you believe in that 10 sort of thing?—*A.* I have done some.

Q. Only a little?—*A.* Again that is a matter of degree. I have appeared in a number of cases, I have not counted them up recently.

HIS LORDSHIP : Will you tell me the difference between a plate and a platen? Is a platen a plate with a pad?—*A.* The term platen is simply the specific name for the plate of a press. An ordinary press, whether hydraulic or toggle, to be a press must have two plates coming together. The name for those two plates coming together to exert a pressure in a press is platen.

HIS LORDSHIP : Somewhere Dreyfus uses plate and platen, I thought perhaps platen was a term used when you had a pad on top of a plate?—*A.* No, 20 a platen may be a steel platen for example.

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Theodore
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(recalled).
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tion—

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THEODORE LOEW, recalled by Mr. SMART.

HIS LORDSHIP : Will you tell me when and how you apply the solvent in your St. Hilaire plant?—*A.* The solvent is contained in the wet press. It is contained on the back of the wet press, and from that reservoir in the machine it is fed to the pads on the platen.

Q. Sprinkled on them?—*A.* No, it is fed by capillary action.

Q. It is a liquid of course?—*A.* Yes, and the collar is introduced between those two platens through an opening in the front of the machine and is then 30 pressed between those two wet surfaces, thereby being moistened.

Q. Is it applied just to the intermediate fabric?—*A.* No, to the collar as a whole.

BY Mr. SMART.

Q. From outside?—*A.* From outside the collar yes.

Q. Now, I understand that you have sent for and have with you a photograph which will illustrate the way in which the plies adhere in the processed collar made according to the process you have described by St. Hilaire Limited?—*A.* Yes.

Q. Will you produce that? Is this a photograph you took yourself?— 40
A. Yes.

Q. Enlarged?—A. Yes, greatly enlarged.

EXHIBIT No. 44: Filed by Mr. Smart: Enlarged photograph of fabric.

Q. You might explain what this photograph is. I do not know if you can relate it to Exhibit 17 or not.—A. This photograph is the same thing as was photographed by Dr. Esselen. I took a piece of a processed collar which had gone through the regular commercial process and dyed it the same way Dr. Esselen has done to differentiate between the cellulose acetate and the cotton. I then cut out a piece which ran from the sewed edge of the collar towards the banded edge and I then separated the three plies and folded back the two outer plies upon themselves and photographed that so that in the finished photograph you can see down here the bottom outer ply of the collar. Here is the special lining and here is the other outer ply of the collar.

Q. The special lining is to the right?—A. Yes.

Q. And the background is—?—A. Is a piece of ground glass. You can see faintly down here a ruler which I placed behind the ground glass to give it scale. I had to retouch that because it was slightly out of focus.

Q. What does the photograph indicate as to the condition of the lining layer?—A. It shows the porosity of the lining. You can see here very plainly what the construction of the collar was, before the trubenizing process, the two threads of cotton then the space where the acetate thread was and then the two additional threads of cotton. You can see distinctly between each pair of cotton threads the interstices which have not been closed.

Q. That is on the folded back portion you are now going to refer to?—

A. Yes, the inner surface of the outer surface of the collar. You can see that the larger proportion of the surface of the collar is not affected in any way by the process, it is just the plain ordinary cotton cloth. The cellulose acetate covers up and obstructs some of the interstices, but you can see the majority of them are still open.

Q. And what are these black dots?—A. The black dots are dots of cellulose acetate that were the knuckles of the cellulose acetate in the unprocessed lining.

Q. The point you indicated a moment ago is the upper left hand corner?—A. Yes.

Q. Is there any indication on the intermediate lining material of places from which the cellulose acetate on the folded back portion has been taken?—

A. Yes, that is seen very plainly, there is a wider space, larger interstices are left at the places where the knuckles have been pulled out and adhered to the outer plies of the collar.

Q. These white specks on the lining are what?—A. They are the interstices. There was a light placed behind the ground glass on which the sample was placed.

Q. Now you spoke of the porosity of the intermediate lining. Does the processing of the collar seek to maintain that porosity?—A. That is one of the chief objects of the process, that the porosity must be retained in the collar.

Q. Why is that?—A. Well everything one ordinarily wears for any considerable time is porous. It must be porous to permit ventilation of the body and permit perspiration to evaporate. Aside from its importance for comfort it is necessary in order that the object may be washable. A collar of course

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must be launderable in the ordinary way, and without porosity this cannot be done because if you have an intermediate waterproofing ply between the two outer layers of a collar, outer layers, which are in contact with the body all day long, will pick up perspiration and dirt and in laundering it will be impossible for the water to pass through that material and carry it out. In other words in the washing process the soapy water washes back and forth through the fabric and carries out that dirt. If there is an intermediate waterproof ply it would be impossible to do that and the material could not be properly washed.

Also in ironing it is necessary that the collar be porous. The process of 10 ironing consists of dampening the article and then pressing it flat and smoothing it out with a heated iron which evaporates the water and produces steam. The cloth must be porous to permit that steam to escape. If it were not, if there were a waterproof layer preventing the escape of the steam, the plies would be separated, there would be blisters when the steam forces its way up.

Q. In your evidence before you described the run and turned edge which is used on any of these collars, and which you said was in common use, such as Exhibit 14. Can you illustrate that with a folded sheet of paper?—A. Yes.

Q. Will you explain what it shows :

HIS LORDSHIP : If the witness would speak up and try to speak more 20 distinctly. I cannot understand him at all.—A. This folded piece of paper shows the run and turn method of manufacturing collars. The ordinary collar consists of three plies, which are first sewed together with the two outer plies together and the intermediate lining ply placed on top. After the first sewing operation the collar is turned inside out, bringing the intermediate lining ply in the centre, and the two outer plies in their proper position on the outside of the collar. The collar is then sewed up around the edges and is ready for attaching to the band, or the processing.

EXHIBIT No. 45 : Filed by Mr. Smart : Paper illustrating run and turning.

Q. Then you spoke of the turned edge. Suppose you attempted to make 30 a collar from a thick fabric without separate layers, that had been united into a composite fabric before being formed into a collar, then what kind of edge would be used?—A. You use a turned edge in that case. Assuming this is a single heavy ply material, you just fold in the edges of the collar once and then fold over again to conceal all raw edges. That makes a heavy edge on a collar and makes it very difficult to form the corner, as you can see here. It is necessary to fold up one side and then fold the other side over that so that you have a very thick and awkward collar, which is avoided by the run and turn method.

EXHIBIT No. 46 : Filed by Mr. Smart : Paper illustrating fold-in method 40 with thick fabric.

Q. As we have been talking about the process of making a collar, uniting the layers, perhaps you will produce some samples indicating the different stages a turn-down collar goes through. Give me them in order and tell me what each is. They are numbered one to eleven, and I will file them all as an exhibit.

EXHIBIT No. 47 : Filed by Mr. Smart : Series of pieces of fabric showing process of making collar.

What is No. 1 ?—*A.* No. 1 is the cut material from which the collar is made, placed in their proper relative positions, the two outer plies of the collar placed together and back to back, and on top of those is placed the intermediate lining material.

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Q. Then the second operation ?—*A.* Consists of sewing those three plies together around the edge, a short distance from the edge, usually about $\frac{3}{16}$ ths of an inch.

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Q. The lining material still being on top ?—*A.* Yes, usually on top.

Theodore
Loew

Q. And the next operation ?—*A.* The next operation is trimming the
10 excess material from the points so that the neat point can be made.

(recalled).
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tion—
continued.

Q. And the next ?—*A.* The next operation is turning the collar. This is the collar in the previous condition, it is then turned inside out which brings the two pieces of body material on the outside of the collar with the lining on the inside.

Q. And No. 5 ?—*A.* No. 5 is the second and final sewing operation on the collar top, just putting another row of stitches around the edge.

Q. And No. 6 ?—*A.* No. 6 is merely trimming some of the loose threads from the top edge of the collar.

Q. And No. 7 ?—*A.* The collar after processing.

Q. That is after it comes from the hot press ?—*A.* Yes.

Q. And number 8 ?—*A.* Number 8 is a fresh banding operation, and number 9 is the second. I do not think these are very important.

Q. Number 8 has the outer plies of the banding material sewn onto the turned down collar portion ?—*A.* Yes, sir.

HIS LORDSHIP : There is a collar band sewn on ?

Mr. SMART : They are just starting to make the band. This operation number 8 has the two sides or pieces which are to form the band sewn on to the other.

Q. And then No. 9 ?—*A.* Number 9 is the operation of sewing in the band
30 lining, which in this case is an ordinary lining material and not special lining.

Q. Yes, that has a band reinforcing material. And No. 10 ?—*A.* Number 10 is the collar with band attached, which is of no importance except to show the handling which occurs in the second banding operation, and shows why it is necessary to process the collars again before being sent out.

Q. And then number 11 ?—*A.* Number 11 is missing. This is marked number 12. I do not think there is a number 11. Number 11 was supposed to show a finished collar, but it has been rather badly wrinkled.

Q. It has been cut off a shirt ?—*A.* Yes.

Q. That is, number 10 as it is finished is then sewn on to a shirt ?—*A.* Yes.

Q. And number 11 shows it as it would appear on the shirt, but with the
40 shirt cut off ?—*A.* Yes.

HIS LORDSHIP : That is not very important.

Mr. SMART : No, but different witnesses have spoken about it having been sewn and turned over, and I thought it would be well to have it in order.

This is your witness.

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CROSS-EXAMINED BY Mr. LAJOIE.

—
No. 14.
Plaintiff's
Evidence.
Theodore
Loew
(recalled).
Cross-exam-
ination.

Q. Mr. Loew, when was photograph Exhibit No. 44 taken?—A. I believe I took it in June of 1934. It was about that time.

Q. Whereabouts?—A. It was taken in the photographic studio of a friend of mine in New York City.

Q. And where did you take the specimen which shows on this photograph?—A. From an Essley Shirt Company collar.

Q. The Essley Shirt Company, I understand, is closely connected with the Trubenizing Corporation, is it not?—A. It was, at that time.

Q. And this was cut out, did you say, from a collar?—A. Yes. 10

Q. Was that collar manufactured in your presence?—A. No.

Q. So you just took that from a collar of the type sold by the Essley Shirt Company?—A. Yes.

Q. Have you got the original specimen of which this is a photograph?—A. No, I am sorry I have not.

Q. What did you do with it?—A. I passed it on for exhibition purposes, and I believe it has been lost.

Q. Since when is it lost?—A. For the last six months I have not seen it.

Q. You have not seen it for the last six months?—A. No.

Q. Have you any suspicion as to where it may be today?—A. Yes, I believe 20 it is in the office of Mr. Ellsworth in New York.

Q. And did you ask for it before coming up here for this trial?—A. No, I did not expect this photograph would be used, and did not attempt to get it.

Q. Referring to this photograph, Exhibit No. 44, do all the opaque spots appearing on the reverse of the outer ply towards the left-hand side of the photograph, show cellulose acetate?—A. Yes, all those spots show cellulose acetate.

Q. The reverse of the outer ply and the other side of course, does not show except as to the very small portion at the bottom towards the left-hand side?—A. Yes. 30

Q. So one cannot see from this photograph to what extent the other outer ply also had cellulose acetate on it?—A. Well, that small portion is a very fair representation of the other side.

Q. You do not see the inner side of the other ply from this photograph, do you?—A. No.

Q. So that the photograph does not show it?—A. It shows the spots on that side more opaque than the other lining material.

Q. But the opaque spots appearing on this small portion of the outer ply, shown towards the bottom of the photograph, is completely the other side of the collar and does not show the inner side of the outer ply, on that side?—A. No, it does not. 40

Q. One would expect to see and to find more cellulose acetate on the inner sides of the outer plies than on the outer sides of those outer plies, would they not?—A. Well, I would not say that.

Q. Do you claim all the white specks appearing on the lining material in this photograph to be interstices?—A. I believe they are. There may be a

few specks of dust which photograph in the same way, or a few highlights on the threads ; but on the whole the white spots are interstices. I believe here is a speck of dust which looks like one and there are a few spots where the high lights resemble them.

Q. And would also give the light or white effect ?—*A.* Yes.

Q. And this photograph, if it does show any porosity anywhere, would show it merely by pointing out interstices in the lining itself ?—*A.* No.

Q. What more does it show ?—*A.* It shows that a large portion of the outer ply material had not been affected in any way by the processing,—the lighter
10 coloured material here has not been affected in any way ; and also—

Q. What part has not been affected in any way ?—*A.* The black dots show the cellulose acetate which admittedly covered the outer plies. The main part of it is not covered with any foreign material. This light gray material all round the black dots comprising the major portion of the area.

Q. Where is the cellulose acetate which originally existed in the lining where has it gone to ?—*A.* It appears as the black dots here on the inner surface of the outer ply ; you can see the opaque spots on the inner side and the other outer ply ; and some of it also remains in the intermediate lining.

Q. So that there is in the composite material, after the process, as much
20 cellulose acetate in the composite material as a whole, except that it is spread differently from what it was originally ?—*A.* Probably.

Q. And it has spread into the pores and interstices of the composite material as a whole, whereas it was not spread in any of the interstices before the processes ?—*A.* It was not spread into the material as a whole. It was spread in certain well defined local areas, which are shown again by the black dots.

Q. And you mean to say that those areas do not correspond with any of the pores and interstices of the fabric ?—*A.* No, I do not say that.

Q. So that you admit that at least part of the cellulose acetate which has
30 been softened would go into the pores and interstices of the fabric by reason of the softening of the acetate and the pressure exercised upon it ?—*A.* Yes.

Q. Do you claim that this photograph, Exhibit No. 44, in any way contradicts what has been stated and illustrated by the previous witness, Dr. Esselen in connection with Exhibits 15, 16, 17 and 18 ?

Mr. BIGGAR : Tell him what those are ?

Mr. LAJOIE : He will remember, probably ?—*A.* I think on the whole it substantiates the testimony I have given on those ; it just shows it somewhat more clearly, I believe.

Mr. LAJOIE : May we suspend at this point, my Lord. My learned friend, Mr. Chipman, points out that it is just about time to go to catch his train.

40 HIS LORDSHIP : Yes. Have you finished with this witness ?

Mr. LAJOIE : No, but I understand that Mr. Loew has to come back.

HIS LORDSHIP : I thought if Mr. Chipman had to leave now, and if it would only require a few more minutes with this Witness, you might complete it yourself. Are you going to Montreal to-night ?

Mr. LAJOIE : No, but I understand the Witness will be here.

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HIS LORDSHIP: Then we will adjourn until 10.30 Monday.

The ASSISTANT REGISTRAR: This Court will stand adjourned until 10.30 Monday next.

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(At 4.30 p.m. Friday, January 10th, 1936, Court adjourned until Monday, January 13th, 1936, at 10.30 a.m.)

Theodore
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(recalled).
Cross-exam-
ination—
continued.

THEODORE LOEW, CROSS-EXAMINATION BY Mr. LAJOIE (Resumed).

Q. Mr. Loew, the enlarged photograph which you have filed as Exhibit 44 was prepared, you stated, in June 1934?—A. Yes.

Q. This photograph I understand was taken for advertising purposes?—
A. Primarily. 10

Q. And this was just about a year before the installation of the St. Hilaire plant?—A. Yes.

Q. You have also stated that you did not have the original specimen with you. You still have not got it?—A. No.

Q. Obviously the original specimen was torn apart in order to get the photograph Exhibit 44?—A. Yes.

Q. By so doing the cellulose acetate which was within the composite material was also torn apart?—A. Yes.

Q. This photograph I take it was taken for the purpose of showing the pores or interstices in the intermediate layer, that is the lining, wasn't it?—
A. No, it was taken to show the porosity of the collar and the construction of the collar. 20

Q. As to the porosity of the collar, how does this photograph show the porosity of the collar taken as a whole, before the component parts were torn apart?—A. It shows that the outer plies of the collar are only partially covered by the adhesive material. The major portion of the area of those materials is not touched in any way by the process, and as everyone knows a textile fabric is porous whether there are interstices between the threads or not. There is porosity through the fibres of the thread. That photograph clearly shows that a large portion of the area of the cloth is not covered by the adhesive material, therefore there will be this porosity through the threads of the cotton cloth as well as through the interstices. 30

Q. But as compared with the assembly as it stood before the treatment, you are not prepared to say that the final product had more porosity than the assembly before treatment?—A. Oh yes, it does.

Q. Why?—A. Well, in the unprocessed collar you have three layers of cloth with an air space between. If there was water on one side it has to jump across this air space. In the processed collar the three plies are cemented together in close contact and the water can go directly through by capillary action, which is impossible in the case of the unprocessed collar. 40

Q. You are assuming in the unprocessed a space between the three layers?—
A. You always have a small space unless they have been fastened together in some way.

Q. I believe you have stated you have no personal knowledge as to the particulars of the process under which the collar from which the specimen of Exhibit 44 was taken?—A. I believe it would be only hearsay.

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Q. You have spoken of the advantages of porosity in the finished collar. The neckband, which is attached to the collar, is not processed, I understand?—A. No.

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Q. And it is the neckband, of course, which is in contact with the skin when used.?—A. Yes.

Theodore
Loew
(recalled).

10 Q. Now Mr. Loew, are you able to give us the construction of the lining used by the St. Hilaire firm?—A. Yes. The construction is approximately 120 by 80—

Cross-exam-
ination—
continued.

Q. Is that for the finished count or the greigh count?—A. The finished count is supposed to be 120 by 80. Actually it is usually a little more. I have never made a count in the greigh.

Q. Then what is the greigh count?—A. I have never made a count of the greigh count.

Q. The greigh count of course is the count before the finish has been put to the cloth, is it?—A. It is the count before the cloth has been bleached and sanforized.

20 HIS LORDSHIP: Supposing now you put that in terms which people can understand.

Mr. LAJOIE: When you gave the finished count as 120 by 80 what do you mean by those figures?—A. The 120 means that there are 120 threads to the inch in the warp, that is the direction at right angles to the length of the cloth. And the 80 means the number of filler threads, that is the number running at right angles to the direction. Of course the counting has to be done perpendicularly to the direction in which the threads run.

Q. Under the finishing process there is a certain shrinkage, I take it?—A. Yes.

30 Q. Which accounts for the fact that the greigh count would be slightly less in the filler, is that true?—A. Yes.

Q. Are you able to give us with respect to the warp, the number of turns and the particulars of the warp?—A. Do you mean the twisting of the threads?

Q. Yes.—A. No, I do not know that.

Q. And you cannot give it as to the filling either?—A. No, the filling is ordinary cotton thread, I believe No. 40, but I am not sure.

Q. You do not know what number the warp has. You are giving the filling as 40—A. The cotton?

Q. Yes.—A. That is either 40 or 50, I have not measured that myself.

40 Q. Now the proportion of the cotton threads to the cellulose acetate threads you have given as—?—A. One out of every three warp threads is cellulose acetate.

Q. And the filler is entirely cotton thread?—A. Yes.

Q. Have you ever considered the condition of the lining with respect to stiffness under the process that you have described, after the lining has gone into the wet press but not having gone into the hot press, and assuming the

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continued.

material to have dried in the air?—*A.* You mean have I taken just a piece of the lining cloth not associated with the other collar materials?

Q. We will take it separately first of all, yes?—*A.* Well, if you just wet it and allow the acetone to evaporate, the lining would be stiffer.

Q. Now, in association with the two adjacent fabrics, what would be the difference, if any?—*A.* I do not think it would be stiffer.

Q. Why do you say that?—*A.* Well, when you wet the acetate threads with acetone they are jellified, become glue-like and flow. If you allow that moistened piece of cloth to dry in the air the acetate spreads through the cloth and unites the fibres of the cotton threads and coats the whole lining with a film of cellulose acetate. Upon the evaporation of the acetone, that becomes hard, and naturally the lining becomes stiffened. When the collar or acetate thread is again jellified by the acetone, and that jellified acetate thread, the knuckles of it, is forced into the overlying cotton cloth and there is no dispersion throughout the cloth; and when you examine that lining, as I have done, by taking a microscopic section parallel with the warp threads, you can see that the material which remains is no longer a thread but a series of zigzags of cellulose acetate which is very greatly distorted and very frequently broken, and which no longer has any mechanical stiffness. 10

Q. But this examination you have made after breaking apart the compound material?—*A.* No. I have done it by the well known method of examination of such specimens, by imbedding a piece of a collar in paraffin, in melted paraffin, and making microscopic sections parallel to the direction of the warp thread through the entire collar assembly. 20

Q. Would that enable you to see through the collar assembly?—*A.* Well, if we have it of three plies, and my fingers are the direction of the warp threads of the collar, then I take microscopic sections in this way so that I get a section through the three plies of the collar at right angles to the plane of the collar.

Q. But I still do not quite see how you can determine the condition of the acetate inside the collar by that superficial method?—*A.* It is not a superficial method; it is a section through the collar; but of course before I start it I take that collar and treat it with a differential dye so that I can see the acetate in the collar. 30

Q. How do you see the collar under the surface?—*A.* Supposing this book is a collar, the covers are the two outer plies, and the pages are the intermediate lining. What I have done is to imbed the whole collar, or a piece of the collar, in paraffin—

Q. What is the effect of paraffin?—*A.* It is just to hold it so that I can cut it and make thin sections. It is a wax. This is the standard procedure for such work. I take a slice across the collar in this way, and that gives me a thin sheet of paraffin with a cross section of the collar, looking down in this way. 40

Mr. BIGGAR: On the edge?—*A.* Yes. And I put it under a microscope and in that way I can see the two outer layers and the lining.

Mr. LAJOIE: *Q.* And what does that give you?—*A.* That shows that the acetate that remains is in the form of a broken and zigzag streak of acetate,

and any engineer would know that a zig-zag streak like that would not have the strength or stiffness of a continuous piece.

Q. And that cellulose acetate would be partly on the lining and partly on the outer plies?—*A.* Well, it adheres to the cotton threads of the lining and to the cotton threads of the outer ply, but in that stage, before it is torn apart, it just acts as a glue, and you cannot say that it is on either one or the other.

Q. And the acetate which has dried after a solvent has been applied to it would, I suppose, to that extent, stiffen the material inside for the same reason as the solvent after evaporation stiffens the lining, as you have previously mentioned?—*A.* Yes, I suppose it would, but the effect is much less there. It only comes in contact with a comparatively small number of the fibres.

Q. You have spoken of two licensees in Canada?—*A.* Yes.

Q. The first one was St. Hilaire, I believe, — was that the first or the second one?—*A.* The plant at St. Hilaire was the first one installed in Canada. I believe the license was given to the B.V.D.

Q. Have you the date of the license to the B.V.D.?—*A.* No, I have not that date.

Q. Could you get that information?—*A.* Yes, I think I could.

Q. I suppose by enquiring here you could give me that information right away?—*A.* I do not believe so.

Q. Will you make enquiries as to whether you can get it? It is a simple fact to ascertain. Would you get the information from anyone present here, of the representatives of the Trubenizing Company?—*A.* I do not think I could get it from anyone here.

Q. Would you find out now whether you can get it or not?—*A.* I am afraid I cannot get it from anyone here.

Q. Mr. Liebovitz, the president of the Trubenizing Corporation, is here, is he not?—*A.* Yes.

Q. And he is not able to furnish it to you?—*A.* No.

Q. What is the other licensee in Canada?—*A.* The Brill Shirt Company, of Toronto.

Q. Have you got the date of that license to Brill?—*A.* No, I have not.

Q. And you are not able to get that information, either?—*A.* No. I do not think so.

Q. And what is the date of their installation?—*A.* I do not remember.

Q. Have you installed it?—*A.* Yes, I installed it.

Q. Approximately when was it, then?—*A.* I think it was in August.

Q. Of 19—?—*A.* Of 1935. I go on many of these trips, and it is rather difficult for me to remember when I went on any individual trip.

Q. You have described the method of manufacturing collars and have filed, as Exhibit No. 47, a number of assemblies representing various stages in the manufacturing of the collars. I take it that all the stages leading up to the processing itself merely represent the ordinary technique of the manufacturing of collars generally, does it not?—*A.* Yes. They are interesting but not very important.

Q. You have spoken of sections that you have examined after treatment with paraffin, and so on?—*A.* Yes.

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ination—
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Q. Have you those samples with you?—A. No, I have not.

Q. You have not anything that you can give us to corroborate or substantiate your testimony as to that?—A. No, I have not anything with me.

RE-EXAMINED BY Mr. SMART.

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Evidence.

Theodore
Loew
(recalled).
Re-examination.

Q. You were asked by my learned friend with regard to the effect on the lining material alone treated with acetone. I would ask you to look at Exhibit No. 35, which is the Kennedy sample, and compare the effect you have just described with that sample?—A. This is exactly the same thing as what I have just described.

Mr. SMART: Thank you. That is all.

10

Mr. BIGGAR: That is all, my Lord, except that I would like to mention to your Lordship the Woodman and Dickie patent which is in the book. My friends object to that, no doubt on the ground that it was not issued until 1929, which is late, of course. It was applied for in Great Britain as of the date January 10, 1925, which precedes by seventeen days the application for the patent in question, the fabric patent, as given in the Defendant's statement, dated on the 14th; I think it forms a part of the pleadings.

Mr. BIGGAR: Without evidence that there had been some action on the part of Woodman and Dickie which made the invention described in their patent available to the public before the date of the application for the patent in suit, which is the 18th of December, 1925, or nearly twelve months after the date of the Woodman and Dickie application, it is possible to argue that the old Section 37A is an answer to it; but it is also arguable that Section 37A has no application to cases which arose before it came into force in 1932, and for that reason I would like to offer it in evidence subject to that question alone.

HIS LORDSHIP: That patent is mentioned in your particulars?

Mr. BIGGAR: Yes, my Lord, it is mentioned.

Mr. LAJOIE: My Lord, I wish to enter an objection against the filing of this patent.

HIS LORDSHIP: Mr. Lajoie, need we take up time on it now?

30

Mr. LAJOIE: Then I will cut it short by stating that apart from the objection that my learned friend has referred to and the general objection that I made the other day to the patents against which the same objection might be raised, there is the further objection against the Woodman and Dickie patent that no proof whatever has been made of the date prior to the application of the Dreyfus patent in issue. My learned friend stated that the date of the application in Great Britain was January 10, 1925. There is no proof whatever as to that.

Mr. BIGGAR: Yes, it is on the patent.

Mr. LAJOIE: That is not legal proof. That is just the point.

40

HIS LORDSHIP: Is that your point?

Mr. LAJOIE: It is the point. I understand your Lordship desires to reserve the objection, and we will discuss the whole matter later.

HIS LORDSHIP : Yes.

Mr. BIGGAR : That is the case for the Plaintiff, my Lord.

HIS LORDSHIP : What is meant by "decomposition" ? I know what the word means ordinarily, but, Mr. Biggar, you have used it frequently and I would like to know just what it does mean in relation to the subject matter here. Does it merely mean broken, or does it disappear altogether ?

Mr. BIGGAR : My Lord, I may not be able to speak with any degree of—

HIS LORDSHIP : Dr. Esselen is still here.

Mr. BIGGAR : My impression is that it means to alter something ; I mean,
10 that its character alters.

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(re called).
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G. J. ESSELEN, Recalled.

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WITNESS : As used here the word "decomposition" can perhaps be illustrated by a simple example. Let us take sugar, and let us dissolve it in water. That is the case of a simple solution. If we evaporate the water, we can get the sugar back again. If instead of dissolving the sugar in water we were to dissolve it in sulphuric acid, the sulphuric acid would dissolve the sugar but, at the same time, it would decompose it. If we used the sulphuric acid, we would no longer find sugar remaining ; it would be converted into
20 a carbon dioxide, and there we would have an example of decomposition. Is that clear to your Lordship ?

Gustavus
J. Esselen
(recalled).
Examina-
tion.

HIS LORDSHIP : In other words, it becomes—

WITNESS : It becomes either another substance or several other substances.

Mr. CHIPMAN : Dr. Esselen—

Mr. BIGGAR : Was Your Lordship intending to recall Dr. Esselen ?

HIS LORDSHIP : It must relate to my question.

Mr. CHIPMAN : Your Lordship will remember that I asked Dr. Esselen for another exhibit, and he has just handed it to me and I want to have it explained. It is simply continuing my questioning at that stage.

30 CROSS-EXAMINED BY Mr. CHIPMAN.

Cross-exam-
ination.

Q. Dr. Esselen, you have handed me a sheet in your handwriting headed "Permeability test." That is a copy of a sheet of your notes, is it not ?—A. It is.

Q. Would you mind explaining it ?—A. Shall I read it ?

Q. No, just explain it. You refer to samples A, B and V ?—A. A, B and U. The samples A and B are samples which have been processed according to the method which has been described by Mr. Loew, and sample U has not been so processed. It is made of exactly the same three fabrics but simply unprocessed.

Q. Are either of these samples materials which have been filed already in connection with your evidence ?—A. I beg your pardon ?

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J. Esselen
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Cross-exam-
ination—
continued.

Q. Are either of these samples—*A.* I forget whether they have been filed as evidence, Mr. Chipman. I gave you the three samples which I used. Whether they were filed, I do not remember.

Q. But these refer to the same three samples?—*A.* Those refer to the same three samples.

Q. And you have at the foot a column showing time after the start of the test, showing grammes, water vapour passed through the material, in the column corresponding to the other exhibit which you already filed?—*A.* I do not remember that I filed these figures. These were brought out in evidence.

Mr. CHIPMAN : I will file this as exhibit—

10

The ASSISTANT REGISTRAR : Exhibit B.

Mr. CHIPMAN : I am further down the alphabet now.

The ASSISTANT REGISTRAR : Is that the one for which I left a mark?—
“ A ” was the picture. I have not got the picture yet.

Mr. CHIPMAN : Oh yes, you were going to get another copy of that photograph.

Q. I think you still have that photograph?—*A.* I was under the impression we gave that to you this morning.

Q. Yes you did, and you took it back. You were going to examine it and get your copy. I do not think that is in yet.

20

Mr. BIGGAR : You mean it has not been marked ?

Mr. CHIPMAN : No.

Mr. BIGGAR : This is the only one I have.

WITNESS : If there are two here in Ottawa, I will get the other one and have it after lunch. I was under the impression you had them both.

Mr. CHIPMAN : Is there any objection in the meantime to marking this one and filing the other later ?

WITNESS : Yes, that is all right. I will get you the other one. I am sorry ; I thought you had that.

Mr. CHIPMAN : I think you took that back after lunch.

30

Mr. BIGGAR : I do not think so.

WITNESS : May I see that last photograph again just to make sure I get the right one ?

HIS LORDSHIP : I do not think it will be necessary, Mr. Lajoie, to make any opening.

Mr. LAJOIE : No.

DEFENSE

Mr. LAJOIE : I will first of all, My Lord, file as Exhibit “ G ” certified copy of British application for patent of January 23, 1925, establishing said date as being the priority date of application of patent 265,960 in issue.

40

EXHIBIT “ G ” ; Filed by Mr. Lajoie : British application for patent of January 23, 1925, No. 265,960.

I will file as Exhibit "H" certified copy of United States application for patent dated December 15, 1927, establishing said date as the priority date of application for patent 311,185 in issue.

EXHIBIT "H"; Filed by Mr. Lajoie: United States application for patent dated December 15, 1927, No. 311,185.

I will also put in as Exhibit "I" Mr. D. H. Stewart's examination on discovery taken in this case on October 30, 1935.

EXHIBIT "I"; Filed by Mr. Lajoie: Examination for discovery of Mr. D. H. Stewart, October 30, 1935.

10 EXAMINATION on Discovery of DONALD HOWARD STEWART on behalf of the defendant above before R. M. SPANKIE, Esq., Deputy Registrar, in the Exchequer Court of Canada at Ottawa, Ontario, Monday, November 18, 1935, at 2.30 p.m.

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Gustavus
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No. 16.

Defendant's evidence.

COUNSEL: O. M. BIGGAR, Esq., K.C., for Plaintiff.

H. GERIN-LAJOIE, Esq., K.C., for Defendant.

DONALD HOWARD STEWART, Sworn BY Mr. LAJOIE, K.C.

No. 16.
Defendant's
Evidence.

Donald
Howard
Stewart.
Examina-
tion on
Dis-
covery.

20 Q. You are the president and manager of the Plaintiff Company, Mr. Stewart?—A. Yes.

Q. Since when does the B.V.D. Company, Ltd., manufacture shirts with stiffened collars such as are referred to in the present action?—A. Since some time around the end of June 1935.

Q. Have you any samples of the shirts in question with you?—A. No.

30 Q. Paragraph 4 of the Statement of Claim states that the collars on the said shirts which are alleged to infringe the said patent are formed from three layers of material, an intermediate layer having been woven so as to include threads of celanese (*sic*?) acetate which, after the collar has been formed, are slightly softened by the action of a solvent. Will you please state what solvent is used for such purpose?—A. I do not know.

Q. Who in your Company would be in a position to state what solvent is used?—A. Nobody.

Q. Did you not state that the Company Plaintiff manufactures the shirts in question since the end of June, 1935?—A. Yes.

Q. Then if your Company does manufacture these shirts who knows of the process of manufacture?—A. When I said that the Company manufactured these shirts I am going by the government ruling which states that as these shirts are made by a firm only for us that we are considered as the manufacturers.

40 Q. Which is the firm which manufactures only for you?—A. L. St. Hilaire, Limitée.

Q. Where has this Company its head office?—A. St. Romuald de Etchemin.

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tion on
Dis-
covery—
continued.

Q. Is that in the district of Quebec?—*A.* Yes, sir.

Q. Do I understand then that you are personally unable to testify as to the process of manufacture used for making these collars?—*A.* That is right.

Q. The firm of L. St. Hilaire Limitée manufactures that type of shirts exclusively for your Company?—*A.* Yes.

Q. Will you then undertake to obtain and furnish the details of the process of manufacture used in making these shirts and collars, or alternatively will you undertake to produce the representative of L. St. Hilaire Limitée who would be in a position to testify on this process of manufacture?

Mr. BIGGAR: Yes. We will tell you exactly how the collars are made, 10 if you want more information than is contained in the Statement of Claim.

Mr. LAJOIE: You mean by furnishing further particulars?

Mr. BIGGAR: Any way you like. If you want more information than is given in the paragraph in the statement of claim, let me know on what points you want further information and I will be glad to furnish it.

Mr. LAJOIE: May I suggest, Mr. Biggar, since you are furnishing this information that we might submit interrogatories which would be answered and which would enable us to obtain information.

Mr. BIGGAR: Yes. We will answer the interrogatories—the solicitors 20 for the plaintiffs.

Mr. LAJOIE: Well, I would prefer to have this information coming from the company plaintiff.

Mr. BIGGAR: It will come from the Company Plaintiff through us. It will be evidence. We will admit it.

Mr. LAJOIE: If there are interrogatories they will have to be submitted to the plaintiff for the witness to answer.

Mr. BIGGAR: The plaintiff cannot answer them as the witness has just told you, because they have not got the information; but we will get the information for you and furnish you with it, if you want any further particulars.

Mr. LAJOIE: Well, some points might develop, according to answers 30 given, Mr. Biggar, which would justify making further questions. Would you undertake to produce the representative of L. St. Hilaire Limitée?

Mr. BIGGAR: No. I will not introduce any witness you are not entitled to examine for discovery; but I am prepared to amplify the paragraph in the statement of claim if you desire it to be amplified.

Mr. LAJOIE: Well, I think the defendant is entitled to examine the witness who is familiar with the process of manufacture. Inasmuch as L. St. Hilaire Limitée manufacture exclusively for the company plaintiff shirts of this nature and, therefore, act as the plaintiff's agent for the purpose of manufacturing shirts, these shirts, I would ask that a representative of L. St. Hilaire 40 Limitée be produced for such purpose.

Mr. BIGGAR: Having regard to your argument just made with regard to the limitations on examination for discovery under the rules of the Exchequer Court, I do not propose to enlarge those rules so as to give you the privilege of examining anybody that the rules do not give you the right to examine.

Mr. LAJOIE : They are within the jurisdiction of the court. I suppose we ought to go to the judge.

In the
Exchequer
Court.

Mr. BIGGAR : You will have to make a substantive motion. I want to know what you want to do, who you want to examine and why. I am not going to allow you to examine for discovery somebody whom the rules do not authorize you to examine for discovery.

No. 16.
Defendants'
Evidence.

BY Mr. LAJOIE.

Q. Mr. Stewart, what is your answer to that question ?

Donald
Howard
Stewart.

Mr. BIGGAR : The Witness need not answer. I instruct the Witness not to answer.

Examina-
tion on
Dis-
covery—
continued.

Mr. LAJOIE : I am insisting on the question ; so I suppose we will have to submit it to the judge.

BY Mr. LAJOIE.

Q. On advice from Counsel you refuse to answer ?

Mr. BIGGAR : He cannot. That is not a question to submit to the Registrar : " Will you undertake ? " Your examination must be addressed to the question of fact. You are not here for the purpose of getting agreements. Any question of fact the Witness will answer. I certainly instruct the Witness not to make any agreements with you on an Examination for Discovery. If any agreements are going to be made I will make them.

Mr. LAJOIE : Q. Will you obtain the information that I am asking for, Mr. Stewart, with respect to the process of manufacture so as to furnish it at the continuation—at some other date of the present examination ?

Mr. BIGGAR : No. The Witness will not find out from other witnesses any information that is not now information in the possession of the Plaintiff Company.

BY Mr. LAJOIE.

Q. I am insisting on the question, Mr. Stewart. If you refuse to answer I will have to submit the objection.

Mr. BIGGAR : If you want to go before the judge, do so. That is not a question of fact. You are asking for the Witness to do something. You are asking for an agreement.

Mr. LAJOIE : I am not asking for an agreement. I am asking for information. He can secure it. The officer of the company must obtain the information, and the Company is supposed to furnish it, and I claim that the Company Plaintiff is supposed to get it. We will ask the Registrar.

The DEPUTY REGISTRAR : The Witness does not have to answer that question.

Mr. LAJOIE : We will go before the judge. Mr. Registrar, you will have an entry made.

(Counsel went before Mr. Justice Maclean)

Resuming :

The DEPUTY REGISTRAR : Do you want to adjourn or conclude the examination ?

In the
Exchequer
Court.

No. 16.
Defendants'
Evidence.

Donald
Howard
Stewart.
Examina-
tion on
Dis-
covery—
continued.

Mr. LAJOIE : No. Adjourn it ; because that is practically the only subject matter —

Mr. BIGGAR : My Friend ought to conclude the examination. Any questions he wants to ask this Witness he ought to ask now.

Mr. LAJOIE : I am unable to say what further questions — probably there will not be any further questions, if the interrogatories are answered as satisfactorily as I suppose they will be.

Mr. BIGGAR : I object to the examination being adjourned merely because I have agreed to give some information further which the judge has ruled cannot be obtained from the Witness. If my friend has any further questions to ask the witness, it seems to me, Mr. Registrar, that they ought to be asked now. 10

Mr. LAJOIE : Then, Mr. Registrar, I think it would be proper that my friend's statement be made of record. The interrogatories will be answered as soon as possible and probably will be answered within eight days from service, and considering that statement I am satisfied to suspend the examination on discovery, but it is impossible for me to conclude it without first seeing what will be the result of the interrogatory answers.

Mr. BIGGAR : I cannot agree with that statement. What I have agreed to do is already on the notes. The examination in my submission ought to be concluded now. If my friend has any further questions to ask the Witness they should be asked now. I am going to object to the Witness being required to come back merely because my friend says " I am asking to have an adjournment." 20

Mr. LAJOIE : Will we have that point decided again ?

Mr. BIGGAR : I am not going to raise any further questions.

Mr. LAJOIE : I am leaving it that way. As far as I am concerned I am suspending the examination and I am requesting its postponement until the 3rd of December.

Mr. BIGGAR : No. I do not agree. If my friend wants the Witness he must finish with him now. He is not coming back from Montreal for any further questions. 30

Mr. LAJOIE : We will leave the judge to decide that — or, Mr. Registrar, if you would decide it, considering that we are to get certain information as to the process of manufacturing.

THE DEPUTY REGISTRAR : You want me to decide whether the examination should be concluded or adjourned ? I will decide it is an adjournment. Are you leaving the date blank ?

Mr. LAJOIE : I am suggesting the 3rd of December. I am suggesting it.

Mr. BIGGAR : There is no reason for adjourning the examination. My friend has the right to go on. He can apply to go on. 40

Mr. LAJOIE : I am suggesting an adjournment until the 3rd of December. Perhaps, very likely I will not have to avail myself of it if the interrogatories are satisfactory.

Mr. BIGGAR : I will have to ask the judge. I am not bringing Mr. Stewart back.

(Deputy Registrar went before Mr. Justice Maclean.)

Resuming :

DEPUTY REGISTRAR : After seeing the judge, the examination must be concluded.

Mr. LAJOIE : No further questions at present.

EXAMINATION CLOSED.

I certify the foregoing pages to be a faithful transcript of my shorthand notes taken in this case.

JOSEPH HOWE,
Chartered Shorthand Reporter
Sworn Stenographer.

Mr. LAJOIE Continues :—

I will put in as Exhibit “ J ” original letter written by a firm of solicitors to Counsel for Defendants, previously referred to, and attached thereto a copy of letter of December 20, 1935.

Mr. BIGGAR : I have no objection, but I shall certainly be more careful to give my friends no further indication in the future of the course we propose to take at the trial for the purpose of assisting him. That is not in the pleading.

Mr. LAJOIE : I will withdraw that, my Lord.

I will now call Mr. Blancke.

In the
Exchequer
Court.

No. 16.
Defendant's
Evidence.

Donald
Howard
Stewart.
Examina-
tion on
Dis-
covery—
continued.

No. 17.

HAROLD BLANCKE, Sworn. EXAMINED BY Mr. LAJOIE.

Q. Mr. Blancke, I understand that you are the assistant secretary and assistant treasurer of the company defendant and also treasurer and assistant secretary of the Celanese Corporation of America ?—A. That is right.

Q. And that in your capacity as an officer of the company defendant, you have the custody of the Canadian licenses that have been granted the company defendant under the two patents in issue in this case ?—A. That is correct.

Q. Will you produce those licenses ?—A. These are photostatic copies of the original licenses.

Q. You have the actual, original license agreements before you, and you also have a corresponding set of photostatic copies ?—A. That is correct.

Mr. LAJOIE : Perhaps my learned friend would agree to putting in the record merely the photostatic copies which they have already seen ?

Mr. BIGGAR : I would like to know the purpose of the evidence. Is it suggested that the grant of the licenses has any effect on the validity of the patent ?

No. 17.
Defendant's
Evidence.

Harold
Blancke.
Examina-
tion.

In the
Exchequer
Court.

No. 17.
Defendant's
Evidence.

Harold
Blancke.
Examina-
tion—
continued.

Mr. LAJOIE : I am not entering into it just now. I am merely asking whether photostatic copies will be accepted ; if not, I will put in the originals.

HIS LORDSHIP : Mr. Biggar will not object to that ?

Mr. BIGGAR : No, not at all. The difficulty is the relevancy of the evidence.

HIS LORDSHIP : I do not know about that. They were introduced on discovery.

Mr. LAJOIE : Yes, on discovery, My Lord.

HIS LORDSHIP : Yes.

Mr. LAJOIE : Seeing that there is no objection to putting in photostatic 10
copies rather than the originals themselves, I will ask you to file the photostatic
copies as Exhibits J-1, J-2 and J-3, being respectively, J-1, license agreement
of May 23, 1935, between the company defendant and Tooke Brothers, Limited ;
J-2, license agreement of May 28, 1935, between the company defendant and
John Forsythe Limited ; J-3, license agreement of May 28, 1935, between
the company defendant and Cluett-Peabody Company of Canada Limited.

EXHIBIT J-1 ; Filed by Mr. Lajoie : Photostatic copy license agreement
May 23, 1935, between defendant company and Tooke Brothers Limited.

EXHIBIT J-2 ; Filed by Mr. Lajoie : Photostatic copy license agreement 20
May 28, 1935, between defendant company and John Forsythe Limited.

EXHIBIT J-3 ; Filed by Mr. Lajoie : Photostatic copy license agreement
May 28, 1935, between the defendant company and Cluett-Peabody Company
of Canada Limited.

Q. Will you state if royalties have been paid and are being paid by these
licensees under the said license agreements ?—A. Yes, royalties have been paid
regularly.

Q. Has the Celanese Corporation of America granted licenses in the United
States —

Mr. BIGGAR : I object.

Mr. LAJOIE : — on the corresponding United States patent ? 30

Mr. BIGGAR : I object, my learned friend refused to permit any examination
for discovery on that.

HIS LORDSHIP : That is quite correct.

Mr. LAJOIE : But, My Lord, the witness for the plaintiff has established
his licenses. I am merely asking to put in the corresponding evidence. I believe
I objected at the time but Your Lordship said we would deal with it later.

HIS LORDSHIP : State that again, please.

Mr. LAJOIE : The plaintiff through Mr. Loew has testified and has proved
that license agreements had been granted by the B.V.D. company or by the
Trubenizing Process Corporation in the States, and mentioned that it had so 40
many licenses and that so many manufacturers were using it. I am merely
asking to put in the same corresponding evidence with respect to our own
company.

HIS LORDSHIP : Did you object to that evidence ?

Mr. LAJOIE : Yes, but Your Lordship thought you should reserve the objection ; so I am only putting in the same corresponding evidence on our side. In the
Exchequer
Court.

Mr. BIGGAR : I think my learned friend is quite wrong on his facts ; so far as we were concerned we endeavoured to avoid referring to the existence of any licenses granted by the plaintiff. My friend brought out a lot of information in cross-examination which was not asked for in chief, and there may have been some replies to questions directed merely to the extent to which the process followed in the St. Hilaire factory was also followed elsewhere. No. 17.
Defendant's
Evidence.

HIS LORDSHIP : There was evidence as to the sales in the United States. Harold
Blanche.
Examina-
tion—
continued.

10 Mr. BIGGAR : But nothing about licenses.

Mr. LAJOIE : My Lord, I am sorry to say that my learned friend is quite wrong as to his facts. I have the evidence before me which Mr. Loew gave, and Mr. Loew testified that in 1935 he made in the United States installations for licensees ; that there were about 30 in the United States, 2 in Canada, and that there were furthermore 14 in England.

HIS LORDSHIP : You want to ask a corresponding question ?

Mr. LAJOIE : Exactly.

HIS LORDSHIP : I will have to allow you.

Mr. LAJOIE : Q. Will you answer the question ?—A. We did grant
20 licenses under these patents in the United States.

Q. About how many ?—A. Between 50 and 60.

Q. Upon which royalties are being collected ?—A. Yes, sir.

Mr. LAJOIE : Your witness.

CROSS-EXAMINED BY Mr. SMART.

Q. Will you tell me the date of the licenses you referred to in the United States ?—A. I cannot tell you all of the dates. Cross-exam-
ination—

Q. The first one ?—A. It would be about October 1st, 1934.

Q. October 1st, 1934 ?—A. That is right.

Q. And the others were subsequent to that date ?—A. Yes, sir.

30 Q. And all of them would be like these Canadian licenses, for collars ?—
A. I am not certain that they mentioned collars. They would all be similar to the Canadian licenses, yes, sir.

Q. Perhaps you have a copy of the United States licenses ?—A. No, sir, I have not.

Mr. SMART : Well, I understood that my learned friend had the licenses here.

Mr. LAJOIE : Yes, yes.

HIS LORDSHIP : They are in evidence ; they speak for themselves.

Mr. SMART : But the witness has spoken about the United States licenses
40 and has not any documents with him. I do not see how he can undertake to prove written documents.

Mr. LAJOIE : I made exactly the same objection. He has not filed any licenses here.

In the
Exchequer
Court.

No. 17.
Defendant's
Evidence.

Harold
Blancke.
Cross-exam-
ination—
continued.

Mr. SMART : The evidence was not directed to the proof of the licenses ; it was directed to the proof of the use of the process.

Mr. CHIPMAN : Whatever that is.

HIS LORDSHIP : Your question, Mr. Smart, was directed to the Canadian licenses, was it not ?

Mr. SMART : No, my Lord. They speak for themselves. He has told me generally.

HIS LORDSHIP : Well, it is all so much history. It is of no great importance.

Mr. SMART : *Q.* For practical purposes I can take it that the form is the 10 same as the Canadian license ?—*A.* Well, I assume it is the same.

HIS LORDSHIP : As a matter of fact, what form does the Canadian license take ?

Mr. LAJOIE : The licenses are to make and sell collars, bosoms and cuffs that are attached to or are parts of men's shirts or detached collars made and sold only with shirts of identical material (not exceeding two per shirt) hereinafter called " matched " collars (but no other detached or loose collars or any detached or loose bosoms or cuffs), and so forth. They apply to those materials, the making of collars, bosoms and cuffs.

Mr. SMART : That is all I wanted to say, and I think he has stated that 20 the United States licenses apply to the same field as these licenses.

WITNESS : That is correct.

HIS LORDSHIP : I suppose the patent is mentioned, is it ?

Mr. LAJOIE : Oh, yes.

HIS LORDSHIP : It is a strange form of license.

Mr. LAJOIE : It says,

"Whereas the Licensee desires to secure a non-exclusive and non-transferable license under the following Canadian Letters Patent."

HIS LORDSHIP : That will do.

Mr. SMART : *Q.* Perhaps you would look at this shirt which has a license 30 notice on it, " E & W Duro-ized " collar and tell me if that appears to be one of your licensee's shirts ?—*A.* Of course, I would not know ; I am not an expert on collars and shirts.

Q. Well, then, the " E & W " is one of your licensees ?—*A.* I do not recall.

Q. What about Reid & Fort, Philadelphia, is that one of your licensees ?—*A.* I cannot say, I do not recall the name.

Mr. SMART : A witness who cannot tell the names—

HIS LORDSHIP : There was nothing very wrong in asking the witness the number of licensees they have in the United States, but I do not think it is necessary to introduce shirts sold in the United States and examine the witness 40 on that.

Mr. SMART : But this is cross-examination. The witness makes a general statement and comes to court not armed with any material about which I would be entitled to ask.

HIS LORDSHIP : I do not think there is room for cross-examination on this evidence. The only purpose of producing this witness was apparently to present the licenses. In the Exchequer Court.

Mr. SMART : The witness says there are certain licensees. I ask him about one or two names and he does not know. It seems to me that in order to prove the fact as to there being licensees he should know their names. No. 17. Defendant's Evidence.

HIS LORDSHIP : He says he does not know, that is all there is to it. Harold Blancke.

Mr. SMART : I am asking that his evidence as to licensees in the United States should be struck out, because obviously he is not in a position to prove it. Cross-examination—continued.

10 In the first place he is attempting to prove what is established in written documents. If he had come here with the documents that we could have got the information from we might have avoided the necessity of putting the documents in, but surely a witness cannot come and prove what is in effect the contents of fifty or sixty documents without the documents and without knowing who are the parties to the documents.

HIS LORDSHIP : Well, you object to the evidence ?

Mr. SMART : Yes.

HIS LORDSHIP : The objection will be noted.

No. 18.

20 HERBERT PLATT, Sworn, Examined By Mr. LAJOIE.

Q. Mr. Platt, I understand you are a chemist ?—A. Yes.

Q. You are connected with Celanese Corporation of America ?—A. Yes.

Q. Since when ?—A. Since 1924.

Q. Previous to that you were connected with British Celanese Limited ?
—A. Then the British Cellulose and Chemical Manufacturing Company.

Q. It was called by that name ?—A. Yes.

Q. Since when with the British Company ?—A. I do not believe the British Company changed their name until some time after 1924. I do not remember the date, it was after I left them.

30 Q. Starting from what date were you with the British Company whose name ultimately became that of British Celanese Limited ?—A. May, 1921.

Q. Generally what was your work while engaged with each of these companies ?—A. I started in with the British Cellulose and Chemical Manufacturing Company on research and development in connection with yarn and fabrics that they were making, and particularly the processing of those yarns such as dyeing and finishing. I worked directly under Mr. J. F. Briggs who was then chief chemist. After I had been with the Company some while I had practical experience in the dyeing and finishing and processing of yarns and fabrics, and when I left them and came to America I was shooting trouble or
40 shooting problems in the practical end of the dye house and finishing department.

No. 18.
Defendant's
Evidence.

Herbert
Platt.
Examina-
tion.

In the
Exchequer
Court.

Q. In connection with the work you have described, have you had experience in the treatment of cellulose acetate yarns and fabrics?—*A.* That is what the British Cellulose and Chemical Manufacturing Company were making.

No. 18.
Defendant's
Evidence.

Q. Will you state briefly your qualifications in this line of industry?—*A.* I studied for four years full time dyeing finishing and textiles chemistry at the Bradford Technical College in England, and in 1920 I graduated after a four years' course there.

Herbert
Platt.
Examina-
tion—
continued.

Q. Then in 1921 you joined.—*A.* I did not join the British Company until May, 1921. At that time jobs were hard to get, we had then a sort of depression in England, right after the war. I did in fact stay on in college doing some 10 post graduate work until I got a job, rather than loaf around.

Q. And since that time you have been continuously in this particular line?—*A.* Yes, with the American Celanese Corporation.

Q. You might explain a little further the kind of work you carried on in the United States since you arrived there, more particularly in connection with the plant at Cumberland?—*A.* I came to America at the time when the plant at Cumberland, Maryland, was being built up to produce yarn. Up to that time it had not produced yarns. In 1924 we started to build up the plant with the idea of producing yarns there.

Q. You are speaking of the plant of the Celanese Corporation of America?— 20
A. Yes. My job during the first nine months I was in the States was to go around the trade and tell them about celanese yarns and what celanese fabrics were like and the general processing of them.

Q. You mentioned the word celanese. Is that a trade mark?—*A.* I understand it is the trade mark of the Celanese Corporation of America, I suppose it would be described as a synthetic fibre made from cellulose acetate or something of that character. I do not think it has to be that but I think that is what it is.

Q. Then what did you have to do with the plant that was just being put up?—*A.* When we got to September, 1924, it was decided that some difficulty 30 was to be anticipated with the dyeing of the material, the yarn and the fabrics, and it would be a good idea to install a dyeing and finishing plant at Cumberland. I was asked at that time if I could go ahead and do that job, I said I could. So I got, in addition to what I call my propaganda duties, the job of seeing that the dye house was built and installed so that it would be satisfactory for doing the job. And when it was built, from then until 1932 I actually had charge of the running of that dye house and production, and ran a research and development department at the same time—at least I was responsible for it.

Q. You have been since then the head of that research?—*A.* In 1932 the 40 thing had grown so tremendously that it was decided to split the production from the research and development, and at that time I went on to research, development and problems and difficulties, and was unhampered by the routine problem of just turning out production.

Q. That is since 1932?—*A.* Yes.

Q. Since that time you are devoting your time exclusively to research and development?—*A.* That is right.

Q. Have you some knowledge of the early development of that line of industry relating to the use of cellulose acetate textiles?—A. I joined the British company at the time when they were more or less in a period of transition after the war, changing over or rather converting a large plant that had, I believe, been used for making what has been described here as aeroplane dope.

Q. That is what the British plant had been making?—A. It was essentially a war plant. I understand the British government wanted cellulose acetate dope for covering aeroplane wings, and that Dr. Dreyfus was the man approached and that a large factory was built, and after the war it was on their hands, and I think it might be expressed that they had to turn their swords into plow-shares so it went then to the development of yarns.

Q. That dope used on aeroplanes that you speak of, what was it?—A. It was a solution I think of cellulose acetate, but exactly what was in that solution I cannot say.

Q. But essentially a cellulose acetate solution?—A. Yes.

Q. You came in just at the time some change occurred. Will you explain then what that change was?—A. I came in at the time when they were starting to produce yarns.

Q. Previous to that was cellulose acetate in the form of yarn used as a commercial product?—A. Looking back I would say that that was the start of the real commercial development.

Q. Of cellulose acetate textiles?—A. Yes.

Q. You have mentioned that Dr. Dreyfus was responsible for that firm—or what was he in that firm?—A. Which Dr. Dreyfus?

Q. Well you might explain whether there were any doctors Dreyfus connected with those firms?—A. Dr. Henri Dreyfus was the president, I know that because he happened to be the one that gave me the job.

Q. Was that Dr. Dreyfus the brother of Dr. Camille Dreyfus?—A. As far as I know, he is.

Q. What connection did Dr. Camille Dreyfus have with the development of that art?—A. Dr. Camille Dreyfus I only knew by reputation until I came to America. The two brothers of course were always coupled together as working together very closely. There was a war plant in the States too and Dr. Camille Dreyfus was in the States at that time I understand.

Q. Perhaps I can shorten your testimony on the history of the early patents by quoting a short paragraph from The Rayon Industry by Avram published in 1927 by D. Van Nostrand Company, New York. You are familiar with that work?—A. I have read parts of it.

Q. That work is well known?—A. Yes.

Mr. BIGGAR: I object. This witness is being examined in chief by my learned friend.

HIS LORDSHIP: Cellulose acetate is an old product isn't it?

Mr. LAJOIE: As a chemical product it is fairly old but as a commercial textile product it is a new development.

HIS LORDSHIP: Why not ask the witness the question instead of reading from books.

In the
Exchequer
Court.

—
No. 18.
Defendant's
Evidence.

Herbert
Platt.
Examina-
tion—
continued.

In the
Exchequer
Court.

Mr. LAJOIE : I wanted to bring out that these companies and the doctors Dreyfus have been pioneers with this.

No. 18.
Defendant's
Evidence.

HIS LORDSHIP : Ask the witness when the manufacture of cellulose acetate as a commercial product began. I do not want to go into the British trade and the American trade.

Herbert
Platt.
Examina-
tion—
continued.

WITNESS : I can only state what I have read in the literature, that probably the idea had its conception somewhere at the beginning of the nineteenth century in experimental ideas, and various attempts have been made, I suppose on an experimental commercial scale, but the real commercial development started when the British Cellulose and Chemical Manufacturing Company started 10
out after the world war, and some of those things that they produced at that time look rather crude even to-day, because there has been a continuous improvement, and it has developed into a tremendous industry.

HIS LORDSHIP : I understand the celanese industry, if that is what you call it, began after the war ?

Mr. LAJOIE : Yes.

The WITNESS : As a yarn.

HIS LORDSHIP : That is where the industry commenced ?—A. As a yarn, yes, sir.

Q. And it has been continued there and elsewhere since ?—A. Continued 20
there and in America and then Canada.

Mr. BIGGAR : I do not suppose that the Witness is attempting to contradict the fact that Dr. Esselen was connected with the Company that was manufacturing yarns in the United States before the war.

The WITNESS : Not at all sir. But I think he admitted it was more or less experimental. I acknowledge Dr. Esselen—

HIS LORDSHIP : It started in England I suppose on a larger commercial basis.

Mr. LAJOIE : You have heard Dr. Esselen's statement in connection with his knowledge of cellulose acetate yarns and their production in the United 30
States. Have you any comments to make as to that ? How does that concur with your views ?—A. I hardly would regard that particular phase as being a successful commercial development. It has been discontinued.

Q. As a matter of fact Dr. Esselen referred to it as an experimental plant ?
—A. Yes.

Q. Have you any personal knowledge what operations were carried on ?
—A. No. Frankly I did not hear of it until 1924 when I came to the States. I had not heard of it in England.

Q. Can you state generally how this prior attempt that Dr. Esselen has referred to is considered in the trade ?

Mr. BIGGAR : I object. If I guess aright the Witness was probably about fourteen years old at that time. Am I approximately right—before the war ?
—A. Yes, I am thirty-seven years old. I did not hear about it until 1924.

Mr. LAJOIE : Speaking of the history of the art I think we can refer to knowledge generally acquired from text books. 40

HIS LORDSHIP : I think so.

Mr. LAJOIE : And that is where I think I can cut short the examination if I am allowed to read the statement that puts it in a nutshell, and ask the witness whether that is a fair statement.

HIS LORDSHIP : That is generally the history of the art you mean, not the history of British Celanese ?

Mr. LAJOIE : No, My Lord.

HIS LORDSHIP : I think I will allow that, provided it is some reputable book.

10 Mr. LAJOIE : I am reading from the work I previously referred to, at page 9 :

“ The next Rayon process to be developed commercially was the cellulose acetate method, whose product is known to the trade as ‘ celanese.’ Cellulose acetate was first prepared by Naudin in 1869. Cross and Bevan (1890–1894) first attempted to use these acetate of cellulose esters commercially, but their acetylation process was soon displaced by that of Lederer. Workers in the United States, namely Little, Mork and Walker, also made interesting contributions to cellulose acetate technology.”

20 Q. Is that the firm referred to by Dr. Esselen ?—A. I really do not know, I have always assumed that it was.

Q. “ In Germany the cellulose acetate art was also considerably advanced by the work of Bayer & Co., and Knoll & Co.

30 “ Nevertheless the comparatively recent acetone soluble cellulose acetate of H. Dreyfus is the present basis of the ‘ Celanese ’ industry. In fact it can be truthfully said that the ‘ Celanese ’ industry really dates from post-war times. It so happened that the huge factory located at Spondon, England, developed during the war for making the familiar ‘ dope ’ used for dressing aeroplane wings, was faced with serious loss at the close of hostilities. The ‘ dope ’ was the Dreyfus cellulose acetate. To convert the ‘ dope ’ factory of the British Cellulose & Chemical Manufacturing Company into a peace-time pursuit commensurate with the size of the plant and the capital involved was the problem. The most promising field was Rayon, and after many difficulties, technical, industrial and financial, Messrs. H. & C. Dreyfus, with the assistance of A. Clavel and J. F. Briggs, finally placed ‘ Celanese ’ on a practical and profitable footing.”

40 Mr. BIGGAR : Your Lordship will observe how unsatisfactory it is. We had a witness whom my friend cross-examined with regard to his knowledge of cellulose acetate, who was a good deal older, knows vastly more of the early history than this witness, and he carefully refrained from putting this to him. It may be necessary to recall Dr. Esselen, which otherwise would not have been necessary.

HIS LORDSHIP : I do not think it is that serious.

Mr. BIGGAR : Well it is not a proper way to read a long passage to one’s own witness, without putting it to the person who knew the facts.

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HIS LORDSHIP: Well proceed, Mr. Lajoie. The British plant was erected at the instance of the British Government during the war. And the government also supplied a large part of the capital.

Mr. LAJOIE: A million pounds, I am informed.

HIS LORDSHIP: Now let us get on.

Mr. LAJOIE: Mr. Platt, will you state if the quotation I have just read is in accordance or not with your views of the history of the art?—*A.* Since I joined the Company I know that after-war period, and the other part that you have read, I have read other things on it and all I have heard, there is nothing contradictory to it. That is the best I can say. 10

Q. Has it been part of your duty with these companies to inform yourself and make research on the history of the art?—*A.* Yes.

Q. Have you any documents on the history of the art?—*A.* In connection with Dr. Dreyfus, yes.

Q. I understand that you are familiar with the two patents in issue in this case?—*A.* Yes sir.

Q. Now, we have been speaking a great deal in this case of various materials, and perhaps we might facilitate a proper understanding of the various points involved by putting in some samples.

Have you a hank of yarn of cellulose acetate that you could file as an exhibit?—*A.* Yes. 20

EXHIBIT "K": Filed by Mr. Lajoie: Hank of cellulose acetate yarn.

Q. That is the form in which the yarn is produced?—*A.* That is the yarn.

Q. That is pure cellulose acetate?—*A.* That is cellulose acetate.

Q. Is that the yarn from which the cellulose acetate fabric is made?—*A.* Yes, sir.

Q. Reference has been made in this case to celluloid sheet. In order to show what difference, if any, there may be from cellulose acetate would you file a sample of celluloid?—*A.* This is a sample of celluloid which I procured.

EXHIBIT "L": Filed by Mr. Lajoie: Sheet of celluloid. 30

Q. Reference has also been made in the case to solutions of celluloid. Perhaps for proper understanding you might produce a sample of celluloid solution?—*A.* This is a solution I made out of the sheet material.

EXHIBIT "M": Filed by Mr. Lajoie: Celluloid in solution.

Mr. SMART: *Q.* It might be convenient to say what it is a solution in.

Mr. LAJOIE: I understand this a solution of 20 per cent. celluloid and 80 per cent. acetone.

WITNESS: That is so.

Q. From your practical knowledge and experience, will you state if cellulose acetate is thermoplastic or not, and in that connection you might state just what is meant by thermoplastic?—*A.* Cellulose acetate is thermoplastic because it softens with heat. 40

Q. Would you explain further what practical experience you have had in this connection which would account for your statement?—*A.* I know that it softens with heat because we use it for producing certain novelties or finishes

on fabrics. I have particularly in mind the moire fabric which is put out by the Celanese Corporation.

HIS LORDSHIP: It is not questioned that cellulose acetate is thermoplastic.

Mr. LAJOIE: By my friend it has been questioned.

HIS LORDSHIP: Mr. Biggar said in his opening it was thermoplastic.

Mr. BIGGAR: No, my Lord, I said it was not.

HIS LORDSHIP: Did not Dr. Esselen say it was?

Mr. BIGGAR: No, he said it was not.

Mr. LAJOIE: Since you are dealing with moire, will you tell us what is meant by moire, and how you refer to it in connection with thermoplasticity?

10 —A. I think nearly everyone is familiar with the moire or watered effect that we used to see in silk fabrics. The same moire effect is produced in celanese fabrics, but permanent. The Celanese Company have a patent for producing permanent moire.

Q. How is that produced, and how does thermoplasticity come into it?—

A. The permanence is due to the fact that when we pass the two layers of fabric to obtain the moire effect through heated rollers, the material is softened and the effect is permanent. It becomes embedded in there permanently.

20 Q. Would you get that effect if the cellulose acetate was not softened by the heat?—A. If it were not softened by the action of heat, in fact if we do the thing without heat, we do not get the melting on the back of the fabric, and do not get as good a figure, nor do we get a permanent figure on the face of the fabric

Q. And in order to get that permanent moire you have to use heat?—A. We use calendar rolls which are heated.

Q. At what temperature?—A. 150 to 160 Centigrade.

Q. Do you produce a large amount of that moire fabric?—A. Yes, we have actually produced to my knowledge about half a million yards.

Q. Have you other facts that confirm your statement as to thermoplasticity?—A. A similar result occurs in making these embossed fabrics. There again we use rolls heated to 160 C.

30 Q. Have you any experience in connection with ironing fabrics of cellulose acetate?—A. I have ironed lots of cellulose acetate celanese fabrics and if your iron is too cold it does not take out the wrinkles. If it is too hot, you could iron cotton with it, but it will mark the celanese. But there is quite considerable in-between stage where your iron will soften the fabric without melting it.

Q. You are speaking there of an all-Celanese fabric?—A. Yes.

Q. Would that also apply in the case of mixed fabric, partly yarns of cellulose acetate?—A. Where the cellulose acetate yarn was exposed to the surface of the iron.

40 Mr. BIGGAR: I made a statement which I should not, I am sorry I misled Your Lordship. We do not say cellulose acetate was not thermoplastic, we said it was not thermoplastic at the temperature of the kind specified in the patent. Your Lordship will remember Dr. Esselen's evidence was that it might become thermoplastic at 200 C. but not below. I was thinking of thermoplastic in the sense that is used in the patent.

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Mr. LAJOIE: Have you had experience of thermoplasticity of cellulose acetate in the finishing of certain fabrics?—*A.* We have used the same hot roller effect for producing a smooth or partly melted finish on the back of some of our fabrics, that is using a temperature of 150 to 160 C.

Q. In connection with the shine that it may give, have you any experience of the thermoplasticity of cellulose acetate in that connection?—*A.* Yes.

Q. Do you make use of thermoplasticity in this connection?—*A.* Yes.

Q. In what way?—*A.* We treat fabrics between a steel roll and a paper roll, with the steel roll at a temperature of 150 to 160. Then we get a shine which is due to the softening and partial coalescing of the surface yarns on one side of the fabric. 10

Q. Why is it only on one side?—*A.* Because we only apply the heat on one side. We have a paper roll on the other side.

Q. And that is actually used in the manufacture of certain fabrics?—*A.* Certain of our fabrics, yes.

Q. Where you want to get that particular result?—*A.* We have used that where we wanted that effect.

Q. Will you refer to plaintiff's exhibit No. 29 and state if that is a fair illustration of what you have explained about the shine on the one side of the material due to the thermoplasticity of it?—*A.* Yes, that is due to the softening or thermoplastic effect of heat. This simply has been pressed with heat and it is softened and you can see the shine on it and the partial melting. 20

Q. Would you get that effect were it not thermoplastic?—*A.* No sir, not that melting down and that permanent effect.

Q. What is your knowledge or experience on the question of whether or not thermoplastic yarns are affected by humidity?—*A.* Cellulose acetate yarns particularly celanese absorb less humidity from the air under normal conditions than other textile fibres, and the yarns of celanese are resistant to wetting with water. That is, one of the difficulties we have or had in connection with handling the dyeing of the fabric was its resistance to wetting. 30

Q. And how would that resistance to humidity compare with yarns of ordinary cellulose, such as cotton or linen?—*A.* The yarns of cellulose are more easily wetted than the yarns of cellulose acetate, and under normal conditions they absorb more humidity than yarns of cellulose acetate.

Q. Then, reference has been made in the case to viscose yarns—I understand that is regenerated cellulose, is it not?—*A.* That is generally termed regenerated cellulose.

Q. How does the resistance to wet of the cellulose acetate yarns compare with the regenerated cellulose of viscose yarns?—*A.* The viscose yarns absorb more humidity from the air, under normal conditions; and the viscose yarns are easily wet out with water, compared to the wetting out of celanese, cellulose acetate yarns. 40

Q. That is so much as to the resistance to humidity. What about resistance to water, now, outside of humidity proper, what is your knowledge and experience as to the resistance to water of cellulose acetate yarns?—*A.* Cellulose acetate yarns are more resistant to water than other yarns; it is one of the characteristics.

Q. What do you mean by stating that they are more resistant?—A. They are more difficult to wet out; if you put a hank or skein of celanese in cold water, it would take a long, long time to wet out; whereas, a skein of viscose would wet out fairly easily.

Q. It has been suggested I should ask you just what do you mean by wetting out?—A. I mean wet through and through.

Q. I understand that you have carried out certain tests under patent No. 265,960 under various conditions of heat, pressure, time and other factors mentioned in the patent?—A. Yes, sir.

10 Q. I would want you to take up and let us know about these tests which you have made. Have you tested out the application of the patent under various conditions of time?—A. Yes, sir.

Q. Say with an all celanese fabric?—A. Yes sir.

Q. You might perhaps let us know just what you have done and what conditions you have applied and what comparisons you have made. Perhaps it would be more convenient for you to sit down while looking at your notes.

HIS LORDSHIP: The only reason I had for asking him to stand up was, that when sitting down it is difficult to get a witness to speak loudly.

20 WITNESS: That is all right, I will stand up.

Mr. LAJOIE: Q. Now, state what tests you have carried out with variations in time?—A. I made tests on all celanese light taffeta fabric which was plastitized according to the patent with 23 per cent. of the mono methyl xylene sulphonamide.

If I may I will refer to that in later talking as mono oil, as I think it would simplify things if I may.

Q. It is commonly referred to as such?—A. We commonly refer to it in that way.

30 Q. What percentage of that did you take?—A. 23 per cent. on the celanese. It was applied as given in the patent from a solution of 20 parts of the mono oil in a hundred parts of benzole. The celanese was between two pieces of cotton; it was treated in a press; they were treated in a press at 150 degrees Centigrade, with a pressure of 300 pounds per square inch on the sample, and done at times of half a minute, one minute, and two minutes.

Q. Your tests in that connection have compared results with these various times?—A. That is right, sir.

40 Q. If you will just state what results you obtained?—A. Examining the samples for adhesion by testing just how they were stuck together, the first one we would grade as fairly good, the one at one minute as good; and the one at two minutes was very good. The difference was evident.

We then tested the water permeability or water proofness and our result showed that the half minute sample gave what we termed a five centimeter test, and the one minute test was a 20 centimeter test, and the two minute sample gave a 40 centimeter test; indicating that the longer time gave a less permeable fabric to water.

Q. Did you also test as to air permeability?—A. We made tests as to air permeability; the first the half minute, and the one minute sample had on our

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range of scale an eight second air permeability, whereas the two minute sample showed a three minute test to air; indicating that the sample treated for the two minutes was less permeable to air.

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Q. Have you got the actual samples that you have been referring to?—
A. Yes. We made two samples and in some cases three samples. In this test we made, as usual, two or three samples, some of which we used for adhesion tests, and the others for the water and air tests. These are samples the same as the ones used for the test, but were ones which were not mutilated. They showed the character of it.

Q. These three samples will go in as Exhibit "N." I will ask to put in, as Exhibit N-1, the first sample you have referred to was the time limit of one half minute. 10

WITNESS: I will mark those with the time for you, sir.

Q. And the one with the time limit of the one minute I will ask to put in as Exhibit No. N-2; and the third one, with the time limit of two minutes, as Exhibit N-3. If you will, mark the time on them.—*A.* Yes, I believe it would be better, sir.

EXHIBIT "N-1"; Filed by Mr. Lajoie: Sample of material as used for one half minute test.

EXHIBIT "N-2"; Filed by Mr. Lajoie: Sample as used for one minute test. 20

EXHIBIT "N-3"; Filed by Mr. Lajoie: Sample as used for two minute test.

Q. Now, you referred to the inner layer as being a light celanese satin fabric?—*A.* No I said taffeta. That is what we termed our 427,—that is the name we designated it by.

Q. That designates that grade?—*A.* Yes, that designates this particular fabric.

Q. As this may again recur, will you just give us the description of that fabric?—*A.* The construction, as we make that in the raw, is 60 ends in the warp, 60 threads in the warp, and 40 in the filling. It is 150 denier, No. 15 celanese yarn, in both the warp and the filling. 30

Q. Is that what you would refer to as a light celanese?—*A.* That is a light taffeta construction.

Q. Would you explain how the measurements as to water permeability had been obtained, and briefly describe the apparatus which you have used in connection with these measurements?—*A.* This is the essential part of the apparatus that we use for testing the water proofness, water resistance, and water permeability of fabrics. It gives a range measurement on the different treatments. The apparatus consists of a tube and a cap. A small disc is cut out of a sample and is placed between two rubber washers into the cap. The cap is then screwed tightly on to the base of the apparatus, giving a water tight and air tight joint between the fabric and the rubber washers on the bottom of the apparatus. 40

We have the apparatus set up in a vertical position, and we have it set up so that we can feed water into the top of the tube at a constant rate. We have it so arranged that it takes 50 seconds to get water to 50 centimeters above the sample.

We allow this stream of water to start in, it comes down the tube and comes to the sample. Now, as soon as the water appears through the bottom of the sample in a sort of small beads, just the smallest bead so that you can see them shine, then we note the length of the column of water that we have above the sample. If there are no beads coming through the sample up until the time we have got to the 50 centimeter mark above, we then leave the sample to stand and we measure the time that it takes for beads to appear with the whole of the 50 centimeters of water above the sample. That is of course going into the water resistant and waterproof samples; where we have samples of very high permeability, then we also look up and take the number of seconds that the water takes to come through, so that we can convert that back on the basis of centimeters, so that we can get the check on the height of the column.

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In interpreting the results for water permeability, water resistance and waterproofness, we have apparatus for fabric which will stand the water coming to 10 centimeters above the sample, which would be very permeable. Any sample which stood up so that 17 centimeters of water column were above it, before the beads appeared, would still be permeable. Then from 17 centimeters up to 50 centimeters of column, we get resistances to water; that is, it becomes less permeable. If we have a sample which stands up under the column of 50 centimeters for one second, we would term it water resistant or rain resistant. If a sample will hold the column of water for one hour without showing the beads, we would term it waterproof.

Now, the interpretation of the results on permeability, waterproofness and water resistance of those various things are relative to the use that the material is going to be put to. But this interpretation we have found to generally suit our needs for different types of fabrics. That is the water test.

Q. So that applying this explanation of the figures which you have given of 5 centimeters, 20 centimeters, and 40 centimeters, respectively, in those three tests which you have described, that would be the height that the water had reached in the tube before it started to show beads?—A. Before it started to show little pearls, just so that you can see them glistening.

Q. Now, would you briefly describe the system or method which you have used to test air permeability?—A. In our air test it is practically a similar test, but the apparatus is used in this way: The apparatus is reversed. You have your tube and the cap fitting on the tube; the sample placed in the cap between the two washers and screwed on to the apparatus so as to get an airtight joint; and you have this long glass tube coming down from the cap. We attach to the bottom of this tube a piece of rubber tube, and bring it around to another glass tube, in which we place water in this second glass tube so that we can put the air in this tube under a certain amount of pressure. Now we adjust so that the water level in this apparatus is at this mark here—

Mr. CHIPMAN: Q. At what mark?—A. We adjust the level of the water to a mark on the lower part of this tube towards the foot of the tube, by means of the water in this other tube. We then tighten up the top, so that we have the air in this tube before it is enclosed between the sample and the water.

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We then raise the tube. There is another tube attached to this with water in it; it is a long tube and I did not bring it with me. We place the air in this tube; then under a pressure of a 10 centimeter column of water. We place this air under a 10 centimeter column of water pressure; then if the sample is permeable, the air starts to go out through the sample and the water will rise in this tube. We continue to raise the tube giving the pressure—

Mr. CHIPMAN: You mean the other end of it?—*A.* We raise the other end of the tube so as to keep the air here under a constant pressure of a 10 centimeter column of water. We measure the time that it takes for 40 centimeters of air to be forced out of this tube through the sample. If the 40 centimeters of air in this tube is not forced out of the sample within one hour, we then know just how many centimeters of air have been forced out of the tube through the sample by means of the 10 centimeter water column. If the 40 centimeters of air in this tube are forced through the sample in 30 seconds or less, it would be very permeable to air. If the 40 centimeters are forced out of the tube through the sample in from 30 seconds to 3 minutes, it would easily be permeable to air. If it takes from 3 minutes to 30 minutes to force the 40 centimeter column of air through the sample, we would have a sample where the permeability was greatly decreasing, and would get to a point where we would be getting moderate air resistance. If it takes 30 minutes to one hour to force the 40 centimeter column of air through the sample, we term it air resistant. If it takes one hour or more, we then have various degrees of air proofness; and the interpretation would depend upon the use to which the material was going to be put.

Again, the interpretation of results on permeability to air depends on the use to which the sample is going to be put; but we have found this to be a good test for general use.

Mr. LAJOIE: *Q.* I gather, Mr. Platt, from the explanation you have given, that you maintain on the column of air in the tube a constant pressure?—*A.* A constant pressure.

Q. And this constant pressure is the pressure of a 10 centimeter column of water?—*A.* Yes.

Q. And this 10 centimeter column of water is kept, by means of the adjustment of the two levels of the water in the two tubes, which you have described, by keeping them constantly 10 centimeters apart, one higher than the other?—*A.* By keeping the water in the one tube 10 centimeters higher up than the water in the other tube.

Q. Now that you have explained the conditions under which you have carried on the three tests, exhibits N-1, N-2 and N-3, what would be your general conclusions as to the results of these tests?—*A.* The tests taken at the different times?

Q. Yes.—*A.* Well, you show that the longer time under those conditions we are getting more union of the plies and better adhesion or intimacy of union of the plies and the closing of the pores of the fabric would be indicated by the fact that the permeability of the fabric treated at two minutes was less than the permeability of the fabric treated for half a minute or for one minute.

Q. All being in the proportion of the figures which you have mentioned?—
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Q. Now would you describe those three samples which you have put in
as Exhibits N-1, N-2 and N-3 as being soft or stiff or what?—A. They are
semi-stiff. No. 18.
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Q. Now, have you carried on tests with variations in pressures, so as to
show the effect of pressure under these different conditions?—A. Yes, I carried
on similar tests with pressures to those I carried on with temperature. Herbert
Platt.

Q. Was it with the same kind of fabric?—A. I used the same fabric of
10 celanese W-427 taffeta. Examina-
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Q. With the same softening agent?—A. The same softening agent, 23 per
cent. mono oil.

Q. The same cotton fabric?—A. The same cotton fabric for the two
outside layers.

Q. And the same provision as you made your former tests with?—A. Yes,
and the same time and the same temperature.

Q. The times varied with the previous tests?—A. Yes.

Q. In the new tests which you will speak about, what was the time?—
A. They were treated in a hydraulic press for one minute at 150° C.

20 Q. Those two elements were constant?—A. They were constant for the
three samples.

Q. What varied in the tests?—A. The pressure per square inch on the
sample varied.

Mr. BIGGAR: What temperature did you say?—A. 150° C.

Mr. LAJOIE: Will you briefly explain the tests which you have made
with the various pressures?—A. The pressure range was 300 pounds per square
inch on the first sample; 450 pounds per square inch on the second sample;
and 600 pounds per square inch on the third sample.

30 Q. And will you just state what results you have attained?—A. The
adhesion on the 300 pound test sample as good; on the 450 pound sample, good;
and on the 600 pound sample we termed it very good, because it was better than
the others.

Q. When you speak of good and very good, what do you understand by good,
as compared with very good?—A. Good is the sort of adhesion that has been
accepted in the trade on what I have seen on collars. Very good, I would say,
was something which was more than that. After all, this is an all celanese
fabric.

40 Q. So much for the adhesion. Now as to permeability against water, what
would that be?—A. The permeability to water, the 300 pound sample was
graded as 20 centimeters; the 450 pound sample as 25 centimeters; and the
600 pound sample as 40 centimeters.

Q. And what were the results as to permeability to air?—A. Taking the
samples in order, the 300 pound sample was eight seconds, the 450 pound sample
was forty seconds and the 600 pound sample was three minutes.

Mr. LAJOIE: Q. Now, you have the actual samples?—A. Yes.

Q. Corresponding to those tests that you have referred to, the three tests.
Will you file them in the order in which you have mentioned them, namely, as
Exhibit O-1, as to the 300 pounds pressure, and as Exhibit O-2 for the 400 pounds

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pressure, and as Exhibit O-3 for the 600 pounds pressure?—*A.* I have marked them.

EXHIBIT "O-1": Filed by Mr. Lajoie: Sample as to 300 lbs. pressure.

EXHIBIT "O-2": Filed by Mr. Lajoie: Sample as to 400 lbs. pressure.

EXHIBIT "O-3": Filed by Mr. Lajoie: Sample as to 600 lbs. pressure.

Q. What are your conclusions with respect to those three comparative tests with variations in pressure?—*A.* From that I would conclude that the higher pressure gives better adhesion. The higher adhesion gives a sample of less permeability both to air and to water, and that the results on the air and the water would indicate a closing of the pores or interstices with an increase of 10 pressure.

Q. Have you carried on tests with variations in temperature?—*A.* Yes, sir, under very similar conditions.

Q. That is, with the same fabric, 427, previously described?—*A.* Yes, sir

Q. And with the same softening agent in the same proportion?—*A.* Yes, sir.

Q. And the same outer layers?—*A.* Yes, sir.

Q. Now what constant pressure did you use there?—*A.* We used a constant pressure of 300 pounds per square inch and a constant time of one minute. The temperature varied.

Q. Would you explain at what temperatures you made the tests?—*A.* Three tests were made using a temperature of 100 degrees centigrade, 150 degrees centigrade and 180 degrees centigrade. 20

Q. What results did you get with each of these three degrees of temperature?—*A.* At 100 degrees centigrade we got none or only a very slight adhesion. The 150 degrees centigrade sample was good adhesion. The 180 degrees centigrade was very good adhesion.

Q. And of course you attach to the good and very good the same meaning as you have previously described?—*A.* Yes, sir.

Q. Then as to permeability to water?—*A.* The 100 degrees centigrade sample gave a 3 centimeter water test, the 150 degrees centigrade sample gave a 20 centimeter water test, and the 180 temperature gave a one minute water test. 30

Q. Perhaps you might explain what you mean by one minute there as compared with centimeters for the first two?—*A.* One minute means that the 50 centimeter column of water stood over the sample for one minute before small beads occurred, and that sample would be water resistant.

Q. Will you tell us as to the comparative figures for permeability to air?—*A.* The permeability figures to air showed 5 seconds for the 100 degrees centigrade; 8 seconds for the 150 degrees centigrade and 3 minutes for the 180 degrees centigrade.

Q. You have those samples with you?—*A.* Yes, sir. 40

Mr. LAJOIE: Will you file them respectively as P-1 for the sample at 100 degrees centigrade; P-2 for 150 degrees centigrade, and P-3 for 180 degrees centigrade?

EXHIBIT "P-1": Filed by Mr. Lajoie: Sample at 100 degrees centigrade.

EXHIBIT "P-2": Filed by Mr. Lajoie: Sample at 150 degrees centigrade.

EXHIBIT "P-3": Filed by Mr. Lajoie: Sample at 180 degrees centigrade.

Q. What are your general conclusions with respect to those three last tests that you have described?—A. With the higher temperature we got a better union and more adhesion. The water tests indicates that the samples treated at the higher temperature are less permeable to water; and the air test indicates that the sample treated at the higher temperature is less permeable to air, indicating that the high temperature has closed the pores or interstices and made the fabric less permeable.

10 Q. In connection with all these Exhibits, "N," "O" and "P," would you put in as Exhibit "Q" a sample of the lining that you have used and which you have referred to as 427, which you have stated to be 100 per cent. cellulose acetate fabric?—A. Yes, that is the one.

EXHIBIT "Q": Filed by Mr. Lajoie: Sample of lining, referred to as 427.

Q. Has this lining been bleached before being used?—A. No, sir.

Q. For these tests?—A. No, sir.

Q. It was not?—A. No.

Q. So it was used in the same form as appears on Exhibit "Q"?—A. That fabric has not been bleached at all. We did not bleach it.

20 Q. Now, will you file as Exhibit "R" a sample of the cotton fabric that you have used in these tests and which I believe is called nainsook?—A. Nainsook or handkerchief cloth.

EXHIBIT "R": Filed by Mr. Lajoie: Sample of nainsook or handkerchief cloth.

Q. Have you carried on tests, Mr. Platt, that combined variations in pressure and in time?—A. Yes, sir.

Q. Were those tests carried on with the same material, 427, that you have described, or with another one?—A. I have carried out tests with a heavier celanese fabric giving time and pressure differences.

Q. A heavier fabric, a celanese fabric?—A. Yes, sir, all celanese satin.

30 Q. What number do you refer to?—A. That is 279 quality.

Q. Is this a sample of your 279 all cellulose acetate fabric that you referred to?—A. Yes, that is a sample.

Q. Will you file it as Exhibit S?—A. All cellulose satin.

Q. It is an all celanese satin fabric?—A. Yes, all celanese satin fabric.

EXHIBIT "S": Filed by Mr. Lajoie: Sample of cellulose satin fabric.

Q. In connection with those tests, did you make use of any softening agent?—A. No, sir, I did the tests without a softening agent.

Q. Did you use the same sort of cotton nainsook that you have previously referred to for the outer layers?—A. No, I used some shirting fabrics that we had.

Q. At what temperature did you carry on those tests?—A. 210° C.

40 Q. That is a constant temperature?—A. Yes, sir.

Q. Was pressure and time only varied?—A. The pressure and the time were the only things that varied.

Q. Then you might just explain what tests you have carried on?—A. There were six tests. The first three tests were done at 300 pounds per square inch, using time of fifteen seconds, one minute and five minutes.

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Mr. BIGGAR : What was that ?

A. 300 pounds per square inch for fifteen seconds, one minute, and five minutes. A further three samples were made at 600 pounds pressure for fifteen seconds, one minute and five minutes.

Mr. LAJOIE : So as not to confuse, I think we might deal with the first three ones.

Mr. BIGGAR : Give us the third now. What was the third pressure ?—

A. There were only two pressures.

Mr. LAJOIE : *Q.* Now take the ones at the 300 pounds pressure. Have you got them with you ?—*A.* Yes, sir. 10

Mr. LAJOIE : Would you show them, please, and I would ask you to file them as follows : T-1 for one with the time limit of fifteen seconds ; T-2 for one minute and T-3 for five minutes.

EXHIBIT " T-1 " : Filed by Mr. Lajoie : Sample with time limit of fifteen seconds.

EXHIBIT " T-2 " : Filed by Mr. Lajoie : Sample with time limit of one minute.

EXHIBIT " T-3 " : Filed by Mr. Lajoie : Sample with time limit of five minutes.

Q. Will you state what results you got as to adhesion with the three samples 20 you have just filed, T-1, T-2 and T-3 ?—*A.* The adhesion on the first two samples was good, and the adhesion on the five minute sample was very good. The water permeability on the fifteen second sample was 5 centimeters ; on the one minute sample it was five minutes, and on the five minute sample it was one hour or waterproof.

Q. And as to permeability to air ?—*A.* On the air permeability I only compared the fifteen seconds and the five minute sample. The fifteen seconds sample was two minutes air permeability, and the five minutes sample was twenty-four minutes.

Q. Why have you not got the figures for the T-2 ?—*A.* I have not tested 30 every sample I made to air and water permeability.

Q. You have referred to the next three samples as being with a pressure of 600 pounds ?—*A.* Yes, sir.

Q. You have them with you ?—*A.* Yes, sir.

Mr. LAJOIE : Will you file the one at fifteen seconds as Exhibit U-1 ; the one minute as U-2, and the five minute as U-3 ?

EXHIBIT " U-1 " : Filed by Mr. Lajoie : Sample with time limit of fifteen seconds.

EXHIBIT " U-2 " : Filed by Mr. Lajoie : Sample with time limit of one minute. 40

EXHIBIT " U-3 " : Filed by Mr. Lajoie ; Sample with time limit of five minutes.

Q. What results did you obtain with respect to adhesion of these three ?—*A.* The samples made at fifteen seconds and one minute with 600 pounds pressure were all good adhesion ; and the sample made with five minutes at 600 pounds pressure was very good adhesion.

Q. I believe by a mistake you have marked two of them as one minute. One is fifteen seconds, the other one minute, and the other five minutes.—
A. May I see that ?

Q. Did you not make a mistake there ?—A. Yes, I did.

Q. Now as to water permeability, what results did you get ?—A. The fifteen seconds at 600 pounds gave a water test of five minutes. The sample with one minute at 600 pounds gave a water test of forty-eight minutes, and the five minute test at 600 pounds gave a water test of one hour, or waterproof.

Q. What about air permeability ?—A. I tested the first and last samples.
10 There again the fifteen seconds sample gave a thirteen minute air test, and the five minute sample gave a thirty-six minute air test.

Q. What are your general conclusions with respect to these last six exhibits that you have put in ; that is, the T's and the U's ?—A. Well, they indicate that without plasticisers that you can treat cellulose without destroying it, the 210° C., because you can see it, it is still there. They show that you get adhesion of the plies without using plasticiser. They show that with the increased time you get more adhesion or union of plies, increased impermeability to water, less permeability to air, and from that you would conclude more closing of the pores or interstices of the fabric. They also show that the 600
20 pounds pressure, given for the same time as the 300 pound pressure, that it gives a fabric which is less permeable to water, less permeable to air, and therefore indicating more closing of the pores or interstices ; and on a hand test, apparently they were all good adhesions where you can get a direct comparison.

Q. Now, have you carried on tests with variations in quantity of plasticiser ?—A. Yes, sir.

Q. With what kind of a fabric did you make those tests ?—A. With a 427, all cellulose light taffeta.

Q. The first one you referred to ?—A. Yes, the one with the first three tests.

Q. What was the nature of the plasticiser that you used ?—A. I referred
30 to it as a mono oil.

Q. The outer layers were ordinary cotton fabrics ?—A. The cotton nainsook fabric.

Q. At what constant temperature did you make those tests ?—A. At 150° C.

Q. That is as to the temperature ?—A. Yes, sir.

Q. At what constant pressure ?—A. At 300 pounds per square inch of sample.

Q. And the time also was constant ?—A. The time was constant, being thirty seconds.

Q. So only the quantity or proportion of plasticiser varied ?—A. Yes, sir.

Q. Will you tell us what tests you carried out in that direction ?—A. There were four quantities of plasticiser on the cellulose fabric, the first one at fourteen per cent., the next one twenty per cent., the next one thirty-two per cent. and the next one forty-two per cent.

Mr. BIGGAR : Give me those again.—A. Fourteen, twenty, thirty-two and forty-two per cent.

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Mr. LAJOIE : I would ask you to file them respectively as V-1, V-2, V-3 and V-4, if you have them.

EXHIBIT " V-1 " : Filed by Mr. Lajoie : Sample of plasticiser at 14 per cent.

EXHIBIT " V-2 " : Filed by Mr. Lajoie : Sample of plasticiser at 20 per cent.

EXHIBIT " V-3 " : Filed by Mr. Lajoie : Sample of plasticiser at 32 per cent.

EXHIBIT " V-4 " : Filed by Mr. Lajoie : Sample of plasticiser at 42 per cent.

Q. Will you tell us what results you obtained, first as to adhesion ?—A. Yes. As we used an increased amount of plasticiser, we passed from very slight adhesion to fairly good adhesion the last two samples, 32 and 42 per cent. having very good adhesion.

Q. Now would you give us the comparative figures as to water permeability ?—A. The water permeability was 2 centimeters on the 14 per cent. sample ; 3 centimeters on the 20 per cent. sample : 30 centimeters on the 32 per cent. sample and 50 centimeters on the 42 per cent. sample.

Mr. BIGGAR : What was the 20 per cent. sample ?—A. Three centimeters.

Mr. LAJOIE : Q. Now as to air permeability ?—A. The air permeability was five seconds on the 14 per cent. ; six seconds on the 20 per cent. ; one minute on the 32 per cent., and three minutes and forty seconds on the 42 per cent.

Q. What are your general conclusions in connection with these last four mentioned tests ?—A. That the increased amount of plasticiser gives increased softening, greater adhesion and better union of the plies ; that because of the closing of the pores or interstices of the softened fabric we get a higher resistance to water with a higher amount of plasticiser, and a higher resistance to air with a higher amount of plasticiser.

At 1 p.m. Court adjourned until 2.15 p.m.

AFTERNOON SESSION—2.15 p.m.

January 13th, 1936.

HERBERT PLATT, EXAMINATION BY Mr. LAJOIE (continued).

Q. Mr. Platt, have you carried on tests with various qualities of plasticisers with a different inner layer than the one you have referred to in connection with Exhibits V-1, V-4 ?—A. Yes.

Q. With what sort of material ?—A. With a celanese cotton fabric.

Q. A mixed fabric ?—A. Yes, sir.

Q. You might perhaps describe briefly the construction and nature of the mixed fabric ?—A. It is a fabric containing two threads of cotton and one thread of celanese in the warp, and all cotton threads in the filling.

Q. Briefly what would be the construction of the fabric ?—A. It is 120 by 72 with 200 denier celanese and two ends of 40 single cotton in the warp and 40 single cotton in the filling.

Q. When you say 72 in the weft that is in the greigh count. How much is it in the finished count ?—A. It may be slightly less than that in the finished count.

Q. Do you mean less or more ?—A. In the finished count I think it might be slightly less. Offhand I do not just remember what the variation is.

Q. Does it shrink for the purpose of the finished state?—A. That I do not remember offhand.

Q. How would that fabric compare with the one described by Mr. Loew as being the one used in the St. Hilaire plant?—A. I think it is generally about the same. There may be a slight difference.

Q. For all practical purposes.—A. They are very similar.

Q. Now is this a sample of the mixed fabric that you are referring to, and what number does it bear?—A. That is 524 construction of celanese cotton.

Q. That you have just described?—A. Yes, that is what I am referring to.

10 EXHIBIT "W": Filed by Mr. Lajoie: Sample of mixed fabric tested.

Q. Did you use the same mono oil plasticiser that you have previously referred to in connection with exhibits V-1, V-4?—A. Yes.

Q. The same proportion?—A. I used varying proportions.

Q. The outer layers of course were the same grade of cotton, I take it?—A. Yes, cotton.

Q. Was the temperature the same as the previous tests, that is 300 pounds per square inch?—A. Yes, I think conditions were exactly the same.

Q. The time the same, 30 seconds?—A. Yes, conditions of pressure, time and temperature, the same.

20 Q. Temperature 150?—A. Yes.

Mr. BIGGAR: What is the time?—A. Thirty seconds.

Mr. LAJOIE: Will you state briefly what tests you made in this connection?—A. We used varying amounts of plasticizer, namely, 13 per cent., 20 per cent., 35 per cent., and 45 per cent.

Q. You have the samples with you?

EXHIBITS "X-1-4": Filed by Mr. Lajoie: Samples tested with varying amounts of plasticizer.

Q. Will you explain what results you obtained in each case?—A. With the 13 per cent. of plasticizer we had very slight adhesion. With 20 per cent. we had slight adhesion. With 35 per cent. we had good uniting of the plies. With 45 per cent. we had very good uniting.

Q. And as to the water permeability?—A. With 13 per cent. plasticiser our water permeability test was 2 centimeters. With 20 per cent. plasticiser, 3 centimeters; with 35 per cent. the sample showed 5 centimeters. With 45 per cent. the sample showed 5 centimeters.

Q. I notice that the difference of water permeability with respect to the two last mentioned samples, X-3 and X-4, as compared with the previous tests with Exhibits V-3 and V-4 shows greater permeability in the case of the X Exhibits than the V Exhibits. What accounts for that?—A. The X Exhibits are the 524 with the varying plasticisers?

Q. 524 celanese cotton mixed fabric, and the V's are with the 427 fabric?—A. Yes, there is a very noticeable difference.

Q. I am asking what accounts for that difference?—A. Because there is more cellulose acetate thread per square yard in the 427 fabric than in the 524 fabric, and the 524 fabric also contains cotton.

Q. So the reason is that in one case it is all celanese, in the other case it is only a comparatively small proportion of celanese?—A. Yes, sir.

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Q. Would you give the result as to air permeability in connection with the last Exhibit?—*A.* The air permeability tests show, for 13 per cent. plasticiser, 5 seconds, for 20 per cent., 6 seconds, for 35 per cent., 7 seconds, and for 45 per cent. 7 seconds.

Q. I also find from the figures you have just given that permeability to air is much greater with respect to the 35 and 45 per cent. plasticiser, X-3 and X-4, than corresponding Exhibits V-3 with 32 per cent. plasticiser, and V-4, with 42 per cent. plasticiser. In your opinion what accounts for this difference?—

A. The difference in the liner of fabrics. The difference in the inner layers.

Q. What is your general conclusion with respect to all four tests, X-1—X-4?—*A.* They show that the increased amount of plasticiser gives good 10
adhesion and very good adhesion, whereas with the small amounts of plasticiser only very slight adhesion is obtained.

Q. And with respect to adhesion what difference do you find as between Exhibits X-1—X-4 with the mixed fabric as compared with the previous Exhibits V-1—V-4, with the all-Celanese fabric?—*A.* The tests would indicate that it is easier to get adhesion using a liner of the 427 construction than it is with the mixed fabric construction 524 under these conditions.

Q. Applying the same plasticiser, the mono oil, that you have described?—*A.* Yes.

Q. Have you carried out tests making use of different plasticisers with both 20
all-Celanese fabric and mixed fabric of celanese and cotton?—*A.* Yes, sir.

Q. Would you tell us what sort of lining you used for that purpose?—*A.* We used both the all-Celanese 427 liner and the 524 Celanese-cotton liner.

Q. That is the one resembling the St. Hilaire type of lining?—*A.* Yes, sir.

Q. I assume that the cotton used for the outer layers was the same in this case as in the preceding one?—*A.* Yes, that is the nainsook.

Q. Did you also follow the same conditions as to pressure 300 pounds, time 30 seconds and temperature 150 C.?—*A.* Yes, sir.

Q. Then the plasticiser varied of course. Would you tell us what tests 30
you made?—*A.* Using 427 Celanese fabric we used 33 per cent. dimethyl phthalate and we also made a comparative test with 427 fabric using 33 per cent. triacetin as a plasticiser.

Q. Will you produce those two samples as Exhibits Y-1 and Y-2 respectively?

EXHIBITS "Y-1, Y-2"; Filed by Mr. Lajoie: Samples tested, using dimethyl phthalate and triacetin plasticizers.

Q. Will you deal first with Exhibit Y-1, the 33 per cent. dimethyl phthalate?—*A.* It had very good adhesion and union of the plies, and gave a water permeability test of 10 minutes. 40

Q. Did you test air permeability with that?—*A.* No, not on this particular sample.

Q. Now what about Exhibit Y-2, the 33 per cent. triacetin?—*A.* That also had very good adhesion and union of the plies and gave a 20 minute water test.

Q. So the difference there was only in the greater permeability of the first one you mentioned, Y-1 as compared with Y-2?—*A.* Yes sir.

Q. How do those two plasticisers compare as to their activity or effect as a softening agent?—A. The triacetin is softening a little more. They do not show a tremendous difference in softening between those two plasticisers.

Q. What relation has that, if any, to the permeability?—A. The softening effect of these plasticisers is allowing a closing of the pores, or partial closing of the pores and interstices of the fabrics under those conditions of pressure, time and temperature.

Q. Perhaps this is where I should ask you whether softening agents may vary considerably between themselves as to their effect?—A. Yes there is quite a large difference.

10 Q. In that connection how would you class the mixture of 75 per cent. acetone and 25 per cent. methyl or ethyl alcohol—which was it?—A. Methyl.

Q. Methyl alcohol described by Mr. Loew as being the solvent used by the company plaintiff?—A. That is a very good softening agent in that it will soften the yarn in the cold.

Q. Is it one of the most active solvents known for that purpose?—A. I would regard it as a little more active solvent than acetone.

Q. Than pure acetone?—A. Yes sir.

Q. But as compared with other solvents generally, how would you consider its effect?—A. I would say it is among the best solvents or softeners.

20 Q. You mean as being active?—A. For softening at low temperatures.

Q. Now you have carried on some tests with the other fabric as a lining, namely 524, which is the one practically identical with the Plaintiff's?—A. Yes.

Q. What tests have you carried on in that connection?—A. With the 524 fabric we tried various plasticisers, namely 35 mono oil, 33 per cent. dimethyl phthalate and 30 per cent. triacetin.

EXHIBIT "Z-1a, 1b and 1c" : Filed by Mr. Lajoie : Samples of 524 fabric tested with various plasticisers.

30 Q. What result did you get with Z-1a with the mixed fabric 524, 35 per cent. mono oil?—A. We got a good adhesion, union of the plies, and with a 5 centimeter water test, permeability.

Q. I see that there is a very wide difference as regards permeability from the two previous samples, Y-1 and Y-2. What accounts for that great difference?—A. That is due to the difference in the liner or inner layer.

Q. That is in effect that one is all celanese and the other a mixed fabric?—A. One is all celanese and the other contains cotton and less celanese.

Q. That is contains only one-sixth of yarn as celanese?—A. I am not just sure, but I do not think it is quite that much. It is somewhere in the nature of one-half, may be between one-half and one-third roughly.

40 Q. I understood that 524 was the one you have described as having one warp of celanese?—A. That is right.

Q. As against two of cotton, and none in the filler?—A. Yes, sir.

Q. Does not that make one-sixth of the fabric celanese as compared with cotton?—A. I think there may be a little difference in yarn sizes there that you have to take into consideration. I do not just remember that figure.

Q. Anyway that is the construction which is close to the plaintiff's lining that you have described?—A. You will notice that the warp count in 427 is 60 whereas in 524 it is 120.

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Q. You misunderstood me, I was asking whether 524 was not only one-sixth of the warp that was celanese, not as compared with the other fabric. Taking 524 itself?—*A.* Taking 524 in itself there is one thread in every three in that warp celanese, and there is none in the filling.

Q. Now you gave us the result as to Z-1 (a). What about Z-1 (b) with 33 per cent. dimethyl phthalate?—*A.* That again shows good adhesion and union of the plies.

Q. And what is the water permeability?—*A.* Twelve centimeters.

Q. What accounts for the fact that the porosity is somewhat less in this case as compared with Z-1 (a)?—*A.* The dimethyl phthalate in that amount is softening more than the mono oil. 10

Q. And what about the third test, Z-1 (c) using 30 per cent. triacetin?—*A.* The adhesion is good; showing a union of the plies.

Q. And what is the water permeability?—*A.* Water test 5 centimeters.

Q. The same as in the mono oil?—*A.* That is right.

Q. What sort of permeability would you say 5 centimeters is?—*A.* Very permeable.

Q. I show you the sample Z-1 (c), do you consider that to be thoroughly permeable with 5 centimeters that you have described?—*A.* Yes that is very permeable. A 5 centimeter water test would be very permeable. 20

Q. Would you consider that this material would be a proper one for making collars?—*A.* Yes sir.

Q. Have you got an eye dropper?—*A.* Yes, I think so.

Q. Perhaps you could find out whether a drop of water applied on it will go through at once or not.

Q. Has it gone through it once?—*A.* Yes.

HIS LORDSHIP: When this fabric is manufactured, is it manufactured for stock or for order?—*A.* Which fabric do you mean, sir?

Q. These three ply materials?—*A.* Oh, no, no, we naturally do not sell a three ply fabric. You can use any of our fabrics containing celanese, or all celanese, if you wish, for forming this union of plies by using heat and pressure to give a softening, with or without softening agents. 30

Mr. LAJOIE: What are your general conclusions with respect to the use of these different plasticisers, both with an all celanese or a mixed celanese-cotton fabric covered by these Exhibits Y-1 and Y-2, Z-1 and Z-1c, which you have described?—*A.* We have got a better adhesion with the 427 fabric than we did with the 524 fabric, although that is good.

Q. The 427 is the all celanese fabric?—*A.* The 427 is all celanese, which you notice is very good. The 427 fabrics are much less permeable to water because of the more closing of the pores or interstices of the fabric. 40

Q. I notice that with the two 427 samples you have 10 minutes and 20 minutes respectively, which means that that was the time that there was the 50 centimeters of water above it?—*A.* Yes.

Q. Now we would be interested to know whether you had carried on the process making use of hot rollers?—*A.* Yes sir, I mentioned hot rollers.

Q. You might perhaps first describe just what these hot rollers were, how they were constructed and how they were used?—A. It was a calender which had a pair of heated steel rollers, such as we have in our fabric finishing department.

Q. And the fabric was passed between two such rollers?—A. The fabric was passed between two heated rollers.

Q. At various temperatures?—A. Yes, at various temperatures.

Q. Now, what lining did you use in connection with those tests?—A. We used a somewhat heavier celanese fabric, a celanese satin, 279.

10 Q. That you have previously described?—A. I believe I have, yes.

Q. Have you used any softening agents?—A. I have one test without a softening agent, and the other tests with various softening agents.

Q. And the outer layers in all cases?—A. They were cotton print or fabric.

Q. The pressure varied, I suppose?—A. The pressure was the normal pressure we were operating the calender at.

Q. So that it was the same pressure in all cases?—A. Yes.

Mr. BIGGAR: What was it?

20 Mr. LAJOIE: Can you state generally what that pressure was?—A. I could not, because it is a pressure that we have adjusted on that calender for the particular work that we do there, and there is really no means of telling what is on there. It is the normal pressure that we apply on our fabrics.

Q. For carrying what sort of work?—A. As a matter of fact, the machine that we use for moire.

Q. Can you give us the speed of the calender?—A. The speed was six yards a minute, I think.

Q. You might tell us what tests were carried out, and you might define them as you refer to them. What is the first one, which I will ask you to put in as Exhibit Z-2a?—A. The first sample, no softener, was run through the calender with the rolls at a temperature of 260 degrees Centigrade.

30 HIS LORDSHIP: You might sit down, witness, you must be tired.

WITNESS: Thank you.

Mr. LAJOIE: Without any softening agent, do you say?—A. Yes, without any softening agent.

Q. What was the result with respect to adhesion?—A. We had good adhesion.

Q. Would you term this sample Exhibit Z-2a as semi-stiff?—A. Yes, it is semi-stiff.

Q. Did you make any test as to permeability with respect to this one?—A. No, on this particular range of samples we did not make any tests.

40 Q. What is the next one, which I will ask you to put in as Exhibit Z-2b?—

A. This one was plasticized with mono oil.

Q. In what proportion?—A. We used 100 parts of benzine and 40 parts of mono oil.

Q. At what temperature?—A. At 220.

Q. With what result?—A. We had good adhesion of union of the plies.

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Q. Now, what would be the next test in that order?—*A.* As the calender cooled down further and got down to 200 degrees C. we made a trial with dimethyl phthalate.

Mr. LAJOIE : This will be Exhibit Z-2c.

EXHIBIT "Z-2a" : Filed by Mr. Lajoie : Sample, with no softening, run through calender at 260 degrees C.

EXHIBIT "Z-2b" : Filed by Mr. Lajoie : Sample plasticized with mono oil ; at 220 degrees C.

EXHIBIT "Z-2c" : Filed by Mr. Lajoie : Sample, with dimethyl phthalate, at 200 degrees C.

Q. What was the result of this Exhibit Z-2c?—*A.* Good adhesion and union of the plies, semi-stiff. 10

Q. Practically the same result in all three which you have just made?—*A.* Yes.

Q. What is the next one you have got?—*A.* The next one was a trial, wetting the fabric with 70/30 ethyl alcohol and water.

Q. That would act as a softening agent?—*A.* That is a softening agent, warm.

Q. It is a softening agent when warm?—*A.* Yes. It does not soften when cold.

Q. And what temperature did you apply in that case?—*A.* When the calender cooled down to 190 degrees we ran that through the calender. 20

Q. And with what result?—*A.* We got good adhesion and union of the plies.

EXHIBIT "Z-2d" : Filed by Mr. Lajoie : Sample fabric, softened with ethyl alcohol and water, warm ; through calender at 190 degrees.

Q. What is the next that you have?—*A.* The next one was a sample wetted or dampened partly with acetone and run through the hot rolls at 190 degrees C.

Q. With acetone alone?—*A.* Straight acetone. 30

Q. As a softening agent?—*A.* Yes.

Q. And what result did you have?—*A.* We got good adhesion and union of the fabrics.

EXHIBIT "Z-2e" : Filed by Mr. Lajoie : Sample, softened with acetone, run through hot rolls at 190 degrees, C.

Q. Have you any other in that line of tests?—*A.* Yes, there is another sample that we made with acetone when the roll was at 170 degrees.

Q. The same conditions except that the temperature was brought down to 170 degrees?—*A.* That is right.

EXHIBIT "Z-2f" : Filed by Mr. Lajoie : Sample made with acetone, roll at 170 degrees C. 40

Q. And what result did you get with that one?—*A.* We still had good adhesion between the plies.

Q. And all these Exhibits Z-2 were what you termed semi-stiff?—*A.* Yes.

Q. What is your general conclusion with respect to these Exhibits Z-2 that we have referred to, Z-2a to Z-2f?—*A.* Why, it showed that by using

different softening agents, or without softening agents, if you have the necessary temperature, you can get union of plies or adhesion by using hot rollers.

Q. Now, the patent refers to airproof, waterproof fabrics, which it says "may be obtained"—have you carried on tests to find out if such airproof and waterproof fabrics could really be obtained?—A. Yes, sir.

Q. With what lining did you carry out these tests?—A. With our all-Celanese lining, which we term our quality 280.

Q. Is that a heavy celanese fabric?—A. Yes, sir, that is a heavier celanese fabric than we have previously had.

10 Q. I will ask you to file a sample of this heavier 280 celanese fabric which you refer to, as Exhibit Z-3. The outer layers I presume, were the usual cotton fabric?—A. No, the outer layers were sometimes cotton and sometimes silk.

Q. They varied?—A. Yes, sir.

EXHIBIT "Z-3": Filed by Mr. Lajoie: Sample of heavier 280 celanese fabric.

Q. Have you used a uniform plasticizer?—A. There was some variation. In some cases we used 30 per cent. mono oil, and in others we used 20 per cent. mono oil.

20 Q. Perhaps you might deal first with the three with which you used 30 per cent. mono oil, and would you file the first one as Exhibit Z-4a?—A. I cannot do much writing on these samples, as it does not show.

Q. Which is the first one?—A. This is Exhibit Z-4a.

Q. Then will you tell us what tests you made in connection with Z-4a, and would you explain, first of all the particulars as to the nature of the fabrics used, particularly the outside layers, the plasticizer, and so on?—A. The outside layers were cotton, printed cloth; the inside layer was of celanese 280 fabric. The celanese was plasticized with 30 per cent. mono oil, and the fabrics were treated in the hydraulic press under 600 pounds per square inch of sample, at a temperature of 160 degrees, for one minute.

30 Q. Now, under those conditions, what results did you get?—A. We got very good adhesion of union of the plies, a fabric which was waterproof, standing one hour of water; giving an air test of 22 minutes, which would be very air resistant.

Mr. BIGGAR: Did you give the pressure?

Mr. LAJOIE: The pressure, I understand was 600 pounds per square inch. That pressure has been used all through this series of tests with which we are dealing.

EXHIBIT "Z-4a": Filed by Mr. Lajoie: Sample, cotton printed cloth, with inside layer of celanese 280 plasticized with 30 per cent. mono oil, treated in hydraulic press, 600 pounds per square inch, at 160 degrees C. for one minute.

40 Q. Now what is the next sample which you are filing in connection with this series of tests?—A. The next sample is identical with the first one, with the exception that the temperature was 180 degrees C. and the sample was allowed to cool down in the press.

Q. This sample which will be Exhibit Z-4b, has it the same outside cotton as before?—A. I believe it was the same, although it may be a different print design.

Q. But the same quality?—A. Yes.

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Q. And the same plasticizer and the same proportions?—*A.* Yes.

EXHIBIT "Z-4b": Filed by Mr. Lajoie: Sample identical with last one, with exception of temperature.

Q. And you stated the time to be the same except that you let it cool. What difference was there in the cooling of Z-4b and that of Z-4a?—*A.* The temperature was 180 degrees for one minute, but after that we turned the water into the press, and it was in that for another about ten minutes, while the press cooled down.

Q. So that it cooled down more gradually than the preceding one?—*A.* No, it was subject to heat for a longer time; it had a higher temperature for a longer 10 time.

Q. What was the result?—*A.* The result is a very good adhesion and union of the plies, and a sample which is waterproof and gasproof. It stood over one hour under the water test, and with one hour in the air test, there was no loss.

Q. No loss of water and no loss of air?—*A.* No loss of air.

Q. So that you consider this sample Z-4b to be both impervious to water and to air?—*A.* That would be waterproof and airtight.

Q. Now what is the next test you carried on?—*A.* The next test is the same as the one you have just filed, except that we used silk fabric in place of cotton 20 fabric for the outside layers.

Q. That is the only difference?—*A.* That is the only difference.

Q. And what result?—*A.* Good adhesion, union of plies, showing the closing up of the interstices.

Q. Was it good adhesion?—*A.* It was very good. In fact one might almost say that on these samples I should have used another adjective and said "excellent."

Q. Now, as to impermeability to water and air?—*A.* It stood over one hour in the water test, and at the end of the hour of water test there was no loss. It was waterproof and gasproof. 30

EXHIBIT "Z-4c": Filed by Mr. Lajoie: Sample, outside layer silk, same treatment as above.

Q. What was the next test carried out in this series?—*A.* The next test was carried out with 20 per cent. mono oil as a plasticizer on the 280.

Q. Only 20 per cent. instead of 30 per cent.?—*A.* Twenty per cent. instead of 30 per cent.

Q. Was that a cotton outside layer?—*A.* Yes, sir, a printed cotton fabric.

Q. At what temperature?—*A.* 200 degrees Centigrade.

Q. For what time?—*A.* Thirty seconds.

Q. What was the result as to adhesions?—*A.* Very good adhesion. 40

Q. And what as to permeability to water?—*A.* The permeability to water was over one hour and waterproof.

Q. And as to air?—*A.* One hour, and it would be gasproof.

EXHIBIT "Z-4d": Filed by Mr. Lajoie: Sample, 20 per cent. mono oil, on 280; printed cotton fabric outside layers; 200 degrees C. for 30 seconds.

Mr. BIGGAR: Still 600 pounds?

Mr. LAJOIE : The same pressure all through.

Q. Now have you another test ?—A. Yes, here is a sample with silk fabric on the outside, under the same conditions as for the last sample.

Q. The same conditions as Exhibit Z-4d ?—A. Yes.

Q. The only difference being that the outside layers were silk ?—A. Yes.

Q. What was the result as to adhesions ?—A. Very good, sir.

Q. And what as to permeability ?—A. It was over one hour under the water test, and it would be waterproof.

10 Q. And as to permeability to air ?—A. As to permeability to air, at the end of the hour 25 centimeters of air had gone out of our tube ; that would be 25 centimeters out of 40 had gone out of the tube. Still, it would be quite resistant to air.

Mr. BIGGAR : You call that 25 centimeters on the scale you have given us ?—A. Yes, it would be under some circumstances and conditions airproof, depending on the purpose.

Mr. LAJOIE : But not as airproof as the other samples ?—A. No, sir.

EXHIBIT " Z-4e " : Filed by Mr. Lajoie : Sample, silk outside fabric, tested under same conditions as last.

20 Q. What are the general conclusions with respect to these tests of Exhibits Z-4a to Z-4e, of this series of Z-4's ?—A. By the use of plasticizer of 20 or 30 per cent. mono oil, with a pressure of 600 pounds at temperatures of 160 and 180 you can get waterproof and gasproof fabrics, using an all-celanese liner.

Q. Now, have you carried on tests in connection with the use of various solvents along with the use of lining 524 that you previously referred to, and which is for all practical purposes identical to the St. Hilaire lining—the lining used in the St. Hilaire plant ?—A. Yes, sir.

Q. You have used, I understand, various solvents ?—A. Yes, sir.

30 Q. Was it cotton nainsook fabric for the outer layers all through ?—A. Yes, sir.

Q. And I take it that the pressure, time and temperature vary ?—A. Yes, the pressure, time and temperature vary.

Q. Will you deal with the tests which each of these represents ?—A. The first test deals with 75/25 acetone methyl alcohol.

Q. That is the solvent ?—A. Yes.

Q. Yes, and then how does this compare with the solvent used at the St. Hilaire plant, as described by the witnesses ?—A. It is the same.

Q. And then ?—A. The fabric was padded between pads, dampened with 75/25 acetone alcohol for 12 seconds—

40 Q. At what temperature ?—A. Cold. After which it was placed in a cold press.

Q. For how long ?—A. For 15 seconds.

Q. At what temperature ?—A. Cold.

Q. And at what pressure I meant ?—A. Twenty pounds of air.

Mr. LAJOIE : Q. So there was not any heat used in that process that you have just described ?—A. No, sir.

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Q. What result did you get with respect to adhesion under those conditions ?
—A. When we took it out of the press it was still wet.

Q. Yes ?—A. And the thing pulled apart very easily.

Q. Did you allow it to dry ?—A. Yes, we allowed it to dry in the air.

Q. What was the adhesion after drying ?—A. There was practically none.
There was practically none, I would say.

Q. You have that sample with you ?—A. Yes, sir.

Mr. LAJOIE : Would you put it in as Exhibit Z-5a.

EXHIBIT " Z-5a " : Filed by Mr. Lajoie : Sample tested with 75/25 acetone
methyl alcohol, cold, 15 seconds at 20 pounds air pressure. 10

Q. Will you tell us whether you made a test as to water permeability on
that sample ?—A. Yes, sir.

Mr. BIGGAR : What was the last, Z-4e ?

Mr. CHIPMAN : Z-5a.

Mr. BIGGAR : No, the last ?

Mr. CHIPMAN : Yes, 4-e.

Mr. LAJOIE : Q. I believe I asked you whether you made a test as to
permeability to water ?—A. Yes, sir.

Q. With what result ?—A. The water test showed 5 centimeters, and our
air test showed 5 seconds. 20

Q. That would be, I take it, great porosity ?—A. Yes, sir, that would be
very permeable to both air and water.

Q. For purposes of comparison, did you test a similar piece but untreated ?—
A. Yes, sir.

Q. That is, testing as to permeability and to air. I suppose you have such
a sample in your possession ?—A. Yes, sir.

Mr. LAJOIE : Will you file it as Exhibit Z-5b ?

EXHIBIT " Z-5b " : Filed by Mr. Lajoie : Similar sample as to Exhibit Z-5a,
but untreated.

Q. Will you tell us what results you got as to permeability to water and to
air so that we may make a comparison ?—A. Yes, sir. We got a water test of
three centimeters and an air test of 4 seconds. 30

Q. So that it was slightly more permeable when untreated than when
treated cold as you have previously described ?—A. Yes, sir.

Q. Now what was the next test carried out ?—A. The next test was made
with acetone alcohol and putting the goods into a hot press ; that is, 50 pounds
of steam for 15 seconds with 35 pounds of air.

Q. Did you say whether that was using the same solvent as described for
Exhibit Z-5a ?—A. Z-5a, Yes, sir.

Q. What result did you get as to adhesion ?—A. We got good adhesion. 40

Q. And with what result as to permeability ?—A. The water test was
8 centimeters and the air test was 5 seconds.

Q. What was the next test carried on with this material and with this
solvent ?—A. The next test—

Mr. LAJOIE : Excuse me, will you file that as Exhibit Z-5c ?

EXHIBIT "Z-5c": Filed by Mr. Lajoie: Sample tested with acetone alcohol in hot press with 50 pounds of steam, 15 seconds 35 pounds of air.

Q. The next test was made with the same solvent?—A. Yes, sir.

Q. Will you give the particulars?—A. The temperature was 35 pounds of steam, the time was 20 seconds, and the pressure was 45 pounds of air.

Q. And what was the result?—A. Good adhesion and union of the plies.

Q. And as to permeability?—A. The permeability to water was 8 centimeters and to air 6 seconds.

10 Q. So permeability in this case was pretty much the same as for the preceding sample Z-5c?—A. Yes, sir, it was.

Mr. LAJOIE: Will you file the last one as Z-5d?

EXHIBIT "Z-5d": Filed by Mr. Lajoie: Sample tested under temperature of 35 pounds of steam, time 20 seconds, pressure 45 pounds of air.

Q. Did you carry out still another one with the same solvent?—A. Yes, sir.

Q. Please describe it?—A. It is the same as the previous one, Z-5d, except that the air pressure was 90 pounds.

Q. Double the pressure of the preceding one?—A. Yes, sir.

Q. What was the result as to adhesion?—A. Good adhesion.

20 Q. And as to permeability?—A. The water permeability test showed 9 centimeters and the air test showed 7 seconds.

Q. That would be a slight increase over the previous one?—A. Yes, sir.

Q. An increase in impermeability?—A. Yes, sir, less permeability.

EXHIBIT "Z-5e": Filed by Mr. Lajoie: Sample tested the same as Exhibit Z-5d, except that air pressure was 90 pounds.

30 Q. These tests, Z-5a, to Z-5e, that you have described, were all made using the acetone mixture that you have described similar to what is used in the St. Hilaire plant, except Exhibit 5-b which was the non-treated sample. Will you tell us what your general conclusions are with respect to the effect of temperature, time and pressure on these in carrying out this process under the conditions you have mentioned?—A. The indications from those tests are, in fact, you can definitely see between Z-5d and Z-5e that increased pressure gives a slight increase in impermeability. It shows that the samples treated in a heated press with pressure are less permeable than the fabric before it was given any treatment. Even the sample with only slight adhesion, very slight adhesion, practically no adhesion, is if anything less permeable to air and water.

Q. As to adhesion, have you any remarks to make?—A. Oh, I would say, with the exception of the Z-5a and Z-5b, they are good adhesions.

Mr. BIGGAR: With the exception of those?—A. Yes, sir.

40 Mr. LAJOIE: Q. Z-5b is the untreated one, and there would be no adhesion there?—A. Yes.

Q. And Z-5a is the one treated in the cold without any heat at all?—A. Yes, sir.

Q. How does the adhesion obtained under those conditions compare with the other tests where heat has been resorted to?—A. It is practically none.

Q. None as compared with?—A. With good.

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- Q. Now did you carry out any tests using another solvent?—A. Yes, I used alcohol, ethyl alcohol and water, 70/30.
- Q. In proportions of 70/30?—A. Yes, sir.
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- Q. That would be also a softening agent?—A. That is a softening agent, warm.
- Q. When warmed?—A. Yes, not in the cold.
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- Q. What tests have you carried out with other solvents?—A. I have soaked the fabrics in alcohol/water and then subjected them in a press to a temperature of 75 pounds steam for 20 seconds with 50 pounds air pressure.
- EXHIBIT "Z-6a": Filed by Mr. Lajoie: Sample tested at temperature of 10 75 lbs. steam for 20 seconds with 50 lbs. air pressure.
- Q. What result did you get as to adhesion and as to permeability?—A. The water permeability tests showed 7 centimeters and the air tests showed 5 seconds.
- Mr. BIGGAR: How many centimeters?
- WITNESS: The sample had good adhesion.
- Mr. LAJOIE: 7 centimeters for water permeability and five seconds for air permeability.
- Q. Have you another test with this same solvent? That is, with Exhibit Z-6b, and state under what conditions it was made?—A. Yes. The fabric was wetted with 70/30 alcohol water and placed in a press with 50 pounds 20 steam pressure, time 20 seconds, with an air pressure of 35 pounds.
- EXHIBIT "Z-6b": Filed by Mr. Lajoie: Sample tested with 70/30 alcohol water in press with 50 lbs. steam temperature, time 20 seconds, air pressure 35 lbs.
- Q. With what result?—A. The adhesion was good. The water test was 4 centimeters and the air test was 5 seconds.
- Q. You have stated that this particular solvent becomes active only when heated?—A. Yes, sir.
- Q. And therefore became effective only when in the press?—A. Only when 30 it got warm.
- Q. In connection with the previous Exhibits, Z-5a, Z-5c, Z-5d and Z-5e, when was that solvent applied?—A. Z-5e and Z-5—
- Q. A, C, D and E, the ones using the acetone mixture?—A. The solvent was applied to the fabrics using felt pads which were saturated in acetone.
- Q. I want to know when, was that before going into the press?—A. Before going into the cold press, yes.
- Q. How does that compare with the process carried on at the St. Hilaire plant as described by the witnesses?—A. I would say it is similar in that the fabric, the layers of fabric wetted with acetone were subject to cold pressure
- Q. Would you mind repeating that?—A. I would say it is very, very 40 close, in that the fabrics, the layers wetted with acetone are subject to pressure. in the cold.
- Q. Well, is that different from the St. Hilaire method?—A. Yes, I do not have a wet press.
- Q. You do not have?—A. I say I do not have a wet press.
- Q. Yes, but is the wet press heated in the St. Hilaire process?—A. No, sir.

- Q. In both cases the solvent is applied at room temperature?—A. Yes, sir.
- Q. And then transferred over at once to the hot press?—A. Yes, in the samples when in the cold press, it was transferred into the hot press.
- Q. It was not transferred right away?—A. Oh, yes, without giving any chance for the solvent to evaporate.
- HIS LORDSHIP: What is a high boiling solvent?
- Mr. LAJOIE: It means the boiling point is high, and, therefore, is not as volatile as a low boiling solvent. The boiling point is low and therefore more easily evaporates.
- 10 Q. So much, Mr. Platt, for the tests that you have carried out in connection with Patent No. 265,960. Have you carried out any tests in connection with Patent No. 311,185 referring to the stiffening material?—A. Yes.
- Q. By means of the application of a solvent and its subsequent removal?—A. Yes, sir.
- Q. Would you state briefly what tests you have carried out?—A. I dipped a piece of 239 of cellulose satin in ethylene dichloride and allowed it to dry at room temperature. Finally dried it at about 40 centigrade.
- Q. Finally what?—A. Allowing it to dry at room temperature, and finally dried it at 40 degrees centigrade.
- 20 Q. That would be above room temperature?—A. A little, just warm.
- Mr. LAJOIE: You have that sample, of course, which I would ask you to file as Exhibit Z-7a.
- EXHIBIT "Z-7a": Filed by Mr. Lajoie: Sample of 239 cellulose satin dipped in ethylene dichloride.
- Q. Now, that is an all-celanese fabric?—A. Yes. There is a sample before treatment and after treatment.
- Q. You have both attached so as to show the difference before treatment and after treatment?—A. Yes.
- Q. I take it, of course, that the smooth and soft fabric is the untreated
- 30 fabric?—A. Yes.
- Q. Whilst the other one, which feels and looks stiffer is the treated one?—A. That is right.
- Q. And that was with ethylene dichloride?—A. Yes, sir.
- Q. What is your opinion as to the possible use as a stiffening material of the treated fabric, Exhibit Z-7a?—A. It is stiff, and it will retain its stiffness.
- Q. It will retain its stiffness in water?—A. Yes, sir.
- Q. Did you also test with any other material?—A. Yes, sir, I made a test with a celanese rayon crepe fabric.
- Q. Under what number do you know that material?—A. It is a 488
- 40 construction.
- Q. In what does it differ from the previous one?—A. It has celanese warp and rayon crepe filling.
- Q. It is not pure celanese?—A. No, sir.
- Q. Did you apply the same solvent to it, namely ethylene dichloride?—A. Yes, exactly the same as the previous one.
- Q. How did you apply the solvent?—A. By dipping.

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Q. As in the previous case?—A. Yes, sir.

Q. And dried in the same way?—A. Yes, sir.

EXHIBIT "Z-7b": Filed by Mr. Lajoie: Sample of cellulose warp and rayon crepe filling tested with ethylene dichloride.

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Q. Has that also attached a treated and an untreated fabric?—A. Yes, sir.

Q. For the purpose of the record would you just identify them?—A. The one with the label on is the stiff one.

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Q. Did you try some other material?—A. Yes, I tried a celanese-silk fabric.

Q. How does that compare with the preceding materials as to its composition?—A. It is a little lighter fabric with a celanese warp and a crepe silk filling. 10

Q. Did you carry the test out under the same conditions?—A. Yes.

Q. As previously explained?—A. Yes, the same, with ethylene dichloride, just the same as the previous one.

EXHIBIT "Z-7c": Filed by Mr. Lajoie: Sample of celanese silk fabric treated with ethylene dichloride.

Q. That is the one filed as Exhibit Z-7c?—A. That is the stiff one.

Q. Any other material used?—A. Yes, sir, I made a trial with 524 fabric.

Q. Is that the one corresponding to the lining used at the St. Hilaire plant?— 20
A. Yes, sir.

Q. And therefore a mixed fabric?—A. Yes, sir.

Q. Applying the same solvent?—A. Yes, sir. Because this contained a small amount of celanese we gave this two dips.

Q. And then you let it dry in the same way as previously explained?—A. Yes, sir.

Mr. LAJOIE: Will you file that one as Exhibit Z-7d?

EXHIBIT "Z-7d": Filed by Mr. Lajoie: Sample of 524 fabric dipped twice in ethylene dichloride.

Q. Did you make tests with any other solvent?—A. Yes, sir. 30

Q. Other than ethylene dichloride?—A. Yes, sir.

Q. Will you state what tests?—A. I made a test spraying 524 fabric with acetone.

Q. 524 is the same as just previously referred to?—A. Yes, sir.

Q. What solvent did you use there?—A. Acetone.

Q. How did you apply the acetone?—A. Sprayed.

Q. How did you dry it?—A. Just dried it. This was allowed to dry—
air-dried.

Mr. LAJOIE: Will you file that as Exhibit Z-7e?

EXHIBIT "Z-7e": Filed by Mr. Lajoie: Sample of 524 fabric sprayed with 40
acetone.

Q. Did you try any other solvent?—A. Yes, sir.

Q. Will you explain?—A. I tried spraying 75/25 with acetone methyl alcohol.

Q. Is that the solvent used at the St. Hilaire plant and as described by the Witnesses?—A. Yes, sir.

Q. And applied to the same fabric as is also claimed to be used at the St. Hilaire plant?—A. Yes, sir.

Q. How did you treat this sample?—A. It was sprayed with acetone-methyl alcohol and allowed to dry.

Mr. LAJOIE: Will you file that as Exhibit Z-7f?

EXHIBIT "Z-7f": Filed by Mr. Lajoie: Sample of 75/25 sprayed with acetone methyl alcohol.

Q. Would you give your opinion as to the possible use of this treated fabric, Z-7f, as a stiffening material?—A. It is good and stiff.

10 Q. Have you got any other ones?—A. Yes, I have a sample of all-celanesse satin fabric, 279, treated with ethyl acetate.

Q. Was that also sprayed and dried in the way you have explained?—A. Yes, sir, that was sprayed and dried.

Mr. LAJOIE: Will you file that as Exhibit Z-7g?

EXHIBIT "Z-7g": Filed by Mr. Lajoie: Sample of all-celanesse satin fabric, 279, treated with ethyl acetate.

Q. What are your—general conclusions with respect to these tests represented by Exhibits Z-7a to Z-7g?—A. That the treatment has stiffened
20 them.

Q. And as to the possible use of the resulting product as a stiffening material?—A. I think they could be used as stiffening material because they will hold the stiffness.

Q. Referring to the prior arts, have you made any test to illustrate the product that one would obtain from following the teachings of Oliver, U.S. Patent No. 607,454 of 1898?—A. Yes, sir.

Q. You might state briefly the conditions under which you have operated under the teachings of that patent?—A. I impregnated two layers of cotton duck fabric with a liquid celluloid consisting of 20 per cent. celluloid, 10 per cent. castor oil and 70 per cent. acetone, and cemented the two layers together.
30 I then surrounded these two strips with a third strip of cotton duck impregnated with the liquid celluloid.

Q. Would you show the material that you have used to produce the product?—A. I have not a sample of the cotton duck.

Q. Well you have the product that you finally produced?—A. That is it.

EXHIBIT "Z-8": Filed by Mr. Lajoie: Sample produced following Oliver patent.

Q. Was this produced strictly under the teachings of the patent?—A. Yes, sir.

40 Q. Have you also applied the teachings of Crowell, U.S. Patent No. 665,596?—A. Yes, sir.

Q. Will you explain the operations carried out?—A. I attempted to make boxtoe material as described in the patent. The first experiment consisted of treating layers of cheesecloth with a mixture of glue and sodium silicate. These when partly dry were compressed together to force this material into the fabric, and then the layers were joined together as mentioned in the patent, using a

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solution of 10 glue, 5 glucose and 20 water. The patent does not state what quantities, it just says use glue and glucose.

The second sample was made from two sheets of cotton nainsook fabric. Each of these sheets was first impregnated with a nitrocellulose solution in acetone as a size, which was allowed to dry partly and forced into the interstices and fill up the fabric subject to pressure, and then two layers were joined together using the glue and glucose solution, producing the second sample.

EXHIBITS "Z-9a and Z-9b": Filed by Mr. Lajoie: Samples made following the Crowell patent.

This is the four plies together (9a) and this is a sample of the fabric before 10 treatment, the single ply and the double ply attached together (9b).

Q. In your opinion what use could be made of a product such as those two exhibits you have just produced?—A. There is excellent boxtoe material for making shoes.

Q. Would you term this a flexible material?—A. No, that is very stiff, but it could be softened and formed.

Q. Did you try out the Kempshall U.S. Patent No. 768,129?—A. Yes, sir.

Q. Will you explain your operations?—A. I took a piece of cotton duck and treated it with celluloid in a semi plastic condition, then placed it between 20 two sheets of celluloid and subjected it to heat and pressure.

Q. And then?—A. Then I got a composite material of fabric embedded between two sheets of celluloid.

Q. Will you file as Exhibits Z-10a a piece of canvas, and Z-10b the celluloid sheet used for this purpose, and Z-10c the final product?—A. That is the duck for Oliver too.

EXHIBITS "Z-10a, Z-10b and Z-10c": Filed by Mr. Lajoie: Samples made following Kempshall patent.

Q. Another sample which you explained to have been made under this patent Exhibit 37, will you state how Exhibit Z-10c compares with it and state 30 which of the two in your opinion is the most representative?—A. This Z-10c is a thicker material and looks more like a golf ball material than Exhibit 37. I think this sample Z-10c looks more like what the patent was intended to produce.

Q. You consider Z-10c more representative?—A. I think so.

Q. Have you carried out the teachings of the patent to Henri Dreyfus, British Patent No. 173,021, and if so will you state what operations you did?—A. Yes, I did some experiments on that. The first sample I made was with a wire mesh fabric, I applied to it a 10 per cent. solution of benzyl cellulose in benzene and allowed the sample to dry, producing a glass substitute material, which apparently is the type of thing that the patent was referring to. 40

Q. Did you carry out strictly the teaching of the patent in carrying out that work?—A. Oh yes, sir. The patent says you can use a solution of benzyl cellulose and apply it to wire mesh fabric and dry it.

Q. And that is what you have done, producing this article which I will ask you to file as Exhibit Z-11a?—A. Yes.

Q. Is that the only type of article that can be made under the teachings of the patent?—A. The patent refers to open mesh textile fabrics; so I used a

sample, following one of the methods suggested in the patent, that is by first making a film of benzyl cellulose, and then attaching the film of benzyl cellulose to the open mesh cheesecloth fabric by means of heat and pressure.

Q. And producing this result?—*A.* Yes.

Mr. LAJOIE: Which I will ask you to file as Exhibit Z-11b.

EXHIBIT "Z-11a": Filed by Mr. Lajoie: Sample of benzyl cellulose applied to wire mesh, as a glass substitute.

EXHIBIT "Z-11b": Filed by Mr. Lajoie: Sample of film of benzyl cellulose to open mesh cheesecloth fabric by heat and pressure.

10 *Q.* Did you carry out any other alternative?—*A.* Yes, the patent seemed to particularly talk about open mesh metallic fabrics, so I produced a sample of very open mesh, using wires to represent the fabric, and I embedded them in a film. I did not have any wire netting, but that could visualize it.

EXHIBIT "Z-11c": Filed by Mr. Lajoie: Open mesh of wires embedded in a film.

Q. Have you any other alternative which you carried out?—*A.* Yes we put an open mesh silk lace fabric and coated it with a solution of benzyl cellulose.

Q. Will you file this product as Exhibit Z-11d?—*A.* Yes.

20 *EXHIBIT "Z-11d":* Filed by Mr. Lajoie: Open mesh silk lace fabric coated by solution of benzyl cellulose.

Q. Have you carried out any other application of the patent?—*A.* Yes, we made a couple more samples, I think.

Mr. BIGGAR: I suppose it would not be fair to say that this is a characteristic of the patent, with many varieties as you like?

Mr. LAJOIE: What is the next one?—*A.* This sample was made by using 15 per cent. benzyl cellulose solution in benzene and containing some castor oil. It was put on the gauze and allowed to dry—on a wire mesh fabric; and the solvent was allowed to evaporate. That gives the idea of the opaque.

30 *Mr. LAJOIE:* I file this as Exhibit Z-11e.

EXHIBIT "Z-11e": Filed by Mr. Lajoie: Sample made by using benzyl cellulose solution in benzene, and containing some castor oil.

Q. Did you make any others?—*A.* Yes, we made one by attaching to a cheesecloth fabric by heat and pressure a film of benzyl cellulose which contained castor oil. There is the film, and there is the open mesh fabric.

Mr. LAJOIE: Will you file this as Exhibit Z-11f?

EXHIBIT "Z-11f": Filed by Mr. Lajoie: Sample made according to a teaching in Dreyfus patent.

40 *Q.* Do you consider these samples Exhibits Z-11a to Z-11f as samples of the product obtainable under that patent?—*A.* Yes, sir.

Q. Have you tried out the Le Faguays Swiss patent No. 53,333?—*A.* Yes, sir.

Q. Please explain what you have done?—*A.* I made three samples which would be suitable, I believe, for apparatus for surgery and orthopaedic uses,

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and the manufacture of surgical apparatus. The first one was made by placing felt on acetone, wetting a celluloid sheet and subjecting it to pressure.

Q. That is one of the alternatives under that patent?—*A.* Yes, it says you should use one flexible sheet; it may be cloth, leather, felt or rubberized fabric, superficially united to the celluloid sheet.

EXHIBIT "Z-12a": Filed by Mr. Lajoie: Product made according to teaching in Le Faguays Swiss patent No. 53,333.

Q. Have you made any other application of it?—*A.* Yes, I made a second sample, where we attached to a celluloid sheet wet with acetone, two pieces of cotton duck fabric, that is heavy cotton fabric. 10

Mr. LAJOIE: Will you file that as Exhibit Z-12b?

EXHIBIT "Z-12b": Filed by Mr. Lajoie: Sample made according to teaching in Le Faguays Swiss patent No. 53,333.

Q. Have you made any other application of it?—*A.* Yes, the patent said you might use three sheets of celluloid and, I think, two layers of fabric—it covers the making of multiple layers; so I have a sample that we made, where I wet the inside layer of celluloid with acetone, and then wetting the two sides of the outside layers of celluloid with acetone, making by means of pressure a composite material which would consist of three layers of celluloid sheets and two layers of cotton duck. 20

Mr. LAJOIE: Will you file that as Exhibit Z-12c?

EXHIBIT "Z-12c": Filed by Mr. Lajoie: Sample made according to teaching in Le Faguays Swiss patent No. 53,333.

Q. Those are the only applications of this patent that you made?—*A.* Yes, sir.

Q. I believe you tried one other Swiss patent, No. 77,238?—*A.* Yes, sir.

Q. Would you explain what you have done?—*A.* Yes. That patent seems to cover the use of paper or duck along with a solution of celluloid.

HIS LORDSHIP: What patent is that that you are talking about?—*A.* Nachmann. 30

Mr. LAJOIE: The Nachmann Swiss patent, my Lord, No. 77,238. That is practically the last patent cited by my learned friend.

Q. Would you state what you have done as to that?—*A.* The first sample we made under that patent consisted of six layers of paper which were treated with a celluloid solution and allowed to partly dry, and then placed together with pressure and allowed to further dry. That gave us a stiff number of plies of paper which were stuck together with the celluloid solution.

Q. Now, will you put in, as Exhibit Z-13a, the product obtained under that patent?—*A.* Yes, this is it.

EXHIBIT "Z-13a": Filed by Mr. Lajoie: Sample made according to 40 teaching of Nachmann Swiss patent No. 77,238.

Q. And will you put in, as Exhibit Z-13b?—*A.* The single layer of paper referred to.

Mr. BIGGAR: May I see that?

Mr. LAJOIE : Q. You consider all these samples which you have put in connection with the prior patents to be fairly representative of the patents ?—
A. I do.

Q. Have you any other samples to produce ?—A. We made a further sample on Nachmann, using three layers of cotton duck fabric which were impregnated with a 20 per cent. celluloid solution, and allowed to partly dry, and then placed together with pressure.

Q. Will you file the product itself as Exhibit Z-13c ; and the cotton duck as Exhibit Z-13d ?

10 EXHIBIT " Z-13b " : Filed by Mr. Lajoie : Sample made according to Nachmann patent.

EXHIBIT " Z-13c " : Filed by Mr. Lajoie : Sample made according to Nachmann patent.

EXHIBIT " Z-13d " : Filed by Mr. Lajoie : Sample of cotton duck.

CROSS EXAMINED BY Mr. BIGGAR.

Q. Mr. Platt, I suppose I may assume that you made no tests or experiments contradicting the results of those of which you have given us the particulars, and which you have spoken about ?—A. No, sir, I have given you a perfect picture.

20 Q. I mean, there are no tests which contradict those results ?—A. No, sir.

Mr. BIGGAR : That is what I assume.

Q. I observe in that Nachmann patent, which you have just referred to, that what Nachmann is talking about is not only paper and cotton duck but cotton yarn and wool yarn and hemp yarn and linen yarn. Am I right ?—
A. Where is that, please ?

Q. I find it at the beginning of what appears to be the third paragraph, or the second, if you neglect the colon. Have you got the German before you ?—
A. Yes.

30 Q. You no doubt read German, do you not ?—A. Not sufficiently that I would care to handle it.

Q. Neither do I, especially scientifically, but there is enough, I think, probably you and I have both enough German to read in the third line of the second paragraph ?—A. I see where you mean.

Q. In the second line of the second paragraph, you see three and six, and so on, and then it goes on with a series of words describing the material, of which the first is " papier " ?—A. Yes, sir.

Q. And each of those words from " papier " on down to " leinen " is followed by a hyphen—I am speaking of the official print ?—A. Have I not got the correct translation ?

40 Q. I do not know. I am now talking about something which would not necessarily appear on the translation. Would you look at the German original ?—A. I would rather have a correct translation if you have it.

Q. I am not speaking of the translation at all, but I am asking you to look at the third line in the second paragraph in the German original, and my question

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is: Do you not observe that the series of materials which are there described, beginning with the word "Papier" and going on to the word "Leinen" are each followed by a hyphen?

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HIS LORDSHIP: Why not use the translation, Mr. Biggar?

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Mr. BIGGAR: Because, unfortunately, apparently the Witness has not the same translation as your Lordship and I have.

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HIS LORDSHIP: Would you explain the difference?

Mr. BIGGAR: That is the reason I was calling the attention of the Witness to the German print, my Lord, which is simply a question of the hyphens, because we do not need any translating of the words. 10

HIS LORDSHIP: What is your suggestion about it?

Mr. BIGGAR: If your Lordship looks at the German, which follows immediately after the translation, it says, in the second paragraph, in the third line, beginning with the word "papier"—it begins with "three and six" and so on pieces of fabric of the same size made from paper, cotton, wool, hemp, linen, or other similar yarn—in other words, when you look at that, do you not agree with me, Mr. Platt, that there is no suggestion in that patent of using paper, as such, but that what is proposed is the use of yarns of various materials or other similar yarns?—A. I cannot answer that question.

Mr. BIGGAR: Q. But you see what I mean?—A. I do not. 20

Q. In other words, my point is, Mr. Platt, that when you look at that patent it is perfectly clear that what he is talking about is the use of pieces of fabric made of certain yarns and not of a piece of paper at all?

Mr. CHIPMAN: My Lord, my learned friend—

WITNESS: I do not agree with you.

Mr. CHIPMAN: That is a matter for us, my Lord.

WITNESS: I do not think I agree with you.

Mr. CHIPMAN: If you will allow me to make my point.

Mr. BIGGAR: I beg your pardon.

Mr. CHIPMAN: I submit, my Lord, that that is a matter for us to struggle 30 with, the meaning of paper and yarn.

HIS LORDSHIP: The translation talks about paper yarn—

Mr. BIGGAR: Oh, yes.

HIS LORDSHIP: Hemp yarn and linen yarn.

Mr. CHIPMAN: That is a translation put in by my friends.

Mr. LAJOIE: We have not agreed definitely as yet on those translations. For instance, there are some translations that we cannot agree with.

Mr. CHIPMAN: The translation we had, my Lord, was paper, cotton, hemp, linen or other yarn, and, of course, it is a question of interpretation for your Lordship after argument from us, it seems to me, whether you can talk 40 about paper yarn or whether you must talk about paper, but I do not think it is for this Witness to say, because he does not understand German.

HIS LORDSHIP : I will allow the examination to go on.

Mr. BIGGAR : *Q.* What I was leading up to, if we cannot agree on that, is that the word " cotton yarn " is clearly there, is it not, as one of the suggested materials—fabric of cotton yarn ?—*A.* If it says cotton yarn, yes.

Q. Do you not agree with me about that, that it is suggested as one of the materials—cotton yarn ?—*A.* Yes.

Q. So that if you wanted to make a fabric that looked as nearly like the fabric that might be made under the fabric patent in question, you might have chosen a very thin cotton yarn, might you not ?

10 Mr. CHIPMAN : There again I submit that is a matter for interpretation.

WITNESS : I would make you something with cotton yarns, and it is suitable for shoe soles.

Mr. BIGGAR : *Q.* I say you might have chosen a very thin cotton material might you not ?—*A.* Yes, but the patent does not suggest that is what he was going to make.

Q. If you would be good enough to answer the questions, we will get on so much faster. You might have selected a very thin piece of celluloid might you not ?—*A.* There is no celluloid sheet in that.

20 *Q.* You are quite right. You might have made very thin cotton fabrics, or a very thin flexible fabric, might you not ?—*A.* With an impregnated fabric, a fabric impregnated with the solution, it would have to be very, very thin.

Q. It would depend— ?—*A.* After all, it has three to six webs.

Q. Well, suppose you took three webs of very thin material and treated them with this solution ?—*A.* Yes, sir.

Q. Would you not get a thin flexible material ?—*A.* I do not think so.

Q. At all events, it was not that kind of material that you sought to make when you made the exhibits under this very patent ?—*A.* I had in mind shoes.

30 *Q.* Suppose that you had before you this suggestion, would it be any more difficult to make a composite fabric in this way, as indicated in this patent that is thin and flexible, than it would be to make a thick and heavy thing ?—*A.* I think it would always be stiff. It would not be thin. You could make it maybe thinner.

Q. I said, would it be any more difficult to make a thinner fabric provided you took your original layers of as thin material as you liked—would it be any more difficult to make a fabric, a composite fabric, out of thin fabrics as out of thick ?—*A.* I think it would, with handling a solution, yes, using a celluloid solution.

Q. You have not answered my question yet. You took some brown paper for the purpose of making a sample under this patent ?—*A.* Yes.

40 *Q.* Would there be any more difficulty in making a fabric under this patent if you took a very thin, fine material instead of paper, of fine cotton, for example ?—*A.* I think it would be more difficult to handle, yes.

Q. Why ?—*A.* Because of the thinness and flimsiness of a woven fabric.

Q. Well, I do not understand. I did not ask you the handling after you got it finished ; I was directing my attention to the making of it. Suppose that you stretched out a thin cotton fabric and applied this 20 per cent. celluloid

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solution to it and then went through the other steps that you did go through, what would be the difficulty in doing that which would not be presented when you used paper?—*A.* You would have to handle a thin cotton fabric and press them together when it was only partly dry, and it would be rather hard to handle in a partly dry condition.

Q. Any more difficult than the collars that are made under this patent in question that are handled partly wet, Mr. Platt? Why is it any more difficult to handle partly wet fabrics under Mr. Nachmann's patent than it is under Dr. Dreyfus's patent?—*A.* Because in this case you are using a celluloid solution, and in the other case you have a yarn. 10

Q. You have not made it clear to me why a fabric that is wet with the celluloid solution is any more difficult to handle than a fabric that is wet with acetone alcohol.—*A.* Oh, well now, the solution is sticky like the stuff in that bottle; if you get it on your fingers you know what happens. I have a finger that I got it on and I know it is entirely different from the method of handling yarns.

Q. I do not understand why it is more difficult to handle.—*A.* It would be difficult to handle a thin fabric where you have to handle it partly dry and put the two together when they were partly dry.

Q. That is your evidence?—*A.* Yes.

Q. That you would be presented with an entirely different problem when you used thin materials from when you used thicker materials?—*A.* When you get down to a thin fabric it is difficult to handle. 20

Q. Please follow my question and we will get on more quickly. I understand you now to say that you would have an entirely different problem with thin fabrics than you would with thick fabrics?—*A.* In that it would be more difficult to handle because it was thin.

Q. Would it be a difficult problem, or would it be the same problem in that it was a little more awkward to solve?—*A.* I would say in essence you can handle thick material, that is, sticky, particularly if it has got a certain amount of rigidity, but when it is thin and partly dry with solution it is a problem to handle it. I have tried handling it. 30

Q. I suppose the difference would really be the same difference between a very thin photograph put on to a mount and a thick photograph put on a mount?

Mr. CHIPMAN: If my learned friend would try to remember that we are not on that side and cannot hear so well.

Mr. BIGGAR: I am sorry.

Q. That is the nature of the difficulty?—*A.* It is a case where you are getting down to rather delicate things for a process of this kind.

Q. A little more delicate?—*A.* Too delicate to be practical. 40

Q. What?—*A.* Too delicate to be practical, with thin fabric.

Q. What do you mean by that?—*A.* When you speak of handling this solution on a thin fabric and try to handle them and put them together wet, I do not think you can do it except with things like shoe soles and materials of that kind.

Q. You described yourself as a trouble shooter; do you suggest that if that kind of difficulty were presented to you you would be stumped?—*A.* No, sir.

- Q. That you could not possibly solve it?—A. No, sir, I would use yarns. In the
 Q. What do you mean by that?—A. I would tackle it differently. Exchequer
 Q. You would do it in a different way, and you would find a convenient Court.
 way?—A. I would not necessarily use this method. —
 Q. I am talking about this method. If you want to use this method, and No. 18.
 you are a trouble shooter, are you going to say you would be stumped; that Defendant's
 you could not use this with these materials?—A. I do not think that is the Evidence.
 question. It is a question whether you would use this or something better. Herbert
 Q. I think we will leave it exactly there, Mr. Platt. Let me take the Le Platt.
 10 Faguays patent. Did I understand you correctly to say that you took a celluloid Cross-exam-
 sheet and you wet it with acetone and simply pressed it on the cotton duck?— ination—
 A. Pressed the cotton duck on to it—no, wait a minute. Yes, I said, felt on an continued.
 acetone wetted celluloid sheet.
 Q. Yes.—A. And pressure.
 Q. And you did not use any heat?—A. No.
 Q. And you got good adhesion?—A. Yes, they stuck together.
 Q. Have you ever made any proper scientific tests of adhesion with an
 apparatus for the purpose?—A. That part of it has not been—that has not
 been under my jurisdiction. I test them comparatively with what I find is on
 20 the market.
 Q. Well, my question was have you used a piece of apparatus for the purpose
 of determining accurately?—A. In these tests I have not used a piece of apparatus;
 I have compared them by hand.
 Q. Have you got one piece of apparatus in your laboratory?—A. We have
 a piece of apparatus in our New York laboratory for doing that.
 Q. You mean that you have not access to the New York laboratory?—A. I
 have not access to that. I have not used that.
 Q. You have not had access to that?—A. No.
 At 4.30 p.m. January 13th, Court adjourned until 10.30 a.m. January 14th,
 30 1936.
 HERBERT PLATT, CROSS EXAMINED BY Mr. BIGGAR (Resumed).
 Q. Mr. Platt, for the purpose of some of the exhibits you apparently used
 what you call mono oil in a mixture of 20 parts to 20 parts of benzol?—A. To
 100 parts of benzol.
 Q. Perhaps my note was wrong. All the mono oil you used was used in
 the proportion of 20 to 100?—A. I believe there was one of the trials that was
 with 40, if my recollection serves me correctly.
 Q. What is the effect of benzol on the mono oil, does it dissolve it?—
 A. Yes.
 40 Q. And what about benzene, you referred to benzene at one time?—
 A. Benzol and benzene are the same thing, hydrocarbons.
 Q. What is the effect of benzene or benzol on the cellulose derivative?—
 A. No effect beyond wetting it.
 Q. And none on the cotton?—A. No, sir.
 Q. That is then the kind of solvent that is referred to in the patent as a
 solvent for the plasticizer softening agent or solvent, but which has no effect
 upon the other yarns?—A. No effect upon the cellulose acetate, yes sir.

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Q. Could you incorporate mono oil in the mixture from which cellulose acetate threads were spun?—A. I would say yes.

Q. You also referred to the use of dimethyl phthalate?—A. Yes, sir.

Q. You did not tell us how you used that?—A. Which particular instance was that, sir?

Q. One of them was with respect to the exhibits marked Z-1-B?—A. With Z-1-B dimethyl phthalate was applied 100 per cent., it was not diluted.

Q. Is that a material that could be included in the mixture from which the cellulose acetate filaments were spun?—A. I see no reason why it could not.

Q. A third one that you referred to was triacetin?—A. Yes, sir. 10

Q. How did you use that?—A. Triacetin was applied as 100 per cent. material.

Q. Is that material that could be included in the mixture from which the filaments of cellulose acetate to make threads were spun?—A. Yes, sir.

Q. Was there any other way except this 100 per cent. way that you used dimethyl phthalate or triacetin?—A. No, sir.

Q. You have said with regard to those Z exhibits that you used 35 per cent. of mono oil and 33 per cent. of dimethyl phthalate, and 30 per cent. of triacetin?—A. Yes.

Q. What is that percentage of?—A. That is the percentage of material on 20 the lining fabric, on the inside layer.

Q. You mean the percentage of material both cotton and cellulose acetate, or what?—A. In this particular case, yes.

Q. You mean by weight, that the lining material weighed in the case of the mono oil 65 per cent. of the total combined weight of the mono oil and the fabric?—A. No, sir, I mean that 100 grammes of lining fabric was increased by—you are referring to the mono oil—by 35 parts.

Q. That is not the way the percentages are directed to be referred to in the patent, is it?—A. Not in the example that is given—

Q. Is there any example— 30

Mr. CHIPMAN: He has not finished.

WITNESS: The example that is given in the patent suggests diluting it with benzene.

Mr. BIGGAR: I am not asking that. The percentage, as I read the patent, is to be a percentage of the cellulose acetate in the example given?—A. I am giving you the figures as I did it.

Q. I want to know if I am right in thinking that you did not adopt the percentages, or the way of getting at the percentages, which the patent gives?—A. I believe the patent does express it in some of the examples as the percentage of plasticizer based on the cellulose acetate. 40

Q. Am I not right in thinking that is the only way it suggests the percentage of the plasticizer?—A. Yes, that I would say is true.

Q. Then why did you adopt a percentage of plasticizer that was not expressed as a relation to the amount of cellulose acetate in your fabric?—A. It just happened that we took 100 grammes of fabric and put the plasticizer on and weighed it again. It was the easiest way of expressing our result.

Q. It was a little misleading, wasn't it, because as a matter of fact 33 per cent. of mono oil calculated as you calculated that percentage would be about 150 per cent. of plasticizer to the cellulose acetate, wouldn't it?—A. On the 524 fabric it would be higher because it would be on both the cotton and the celanese.

Q. Am I right in saying it would be about 150 per cent. of the cellulose acetate?—A. On the basis that I have figured it would be about that, yes, if it was all calculated on the cellulose acetate on the basis of that figure.

10 Q. That is true of the 33 per cent. of dimethyl phthalate and 30 per cent. of triacetin, with a slight variation of the figure?—A. On which sample?

Q. Those samples we have been referring to?—A. Z-1-A, B and C, yes, sir.

Q. And will you tell me how you actually set about combining the cellulose acetate fabric with these particular plasticisers, either in the case of those exhibits or others?—A. In the case of these exhibits, the liner fabric was padded through a pair of nip rollers, and the plasticiser was applied to the liner by these heavy nip rollers with a heavy squeeze. The plasticised fabric then was placed between two cotton fabrics and put in the press and subjected to the heat and pressure for the time we gave.

20 Q. How did you know that the quantity of plasticiser which you had prepared all got into the fabric?—A. Because those figures were determined by actually weighing the fabric before and after. The figures were not pre-determined figures, but were figures that the actual padding gave.

Q. And was that true with respect to all the samples with respect to which you have given percentage figures?—A. They are actual figures that we used in the sample.

Q. And that is true of all the percentage figures?—A. Yes, they are actual figures which were checked.

Q. Afterwards?—A. Yes, they were checked.

30 Q. You mean with comparative weighing of the materials with and without the plasticiser?—A. Yes, sir.

Q. Now, you spoke of acetone being a very good softening agent; I think you referred to it as the best?—A. Yes sir, I believe I referred to acetone and acetone methyl alcohol.

Q. Is the acetone alone better from the point of view that you are using the comparative, or worse than a mixture of 75 per cent. acetone with 25 per cent. methyl alcohol?—A. The acetone methyl alcohol is a little better.

Q. Substantially they are close together, are they?—A. Yes. I would say that it is a little better softener.

40 Q. Then how would you go about using the acetone or methyl alcohol in the mixture from which the cellulose acetate films are spun for thread, for the purpose of softening, as a softener?—A. You mean to leave acetone in the fibre in that case? In that case one would have to spin from a substance such as something with a lower boiling point than acetone.

Q. But I am asking you how you would use acetone in the spinning solution from which the cellulose acetate threads are made, as directed in the end of

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paragraph 8 of the patent?—*A.* If you wish to incorporate acetone in the fibre and leave it there, one would use a lower—

Q. I am talking about acetone, this same material. I do not want you to talk about any other material. This same acetone, how would you, in the words of the patent, incorporate the acetone in the filament or fibres in the production thereof, for example with the spinning solution from which the fibres were made?—*A.* I might put it in the spinning solution.

Q. I understood that the spinning solution for cellulose acetate was acetone, and that that was evaporated by the warm air directed against the filaments before they were spun?—*A.* That is true. 10

Q. Then you obviously are going to drive it off in that solution, are you not?—*A.* If you spun in the one method that is now being used, yes.

Q. And would you tell me what volatile solvent there is for acetone which you could use and which dissolves acetone but does not dissolve the cellulose acetate derivative? I am speaking now of paragraph 17 of the patent?—*A.* I do not know for sure, but I believe it is soluble with acetone.

Q. Acetone?—*A.* I believe it is.

Q. But I want to know how, supposing it is soluble in benzene, how by dissolving it in benzene you could cause it, in the terms of lines 24 and 25, page 8 of the patent, to remain distributed evenly on the cellulose acetate fabric, so that when this was associated with another fabric it would have that effect?— 20

A. Would you read that passage again?

Q. It is in paragraph 17, beginning about line 24.

Mr. CHIPMAN: I wonder if the witness has the same page as yours?

Mr. BIGGAR: He can find it.

WITNESS: Oh, yes, I see where it is referring to the mono oil and the benzene. Now, what was your question?

Q. Is there any such way of dealing with acetone, in the way that that passage in the specifications describes?—*A.* One could use it with benzene.

Q. I want to know how you could cause it to remain evenly distributed in the cellulose acetate fabric after it had been applied and when the benzene had evaporated?—*A.* Cellulose acetate absorbs acetone and softens with acetone. 30

Q. You have not followed my question. You have said you think you could mix acetone and benzene?—*A.* Yes.

Q. Now, supposing you have, and you have applied your mixture of acetone and benzene to your fabric. Now, which is the more volatile, the benzene or the acetone?—*A.* The benzene is the high boiling point.

Q. I said which was the more volatile?—*A.* The acetone.

Q. Then which is going to go off first, as between benzene and the acetone?— Is that a difficult question?—*A.* Yes, sir, because there is another factor there. Cellulose acetate yarn holds on to acetone and not on to benzene. 40

Q. Do you know anything about what happens then?—*A.* Without trying it, I would not know just which happened first.

Q. So that even now, some ten years after this patent is issued, you do not know how to use in the way directed by the patent the particular softener that you are suggesting is covered by it,—that is the position, is it not?—*A.* I have not tried that, sir.

- Q. I say you do not know.—A. No, I have not tried it, and I do not know.
- Q. Acetone has been used as a solvent for cellulose derivatives of various kinds for something like forty years, has it not?—A. Yes, sir.
- Q. And what about ethyl alcohol?—A. Ethyl alcohol is not a solvent of cellulose acetate.
- Q. And methyl alcohol?—A. Methyl alcohol under certain conditions is a solvent.
- Q. And those conditions are conditions in which the acetone is a better solvent?—A. Acetone is a better solvent, yes.
- 10 Q. Why is it, then, that a combination of methyl alcohol with acetone, is you think, better than acetone alone, notwithstanding that methyl alcohol is not as good as acetone?—A. It does not necessarily follow, because—
- Q. You have told me it did not follow, and I ask why it did not follow?—A. I am trying to tell you that. It does not follow because you have it that this is not a solvent and that is not a solvent, that when you mix them together it will not be a solvent.
- Q. I quite appreciate that that follows in the particular instance you have cited. I am asking you why the instance you refer to does apply in this particular instance?—A. Just what are you referring to, sir?
- 20 Q. Why, because acetone is a better solvent than methyl alcohol,—I will put it in this way,—a combination of acetone and methyl alcohol is better than alcohol alone?—A. That is my experience. I have tried it, but just why I cannot explain to you.
- Q. In other words, you do not know why?—A. I cannot explain it to you, sir.
- Q. Is it that you do not know or is it that you are lacking expressions?—A. I am lacking expression to make it clear to you.
- Q. I will have to ask you to do your best. I may be particularly dull, but I am going to ask you to use the expressions which you think would be sufficient
- 30 to explain it to somebody more intelligent?—A. All I can tell you is that I know you can take two things that are not solvents and bring them together—I know ethyl alcohol is not a solvent, and water is not a solvent; but together they are.
- Q. I am asking you why, in this particular case of the combination of methyl alcohol and acetone?—A. In that particular case, I cannot say.
- Q. In other words, you do not know?—A. All right, I do not know, sir.
- Q. Then, do you know that a combination of acetone and water is better than acetone alone?—A. I said ethyl alcohol and water, sir.
- Q. Ethyl alcohol and water?—A. Yes sir.
- Q. It was not acetone and water?—A. I did not mention acetone and water.
- 40 Q. And is acetone and water a better or not so good a solvent as acetone alone?—A. In certain proportions, acetone and water is a better solvent than acetone alone.
- Q. In what proportions?—A. Oh, up to about 10 per cent. of water and 90 per cent. acetone makes the better solvent,—10 per cent. of water in acetone.
- Q. Then the 10 per cent. of water in acetone with the 25 per cent. of methyl alcohol in acetone, which would be the better solvent?—A. They should be very close together, I would say.

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Mr. BIGGAR : Q. Would you look at the exhibit that you made with an acetyl methyl solution, by which I understand you to mean a solution of 75 per cent. acetone with 25 per cent. methyl alcohol ? It is Exhibit Z-5-A. You remember that exhibit ?—A. Yes.

Q. How did you apply the solvent solution ?—A. We applied the 75/25 acetone alcohol between felt pads wetted with the solution.

Q. And how did you wet the pads ?—A. By dampening or by wetting the pads and then just getting them thoroughly wetted.

Q. You got them thoroughly wetted and how long did you leave the material between them ?—A. Twelve seconds. 10

Q. In what condition was the material ; I mean was the lining put in alone ?—A. No, the lining, with the outside layers, was put in.

Q. What was the size of the piece ?—A. About 4 inches by 4 inches.

Q. Was that the whole piece that was produced as an exhibit ?—A. Yes, about 4 inches by 4 inches.

Q. I mean is that the whole piece that you have before you ?—A. That is the whole piece. I did three pieces, of course. I made three pieces of each one, and this is one of the three pieces.

Q. Have you got the other two ?—A. No, I just brought the one of each, because the other ones I used for trying the adhesion and the water and the air tests. 20

Q. So you have not got the other ones now ?—A. No, we did not keep the other ones.

Q. And you never tried that particular one that you have produced in the way that you described ?—A. Yes, yes.

Q. You tried it too ?—A. Yes, I tried that. This particular one I tried.

Q. Was that the best of them or the worst, from the point of view of adhesion ?—A. I think that was the best one, sir.

Q. Yes, I would have expected that. And having got those three samples and wetted them in this way all at the same time, bye the bye ?—A. No, they were done one after the other. We wetted one sample and then finished or put 30 that one in the press and we did them—they were done consecutively, one after the other, but the complete operation —

Q. Were the pads wetted between the samples ?—A. Yes, sir, they were re-wetted.

Q. They were re-wetted between the samples. And how long was this particular sample allowed to remain between the pads ?—A. Twelve seconds.

Q. Then how long intervened between the time it was transferred from those pads to this cold press ?—A. Oh just the time it would take me to walk from your desk to the corner of this desk here, sir.

Q. Did you weigh these samples before and after wetting ?—A. Not these 40 samples, no sir.

Q. No, I thought not. And then you stated, I think, that you left it in the cold press for 15 seconds ?—A. That is right, sir.

Q. All the three samples were dealt with in the same way as far as time and handling were concerned ?—A. Yes.

Q. And all three of them were put in in the same way with the lining fabric or the intermediate fabric ?—A. Yes, sir.

- Q. In between the other two?—A. Yes, sir.
- Q. Now, can you explain to me why you did not get adhesion?—A. I can't—I got practically none, or only very slight adhesion there, and it appears to me because it was not treated with the heat.
- Q. That is the only explanation?—A. That is the way it looks to me, yes, sir.
- Q. And your view is, then, that it was impossible to get adhesion by using that solution?—A. I did not get it, sir, no.
- Q. Well, is it your view that it was impossible to get it? You did your best to get it, I assume?—A. Yes, I did, sir.
- 10 Q. You did your best to get it?—A. Yes, sir.
- Q. So that as far as you are concerned, it is impossible for you to explain why it is that Dr. Esselen had no difficulty in getting it and why, as my learned friend, Mr. Lajoie brought out from Mr. Loew and Mr. St. Hilaire, they got it without effort at all with exactly the same solution?
- Mr. CHIPMAN: We do not know that they did.
- Mr. BIGGAR: They say so.
- Mr. CHIPMAN: Mr. St. Hilaire never said that.
- Mr. BIGGAR: Surely.
- 20 Q. Can you explain that?—A. One can conceivably—conceivably there might be some difference, a little more acetone maybe, or something like that.
- Q. A little more acetone used by you?—A. Maybe they were wetted; maybe they were not. If they were a little wetter, why conceivably it might happen, if their samples were a little wetter. I did not see it; I do not know just what they had there. Maybe it was a little wetter. It is the only thing I can think of, but I do not know.
- Q. Did you, when you found that you did not get adhesion, try wetting a little more or wetting a little less to see whether there was some mistake you had made in your test?—A. No, we wetted between the pads with acetone and we took that normal condition. We took that normal condition that I have described to you.
- 30 Q. I say you did not try, having got the result that you did get, any alternative procedure?—A. I did not try any other condition that I have here, sir; no, sir.
- Q. So that the only explanation you have for your failure by comparison with the other successes is that you think now it may have been due to a difference in the extent of the wetting?—A. Yes, a difference in the amount of the softening agent.
- Q. You know Mr. Whitehead, I think his name is? Who is he? He is connected with your organization? You know Mr. Whitehead who is connected with your organization?—A. Yes, I met Mr. Whitehead.
- 40 Q. Who is he?—A. He is an employee of the Company.
- Q. A chemist?—A. I do not know just whether Whitehead is a chemist or not.
- Q. Dr. Camille Dreyfus is a chemist, is he not?—A. Yes, sir.

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Q. I find that in a patent issued to them and assigned to your Company, so I suppose in the course of your development in research work you are familiar—

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ination—
continued.

Mr. LAJOIE : What is the number of that ?

Mr. BIGGAR : 1,927,923.

Q. That they say that by the use of acetone 90 parts and water 10 parts, two layers of fabric can be united without heat ?

Mr. CHIPMAN : Is this one of the patents cited ?

Mr. BIGGAR : It is not one.

Mr. LAJOIE : I suggest that my learned friend should not refer— 10

Mr. BIGGAR : This is exactly the same as referring to a textbook except that it is a textbook written by this company itself, and its officers.

Mr. LAJOIE : I submit, My Lord, that my learned friend cannot refer, for the purpose of examining this witness, to a patent that is not in the case.

HIS LORDSHIP : He is not putting the patent in. I think he is merely basing the question on something he finds there.

Mr. LAJOIE : That is the reason I do not think my friend is entitled to do that.

HIS LORDSHIP : He cannot go far with it. I think he should ask the witness first whether he knows the patent. 20

Mr. BIGGAR : Very well, I will ask him if he knows it. I will put it in.

HIS LORDSHIP : Well, is it a patent that was pleaded ?

Mr. BIGGAR : No, My Lord, this is only for cross examination.

Mr. LAJOIE : Then I have another reason ; I also object to my friend filing this patent.

HIS LORDSHIP : On what ground can you put the patent in ?

Mr. BIGGAR : I am contradicting him, My Lord.

HIS LORDSHIP : I do not know that it is necessary to put the patent in. Proceed with your question first.

Mr. BIGGAR : *Q.* You are familiar no doubt, with this patent ?—*A.* I 30 never heard of it.

Q. You referred, really, to it yesterday, because it is one that dealt with producing the reptile skin effect, and also the one that deals with the moire effect ; I think certainly with the reptile skin effect ?—*A.* I am not familiar with the patent as you refer to it at all. I do not recollect it.

HIS LORDSHIP : Witness, I wish you would try to speak up.

Mr. BIGGAR : *Q.* Well, I find in that, and I want to know if it is wrong, and then I will accept your statement, I must accept your statement.—*A.* Yes.

Q. But the proposal given in example one, for uniting two layers of fabric consisting of yarns of an acetone soluble cellulose acetate is first to use methyl 40 alcohol to wet them and then run them between calender rolls at the rate of 50 meters per minute and unite them in that way ?—*A.* That is evidently some work that Mr. Whitehead did which I am not at all familiar with.

Q. The patent goes on and says :—

“ If instead of methyl alcohol a mixture of 90 parts by weight of acetone and 10 parts by weight of water are employed, substantially identical results are obtained. If in this case the rolls are not heated the resultant fabric is somewhat softer to handle.”

Now, do you say that Mr. Whitehead and Dr. Camille Dreyfus were all wet when they said they could get a composite fabric ?—A. I still have not got the drift of exactly what you are referring to. I have not got the idea of exactly what you are doing or what you are talking about, or what you are trying to do with this
10 operation.

HIS LORDSHIP : I do not think you can contradict this witness by what somebody else said in the patent. I think it would be all right to ask a hypothetical question, such as under certain conditions could that be done. It accomplishes your end just as well.

Mr. BIGGAR : I will carry on anyway.

Mr. CHIPMAN : I do not think it is necessary to ask the Witness to comment upon Mr. Camille Dreyfus, or anything like that.

Mr. BIGGAR : I will read the whole passage. Example one. Perhaps I had better make clear, my Lord, and I will read an early passage to make it clear
20 with what they are dealing :—

“ We have found that if a fabric sheet or film containing an organic derivative cellulose is brought together with any fabric of any suitable nature and the assembly is pressed under certain conditions, that the fabric or film containing an organic derivative of cellulose is caused to dissolve or melt and coalesce with the other fabric, there is produced a fabric that is stiff and more or less impermeable to water and having a face which has the normal appearance of textile fabrics.”

No difficulty in following that ?—A. I follow that you now that you have read it.

30 Q. Example one :—

“ Two layers of fabric both consisting wholly of yarns of an acetone soluble cellulose acetate are fed to a pair of calender rolls both of which are heated to approximately 90 degrees centigrade, the rate of feeding of the fabric may be 50 meters per minute. One of the fabrics is of a taffeta construction, and on its passage to the calender rolls is wetted by means of a felt roll or other suitable device with methyl alcohol. As the assembly of fabrics reach the hot rolls the methyl alcohol becomes a solvent for the cellulose acetate, and the solvent action is such as to cause the wetted fabric partly to dissolve and coalesce and to be pressed well into
40 one face of the unwetted fabric. The outer surface of the unwetted fabric retains its original woven appearance.

“ If instead of methyl alcohol a mixture of 90 parts by weight of acetone and 10 parts by weight of water are employed substantially identical results are obtained. If in this case the rolls are not heated, the resultant is somewhat softer to handle.”

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A. Yes, I see what that is now, but it was not clear before. He is joining together two fabrics of cellulose acetate.

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Q. Yes?—*A.* And with two fabrics of cellulose acetate, where you are going to coalesce cellulose acetate with cellulose acetate, that, of course, will work. That is rather different to what I thought you were trying to get at.

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ination—
continued.

Q. In other words, the dissolution of or partial dissolution of cellulose acetate by acetone and water in these proportions will cause the cellulose acetate to adhere to cellulose acetate?—*A.* They will coalesce, yes sir, under those conditions—two cellulose acetate fabrics, yes sir.

HIS LORDSHIP: Were Dr. Esselen's tests made alone, I mean did he 10
have assistants?

Mr. BIGGAR: I imagine so, My Lord.

HIS LORDSHIP: *Q.* And were your tests made alone?—*A.* I made them or saw them made; made them all or saw them all. I had assistants, but I either made them or I saw them made.

HIS LORDSHIP: It is not possible to reject the evidence, but that is what ought to be done, because such matters as these should be made in the presence of other people.

Mr. BIGGAR: It is rather astonishing to see that there is any difference of opinion about it at all, and we considered last night, My Lord, whether we 20
could not actually do it in court without too great difficulty, and we may have to be forced to take that course.

HIS LORDSHIP: If there was some independent witness in the city, a research man or someone like that—because it is absurd, men going into a laboratory and making tests, then coming here and swearing, one on each side.

Mr. BIGGAR: There is nothing absurd in that, really, My Lord; it is absurd that two scientific men should not reach exactly the same result.

HIS LORDSHIP: There might be some variation, of course, but the tests ought to be identical when made, and they ought to be made in the presence 30
of somebody else who is an independent person. As a matter of fact, I think Mr. Biggar, you provided a rule; we never put it into effect. I do not know whether we intended to adopt it in a case of this kind, but in chemical cases I think it would be a very useful rule. However, the rule is not here now.

Mr. BIGGAR: It is even more important in a chemical case.

HIS LORDSHIP: It is very difficult for a Court to decide which side one is going to believe when you get two scientific men swearing differently.

Mr. BIGGAR: Well, as it stands now, My Lord—

HIS LORDSHIP: You have got to proceed.

Mr. BIGGAR: *Q.* Mr. Platt, have you ever found that a postage stamp, when licked, did not stick to the envelope?—*A.* Yes, we had some very bad 40
stamps at one time. I remember we had some stamps that did not stick.

Q. As a matter of fact, one of the reasons why they did not stick is that they are not sufficiently pressed to the envelope, is it not?—*A.* Yes, it can be. These I am thinking of did not have enough gum on them.

Q. And as a matter of fact did it ever occur to you that if you washed the mucilage off a stamp you would have a great deal of difficulty in making it stick no matter how hard you pressed it?—A. I think that is obvious, yes.

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Q. And have you observed with regard to that sample Z-5-A, that there is practically no cellulose acetate at all left in the lining; that it has all been washed out?—A. That is true.

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Q. And the analogy is obvious, isn't it? There is a good deal of difference, is there not, between pressing twice once in a wet press at 20 pounds and again in a hot press?—A. They are different, yes sir.

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continued.

10 Q. And there is a good deal of difference between pressing in a wet press and wetting in the way you wet and then carrying it over to some other press?—A. They are not exactly the same.

Q. And in fact that might easily account for the difference in the results you got in your single experiment and the ordinary commercial consequences of operating the St. Hilaire process?—A. It is conceivably the amount of acetone, giving the softening period.

Q. That might account for the difference in the results?—A. That might.

Q. Now these tests generally which you made were all made when?—A. They were all made during October, November or December I would say.

20 Q. Last year?—A. That is correct.

Q. Now I observed that some of your samples have outside fabrics which are white?—A. Yes sir.

Q. And I think the white ones are all of the same outside fabric are they not?—A. Yes.

Q. And some of your samples, speaking generally are brown of different patterns?—A. They are cotton printed shirtings I think, yes.

Q. It is true, is it not, that of all the colours you can use, brown is the best to choose if you do not want to have an appearance of scorching?—A. There is brown and there is grey there I think. They were not picked for that reason.

30 Q. But that is true of brown?—A. On a brown fabric you would not see any colouring as much, no sir.

Q. As a matter of fact there was no reason why you should not have used white for all your samples?—A. I was interested in using some coloured shirtings and seeing what happened, that is the reason I used them.

Q. But white was quite adapted to all the experiments you made?—A. I tried to use different insides and different outsides and different conditions. It was merely that idea of using something different.

Q. I did not ask that, I asked whether you might not have used white throughout?—A. Oh I could have, yes.

40 Q. As a matter of fact if you compare some of your samples with others you find that there is considerable discolouration is there not?—A. I do not know just which ones you are referring to. I think maybe one or two do show some discolouration.

Q. That discolouration might be produced, might it not, by the use of the plasticiser, I mean mono oil and dimethyl phthalate and triacetin?—A. Mono oil of course is slightly coloured. it is slightly yellow.

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Q. And a similar effect is produced under certain circumstances with the dimethyl phthalate and the triacetin, isn't it?—*A.* Triacetin I think would not colour. It is white.

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Q. Have you ever made a test to ascertain whether high proportions or percentages of triacetin do not produce a discolouration?—*A.* I have never observed in any of my using of triacetin a discolouration.

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ination—
continued.

Q. Discolouration of course would be very important where you were matching fabrics, wouldn't it?—*A.* Yes, where you had a white.

Q. Or where you had any colour, wouldn't it?—*A.* Where it was going to show, yes sir. 10

Q. I observe for example a considerable difference between two of the Z-2 series of fabrics. I call your attention to exhibits Z-2 (c) and Z-2 (d) and Z-2 (e). Those are all three of the same material are they not?—*A.* That is right.

Q. I presume they were cut from the same piece?—*A.* Yes sir, I think they were.

Q. I notice that the intermediate one of the three, Z-2 (d) the pattern is very much distorted. Why is that?—*A.* That has been treated with a very active softening agent at a temperature really above the temperature which would be required for that agent. It is ethyl alcohol, water treated between hot rolls at 190° C., which is really too high a temperature for that softening agent. I think that is due to too active softening agent, and the calendering has distorted that at that temperature. 20

Q. The first one, Z-2 (c), was at 200 C. and has not been distorted?—*A.* Well you have dimethyl phthalate, that is not as active a softening agent. The temperature and the nature of the softening agent and the amount of the softening agent all play relative parts, and here we really have a high temperature for that softening agent.

Q. So it would be true to say that having regard to the particular purpose for which a composite fabric was desired you would have to select a particular kind of softener if you were going to use one, you would have to select a particular kind of solvent for it and a particular temperature in order to get a result that would be a useful result?—*A.* Yes sir, the softening agent, the heat and the pressure and the nature of the difference between plasticisers and the amount of plasticisers all play a part. There is a number of factors, as the patent indicates there is a lot of factors. 30

Q. My point was—*A.* This sample looks as if it was partly nipped going through the calender roll. It looks to me, apart from the effect I have mentioned, that it was not a very well made sample in that probably it went through the calender not quite straight. 40

Q. Do you know where that fabric came from?—*A.* I do not.

Q. And you do not know where it was made or how it was back-filled or what was in it?—*A.* No sir. They were just commercial shirting fabrics, at least that is what they looked like.

Q. They are sometimes back-filled with starch, are they not?—*A.* This particular cloth was not back-filled. I could see if it was back-filled, and it was not.

Q. Do you know whether there was any starch in it or not?—A. No more than it appeared like an ordinary shirting such as you buy. In the Exchequer Court.

Q. Have you got any sample of it?—A. No.

Q. It would be interesting to compare. How many times were those samples passed between the calender rolls?—A. Once. No. 18. Defendant's Evidence.

Q. Only?—A. Yes, just once.

Q. And how wide were the samples?

HIS LORDSHIP: I suppose, Mr. Biggar, you can get so many different results from these tests upon small pieces, small variations which would not amount to much in commercial life, would they? Herbert Platt. Cross-examination—continued.

Mr. BIGGAR: Well some of the variations are of first grade commercial importance.

HIS LORDSHIP: If it be known that with the cellulose acetate you got adhesion I do not see how there could be much trouble. If you did not get the adhesion you threw it aside and worked until you got it.

Mr. BIGGAR: Exactly, you would go on and make an invention.

HIS LORDSHIP: No you do not want to make an invention, but if you were making a commercial product.

Mr. BIGGAR: What was the width of these commercial rolls that you were using?

WITNESS: 50 inches wide—or long.

Q. And the width of the strip you were passing through was how much?—A. I would say it was about six inches wide.

Q. You cut off some?—A. I trimmed the edges around after it went through.

Q. Roughly speaking what was the order of the pressure which those calender rolls were extended to exert on a 50-inch fabric?—A. I really do not know.

Q. I am not asking for any specific figure, but of what order would it be? Would it be of the order of five or ten pounds or of the order of one hundred pounds?—A. I would say a heavy pressure, but just what the pressure is between a pair of nip rollers, I do not know how to calculate it.

Q. But it would be of the order of one hundred pounds, or perhaps of two or three hundred?—A. It would be a good heavy pressure.

Q. You would count it in hundreds?—A. Yes I would say it was a heavy pressure.

Q. Have you ever calculated what the pressure per square inch on a six inch strip would be in rollers of that kind?—A. I have not.

Q. What is the actual width of the nip, about one-eighth of an inch?—A. You mean—?

Q. The line at which the two rollers come in contact and at which they exert this pressure?—A. The two rollers come together, they are together.

Q. They only touch at one point?—A. You mean when the two rollers come together they come together.

Q. I am asking what the width of that nip is. During what distance do they exert the pressure? Let me put these two tumblers against one another, and you will see what I mean. (Showing). A. If I could give you that I would

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know how to calculate the pressure between a pair of nip rollers, but I do not know what that is, I do not know, when two rollers come together, just what is the width of the contact. I do not know whether anyone does.

Q. Something under one-eighth inch, is it not?—*A.* It is very small.

Q. That would be the order?—*A.* Yes it is very small.

Q. In connection with the pressure of the Z-5 series of exhibits you used the expression, 35 pounds of air. What do you mean by that?—*A.* That was 35 pounds of air on the press, and in our particular instance it calculates back to 35 pounds on the plate, on the sample. This particular test was made in I believe you call it an American fused collar press. 10

Q. What you mean is, when you say 35 pounds of air you mean 35 pounds per square inch?—*A.* That would figure out at 35 pounds per square inch on the sample.

Q. Having regard to its width and the area of the press and so on?—*A.* Yes.

Q. Did you ever hear of calendering paper in calender rolls?—*A.* Yes I have heard of it.

Q. You know what calendering is?—*A.* Yes sir.

Q. It is imparting a polish or shine to the outside, isn't it?—*A.* In some cases, yes sir.

Q. And that is what you do when you make a moire fabric, is it not? 20
—*A.* No sir.

Q. Do you not polish the outside?—*A.* No sir, not in that respect.

Q. You do get a polish?—*A.* We get a polish but we do not do a polishing operation.

Q. Do you mean to say that you do not get exactly the same kind of effect as you get in the calendering rolls when paper is passed over them?—*A.* No sir.

Q. They are not shone in the same way?—*A.* No, we do not size our material to get a gloss.

Q. Independent of size can you not get a shine by passing paper over calender rolls?—*A.* I would imagine in that case—I do not know for sure but 30 I think they run one roll faster than the other.

HIS LORDSHIP: Paper goes through the calender rolls to dry as well.

Mr. BIGGAR: It is dried first in the machine.

HIS LORDSHIP: Not completely. They put it through many calender rolls and the drying process goes on, and you will get other calender rolls in which there will be no polish, heavier material.

Mr. BIGGAR: I am speaking of the possibility.

Q. There was one remark you made to my friend Mr. Lajoie that I did not understand. You said that if you used a cold iron with the cellulose acetate yarns they were left crinkly?—*A.* I do not recollect that. 40

Q. At page 163 you were asked:

“*Q.* Have you any experience in connection with ironing fabrics of “cellulose acetate?”

And your answer was:

“I have ironed lots of cellulose acetate celanese fabrics and if your “iron is too cold it does not take out the wrinkles.”

A. Oh that is right. By “wrinkles” I was referring to distortion you get—

Q. Have you ever heard of ironing cotton fabrics with a cold iron ?
—A. Well it was used in a relative sense, I mean cool, not cold.

Mr. CHIPMAN : In fairness to the Witness my friend should read the whole statement—A. I think I was speaking in relative terms of one thing to another.

Mr. CHIPMAN : “ If it is too hot you could iron cotton with it, but “ it will mark the celanese. But there is quite considerable in-between “ stage where your iron will soften the fabric without melting it.”

Mr. BIGGAR : So that you agree that heat will affect cotton adversely
10 before it will affect celanese yarn ?—A. That is a question of time, sir.

Q. Well that is what you said there, that if the iron was too hot it would be all right for the celanese but not for the cotton. There is no doubt about that I suppose ?—A. I presume you are discussing ironing ?

Q. I am only quoting your own statement and asking if I have correctly understood it.

Mr. CHIPMAN : I do not think his own statement is to that effect.

Mr. BIGGAR : You have just read it. “ If it is too hot you could iron “ cotton with it, but it will mark the celanese.” Is it a good thing to mark the celanese ?

20 Mr. LAJOIE : My friend should read the balance of the statement which explains the witness' position. He says there was an intermediate stage.

HIS LORDSHIP : What about the intermediate stage ?

Mr. CHIPMAN : “ But there is quite considerable in-between stage where “ your iron will soften the fabric without melting it.”

Mr. BIGGAR : Now you produced some fabrics made under the patent to Henri Dreyfus, British Patent No. 173,021. That is the Z-11 series. You remember those exhibits ?—A. Yes, sir.

Q. Will you tell me how you made those ? First you better tell me whether they were all made in the same way ?—A. No, the first one was made using
30 per cent. solution of benzyl cellulose in benzene solution, which was placed on the gauze, that wire mesh fabric, and the gauze allowed to dry. That is number 1 fabric, the sort of glass.

Q. How did you get it on ?—A. I used a 10 per cent. benzyl cellulose solution and put it on there. I laid that on a piece of glass.

Q. Laid what on a piece of glass ?—A. That gauze, and poured the benzyl cellulose solution over it and then lifted it up and hung it up to dry.

Q. You just poured the solution on ?—A. Yes, to fill up the interstices.

Q. And that is number 1. Now number 2 ?—A. That is Z-11 (b). We first cast a film with a solution of 10 per cent. benzyl cellulose in benzene onto
40 a sheet of glass.

Q. How do you mean you cast it ?—A. Poured the solution onto a glass plate and covered it over and allowed the benzene to evaporate so as to leave the benzyl cellulose in the form of a film. Then we stripped that film off the glass by putting the film and a piece of open mesh fabric which I think is cheesecloth together in a press with heat and pressure. We pressed them together.

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Q That course could have been taken just as well with your benzyl cellulose in the form of woven threads, might it not?—A. No, that would not be the same, because it is glass material, you have got to get glass-like material.

Q. I am not asking about the material, I say the process you followed could equally well have been followed if you had your benzyl cellulose in the form of woven thread?—A. If I had a benzyl cellulose fabric I could have begun it with fabric and put it in a press and joined them together.

Q. In exactly the way you did with the sheet of benzyl cellulose that you took off the glass and laid on this cheesecloth?—A. Yes.

Q. Now what about specimen C, that is this one with the imbedded wires, 10 how did you do that?—A. We cast a film of benzyl cellulose and then those wires were just laid across the film and subjected to heat and pressure and the wires forced into the film.

Q. This thing you cast, what was it? How did you get the cast?—A. I took a solution and cast it into a film.

Q. What is the solution?—A. 10 per cent. benzyl cellulose in benzene.

Q. And waited until the benzene had evaporated?—A. Yes sir. That usually is an overnight operation.

Q. And in that case you did not take the sheet of benzyl cellulose off the glass as in the other case?—A. Oh yes. 20

Q. You did?—A. Yes.

Q. Having taken it off the glass you put it on these wires, or put the wires on it?—A. Put the wires on it.

Q. And it was lying on what, the sheet?—A. It was in the press.

Q. After you took it off the glass sheet of benzyl cellulose, you put the sheet of benzyl cellulose in the press?—A. Pressed together, yes.

Q. And then laid the wires upon it?—A. May I see that sample? (Shown). No, I am mistaken about that one. I remember the wires were laid on the film before it was fully dry.

Q. Before it was taken off the glass?—A. Yes, the wires were laid on the 30 film before it was fully dry.

Q. I suppose you could have done it equally well the other way, waited until the film dried and then laid the wires on it in the press, and then used the heat and pressure to bring them together?—A. Yes sir.

Q. And again you could have done exactly the same thing if your benzyl cellulose had been in the form of a fabric woven from threads?—A. I could have carried out the same operation, yes.

Q. And that is equally true of the thread of Z-11 (d), the little lace one. How was that done?—A. The solution of benzyl cellulose was poured onto the glass, the solvent allowed to partly evaporate, and when it was still soft the 40 lace was laid on it and the rest of the benzene allowed to evaporate.

Q. Again you could have done by allowing the benzyl cellulose to dry, taking it off the glass putting it into the press and laying the lace on top of it?—A. Well in this particular instance I would say probably no because of the nature of that lace.

Q. The nature in what respect?—A. I think that would be a difficult way to make a sample like that.

- Q. Why?—A. Just a matter of operation.
- Q. Well but why difficult?—A. I think it would be a little difficult to handle a lace fabric in the press with a thin film without getting it to go through the film. You see that is on the film.
- Q. Oh you mean with that particular kind of fabric.—A. That it would be difficult.
- Q. Then there was C, how does that differ from the others?—A. We formed a film of benzyl cellulose which contained a small amount of castor oil, and the film was attached to an open mesh cheesecloth cotton fabric by means of heat and pressure.
- 10 Q. Putting it a little more fully, you made your film on glass as before?
—A. Yes.
- Q. And took it off the glass?—A. After it was dry, yes.
- Q. And put it in a press?—A. Yes sir.
- Q. With this cheesecloth?—A. Yes sir.
- Q. And then squeezed it?—A. Yes sir.
- Q. And the amount of heat was—A. The amount of heat in that trial I did not make any note of. I went ahead and made them up, it does not specify.
- 20 Q. You did not try then any experiment on the basis of the first part of that specification, in which it says that the production of these things from cellulose esters is old? You only used the ethers?—A. I happened to know that this thing was cellulose acetate, was used for making chicken wire with cellulose acetate film in between. It was made at Sponson by the British Company under the name Spondite chicken wire, covered with a solution of cellulose acetate to look like glass.
- Q. It was a waterproof fabric?—A. No—
- Q. Was it not waterproof? I thought Spondite was waterproof. I was in a case about it once?—A. It must be waterproof of course.
- 30 Q. Was it a waterproof fabric?—A. I would not call it a fabric, I would call it chicken wire.
- Q. The Spondite I saw was a woven wire fabric with the interstices filled up with cellulose acetate?—A. You may have seen a different Spondite. The one I recollect seeing—of course this was when I first went to the British Company, was ordinary chicken wire treated with solution.
- Q. How do you distinguish the ordinary chicken wire from fabric? What do you call this for example?—A. That is a small wire mesh fabric.
- Q. Well there is no difference between that and the chicken wire except the chicken wire is a little more twisted. It is a different weave?—A. Yes, they usually have bigger holes in it.
- 40 Q. It is a different weave?—A. Yes.
- Q. You would not say it was gasproof?—A. I never tried Spondite for gasproofness.
- Q. I call your attention to the figures in U.S. Patent No. 1,903,960.
- Mr. CHIPMAN : That is not in.
- HIS LORDSHIP : That is the one which defines the claims?
- Mr. BIGGAR : Yes, it has four or five claims,—four.

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Mr. LAJOIE : Before my learned friend asks any questions on this, I wish to enter an objection against examining the witness on U.S. Patent 1,903,960, because it is not a prior patent ; it is a patent to the production of which I objected. I do not think the examination of the witness on the disclosures or teaching of that particular patent has anything to do with this present case.

HIS LORDSHIP : I think the evidence is permissible. Your objection will be noted.

Mr. BIGGAR : Q. It is just to see whether I have correctly understood those figures. If you look at figures 1 and 2, they represent, I understand, the state of the two fabrics before and the one fabric, the composite fabric, 10 after processing ?

Mr. CHIPMAN : Is not that a place where the patent should be left to speak for itself, when the diagrams are fully explained in the patent ? I do not think that is a proper subject for examination or cross examination.

HIS LORDSHIP : Oh, I do not think it is objectionable. It is not very serious. You are just examining him on the drawings ?

Mr. BIGGAR : Yes, my Lord.

HIS LORDSHIP : The United States patent requires drawings.

Mr. CHIPMAN : And the processes are fully described at page 3. If the witness says what the patent says, he will be correct. If he says what the patent 20 does not say, he will be wrong. It cannot advance us at all.

HIS LORDSHIP : He must not construe the patent, anyway.

Mr. BIGGAR : Q. How would that figure 2 compare with a cross section of spondite, for example, or something, if you prefer, made exactly as spondite was made ?—A. Let us get away from spondite, because you and I have seen different things. Let us take that one (indicating).

Q. Let us take Exhibit Z-11-A ?—A. Well, in this case, of course, the film is right in between, it is not on this side and it is not on that side, it is actually in the spaces, as you see.

Q. Would you say that the difference between that figure and spondite, 30 and bringing number 20 into comparison, was really just the place at which the film of cellulose acetate appeared by reference to the warped threads or the filler threads, as the case might be ?—A. This does not look anything like spondite, answering the first part of your question.

Q. I am only talking about the cross sections, and the cross sections are almost identical, are they not, Mr. Platt ?—A. No, this is not what I saw as a cross section of spondite.

Q. What I have asked you is the difference in the place of the film, by reference to the warp thread or the filler thread, as the case might be ?—A. Yes, it could be. I do not know whether spondite was made with it on the surface 40 as well as in. We are talking about spondite again.

Q. Then go back to the example, Exhibit Z-11-A ?—A. In this case, of course, the benzyl cellulose is in between the squares of the wires.

Q. That is what I am putting. It is simply the place at which the film appears with reference to the warp threads or the filler threads, as the case may

be. In the one case it is in between the threads, because there is room for it, and in the other case it is in between the threads and also over them?—*A.* In this it is partially pressed into the fabric.

Q. Let me now go back to Exhibit Z-11-F. That is the name as Exhibit 20 insofar as the place of the film is concerned, is it not?—*A.* Yes, sir.

Q. Now, what, if any, is the difference between figure 2 in this patent that I show you, No. 1,903,960, and that sample Exhibit Z-11-F?—*A.* Why, the only difference that I see is that this does not have the bumps on the top. That has bumps on the top, and this has no bumps on the surface.

10 *Q.* It is a better job?—*A.* You do not say which, so I will say yes.

Q. You are not suggesting that the figure is the better job?—*A.* I did not draw the figure, sir.

Q. With regard to the Crowell patent, which you spoke of yesterday, No. 665,996, I understood you to say that you treated that with a glue and sodium silicate size?—*A.* Yes.

Q. Is that a waterproof size?—*A.* No, it calls for a size that is partly waterproof.

20 *Q.* Is that the size that the patent speaks of?—*A.* I do not know; I assume that the nitro cellulose on the second sample would be closer to the term waterproof size.

Q. This is what he says at line 45, that the “composition is in the nature of a waterproof size. Various kinds of waterproof sizes or finishing compounds are well known in the art and choice may be made of such as are adapted to the subsequent uses of my fabric. It is not necessary that the webs or cloths should be completely waterproof,” and so on. Is that a waterproof size that is described?

Mr. CHIPMAN: I again object to my learned friend asking the witness to interpret this written document.

HIS LORDSHIP: He is referring to a patent and the material.

30 Mr. BIGGAR: I am referring to the material which this witness used, and ask him if it agrees with the material described?—*A.* That was my idea of the sort of thing. I used nitro cellulose on one sample, and I used glue and silicate on the other; and that was my interpretation of about the sort of thing that was meant by this patent.

Q. Did you read it carefully, Mr. Platt, because there are two different things referred to in the patent. There is the waterproof size which is applied first, and then there is the adhesive which is used afterwards to bring the two fabrics into association?—*A.* That is correct sir.

40 *Q.* Now I am talking about the thing that you treated the several layers with, that is to say what is described in the patent as a waterproof size. Is glue and sodium silicate a waterproof size?—*A.* My interpretation is that it was more waterproof than glue alone, and therefore I interpreted it as a waterproof size.

Q. Is it a waterproof size or is it not?—*A.* I used it because I thought it was the sort of thing which was meant in the patent, that it would be a waterproof size.

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Q. You thought it would be a waterproof size?—*A.* I thought that was the type of thing; that was my interpretation of the patent.

Q. You can say is it what is known as a waterproof size, or is it not?—

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A. To me, I used it as a waterproof size. I know that nitro cellulose is a waterproof size; and I know that glue and silicate I regard as partly waterproof, but not as waterproof as nitro cellulose.

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Q. I want you to confine your attention for the moment to the material with which the layers were treated before you brought them together at all?—

A. Yes.

Q. A material which is described in the patent as a waterproof size, and I ask you a perfectly simple question: is glue and sodium silicate a waterproof size?—*A.* I regarded it in the nature of a waterproof size. 10

Q. I am not concerned with how you regarded it, for the moment?—*A.* As in the nature of a waterproof size.

Q. I do not want something that is in the nature of, for the moment. Is it or is it not a waterproof size? Never mind what the patent says for the moment?—*A.* Oh, it is not absolutely resistant to water, of course not.

Q. Is it properly described as a waterproof size?—*A.* I thought it was in the nature of a waterproof size.

HIS LORDSHIP: I think I understand what the witness means. You 20
confused the witness a little bit by reading from the patent. If you put the question first you might have got the answer.

Mr. BIGGAR: *Q.* Do you know Thomas Clifford Woodman?—*A.* No sir.

Q. Did you never hear of him?—*A.* No, sir.

Q. Do you know William Alexander Dickie?—*A.* No, sir.

Q. Did you never hear of him?—*A.* No, sir.

Q. When you were at Spondon, do you know whether either one of those people was in the employ of the British Celanese Company?—*A.* I could not answer your question, sir.

Q. You do not know?—*A.* I do not know. 30

Q. You do not know whether they were or not?—*A.* No, I do not know. I could not answer your question just on that basis. I assume that they were, from the patent there.

Q. From the Woodman and Dickie patent?—*A.* Yes.

Q. But that is all the information about them?—*A.* Yes.

Q. Did you ever hear of there having been any resort to a material that is described in that patent, at that time?—*A.* I have no personal knowledge of it, no sir.

Q. You have no knowledge of that?—*A.* No, sir.

Q. No material of that kind ever came under your observation?—*A.* No, 40
sir.

Q. You told us yesterday that yarns of cellulose derivatives were affected by humidity less than other yarns?—*A.* Yes, sir.

Q. When you used the expression "other yarns" to what yarns were you referring?—*A.* I was thinking of other rayon yarns which are essentially cellulose. I was thinking of cotton, and I was thinking of wool and silk.

Q. Do you know the relative degree of the effect of humidity on those various yarns?—A. Do you mean the amount of water they absorb and the amount of humidity?

Q. The degree of the effect of humidity upon them?—A. The cellulose acetate yarn absorbs less humidity, under normal conditions, than the other fibres.

Q. You see, I did ask you that. You told me that before, and I do not want to go over the same thing again and again if I can avoid it. I ask you if you knew what was the relative degree to which these various yarns that you have mentioned are affected by humidity?—A. I think that the acetate is softened, but it keeps its stiffness more than the others; it is not softened so much, if I understand your question.

Q. Do you know the relative degrees?—A. I do not get what you are driving at. Do you want me to tell you that I know that cellulose acetate yarns under normal conditions pick up about four to five per cent. of moisture, and that viscose yarns would be somewhere in the neighbourhood of twelve, and wool probably in the neighbourhood of fourteen to sixteen, and cotton somewhere in the neighbourhood of eight or nine.

Q. Yes?—A. Those are about the general figures.

Q. Am I right in understanding that cotton actually gains in strength when wet?—A. Cotton gains in strength when wet.

Q. Whereas wool loses about 10 to 20 per cent. of its strength when wet?—A. I believe that is right.

Q. And silk about 15 to 25 per cent. of its strength?—A. I am not sure of that figure.

Q. On the other hand, cellulose acetate yarn loses about 40 per cent. of its strength?—A. I would not be able to answer that question. I have not knowledge of the strength under those different conditions. I know that it loses strength, but I would not know how much.

Q. You do know that it loses strength in a higher degree than even silk, do you not?—A. I think that is probably true.

Q. And as a matter of fact, the other cellulose acetate loses more strength, does it not, proportionately, I mean in percentages, than any of the other cellulose derivative yarns when alone?—A. I think the viscose and the regenerated cellulose lose more strength.

Q. Lose more strength?—A. That is my idea. I think cellulose acetate loses less under some conditions.

Q. But you do not know to what extent?—A. My knowledge would be that it is different and it is less.

Q. Would it be true to say that it is essential that all rayon goods and yarns be handled very carefully when wet?—A. I would say that there is a vast difference between handling a piece of rayon and a piece of celanese. You do not have to handle celanese in regard to weakening or softening when wet, with the silk gloves that you do with rayon. Rayon is harder to handle in piece goods, and it is much harder to handle wet, from the point of view of weakening with water than cellulose acetate fabrics. You can put your fingers through it much more easily.

Q. Is the statement I made correct, that it is essential that all rayon yarns and goods be handled very carefully when wet?—A. Relative to the coarser

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fabrics, yes. Of course all fabrics have to be handled carefully and it is rather a vague sort of thing.

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Q. I just want to know if the statement is true nor not?—*A.* I would say yes, that any delicate fabric has to be handled carefully. A silk fabric has got to be handled carefully.

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Q. Are you suggesting, Mr. Platt that if that statement occurred in a textbook or handbook dealing with Rayon and Synthetic Yarns, it would be merely platitudinous, because it applied to all fabrics, no matter from what material they were made?—*A.* Yes, but you are reading, sir, a Wool handbook, I think?

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Q. No, I am reading from a Rayon and Synthetic Yarn Handbook, and is it a correct statement that all rayon and synthetic yarns have to be handled carefully when wet—is that correct or not?—*A.* Yes, I think everything has to be handled carefully, yes.

Q. Do you mean irrespective of the material?—*A.* Yes. I mean you have got to handle,—“carefully” is rather broad.

Q. Is it true that you have to take special care with regard to rayon fabrics when wet?—*A.* Yes, sir.

Mr. CHIPMAN: That question has been answered several times.

Mr. BIGGAR: *Q.* I think rayon and synthetic yarns include cellulose acetate, do they not?—*A.* That is not a question for me to answer, because we do not call celanese rayon. We call it a synthetic textile fibre, and have never regarded it as rayon. 20

HIS LORDSHIP: What is the point of this cross examination?

Mr. BIGGAR: It is directed to the statement, which I pointed out to your Lordship, which was made in the stiffer patent, and which is quite untrue, that cellulose rayon yarns are not affected by humidity.

Q. Rayon then does include all fabrics made of yarns of organic cellulose derivatives, if not cellulose acetate at all events the others?—*A.* My understanding of the term “rayon” is that rayon means synthetic yarns which are essentially regenerated cellulose. 30

Q. Only?—*A.* That is my interpretation of rayon, yes sir.

Q. Is that the common way that the word rayon is used?—*A.* I think in the United States it is, sir, yes.

Q. So that when a man writes a textbook called Rayon and Synthetic Yarns Handbook, he is just using two exactly identical statements?

Mr. CHIPMAN: I think that depends upon the book. The witness has not the book.

WITNESS: Rayon is a synthetic yarn.

HIS LORDSHIP: Of course when the writer of that book says rayon should be handled with care, he is talking about rayon garments, which are not always handled with care, but are given pretty rough treatment, and yet last for years sometimes. 40

Mr. BIGGAR: He has given a table in respect of that, and he says that the essential of rayon yarns is that they regain their strength upon drying. “The loss of strength when wet is attributed generally to the swelling of the hydrated

"cellulose. It is essential, therefore, that all rayon yarns and goods be handled very carefully when wet"—A. That would indicate that rayon was regenerated cellulose.

Q. And what happens to the water which cellulose acetate fabrics take up ?
—A. I do not know. I could not explain just what happens.

Q. It does swell it, does it not ?—A. In the air, the humidity picks up from the air, I doubt if it swells it ; I doubt if it really swells it.

Q. They may, but you are not sure ?—A. My own opinion is that it does not.

10 Q. In the tests which you made from time to time, particularly those water and air permeability tests, what from the scientific point of view, is the margin of error ?—A. I would say maybe a centimeter. The value of the results is getting them comparative ; and probably a centimeter would be about it.

Q. One or two centimeters ?—A. I think one up or down.

Q. How many times have you made the identical experiments ?—A. In what connection sir ? Do you mean in connection with these ?

Q. Generally in your work ?—A. Oh, we use that.

Q. How often have you made the identical experiment ?—A. Oh, we use that possibly twice a month, or something like that.

20 Q. You do not follow my question at all. You have a particular piece of fabric, and you set out to determine its permeability. How many times have you cut several pieces of the fabric and tested them all, so that you have got identically the same fabric subjected to the same test ?—A. On the high permeabilities, the more impermeable samples we did one or two ; on the lower ones we did about three and struck an average.

Q. So that these figures which you have given us do not represent any particular test ?—A. They are an average of three.

Q. They do not represent any particular test ?—A. No, sir.

30 Q. Have you got your exact figures for the tests you did make ?—A. No, I have only got the average figures. It would be one up or down. You see, this is the first time I have ever been in a courtroom, so that I am not experienced in this sort of business, but I had them down on paper, and I recorded the average.

Q. And you have not got the actual readings that you got on the different occasions ?—A. No sir, I just put those things on a piece of paper and I never thought about keeping it.

Q. So that I am right, notwithstanding my friend Mr. Chipman, in saying that the margin of error must be at least two ?—A. One up and one down, certainly.

40 Q. Or you could not get an average ?—A. It is one up and one down, yes, sir. After all, we did not get one up and one down all the time ; they checked out closely.

Q. Since I have got that far, I am going one step further. Were there any of those cases at all in which your three figures were more than two apart ?
—A. No, sir.

Q. There was not any ?—A. No, sir.

Mr. CHIPMAN : I am afraid I cannot agree with my friend's mathematics.

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Mr. BIGGAR : *Q.* Now, can you select from all the fabrics that you put in here as samples of the use or resort to this patent in question, any that would serve for gasbags ?—*A.* I have gasproof fabrics there.

Q. Which ones ?—*A.* Some of those heavier ones are gasproof. I will have to look up those.

Q. Are you speaking of the series that you put in ?—*A.* Yes, the samples.

Q. Would they serve as gasbags ?—*A.* I have never seen a gasbag ; I do not know just what is used in a gasbag ; but I do not see why they could not be used as a gasproof fabric. My impression is that the gasproof fabric in a gasbag is heavy, a number of plies of fabric ; and as such it looks to me as if that would do. 10

Q. You do not know, as a fact, that they use gold beater skins for the purpose ?—*A.* They have gold beater skins in there, and it consists of a number of plies.

Q. Is it not a very highly flexible material ?—*A.* I think it is flexible.

Q. Have you any highly flexible material among those samples ?—*A.* May I see those Z-4's?

HIS LORDSHIP : What is a gasbag, anyway ?

Mr. BIGGAR : My Lord, it is a very, very thin flexible material.

HIS LORDSHIP : What is it used for ?

Mr. BIGGAR : For balloons and the inside of airships, and so on. It is not the outer skin of the airship, but it is the gas balloon or balloonettes that are protected by the outer skin. 20

WITNESS : I am afraid I could not answer your question, because I do not know about that.

Q. Is there any material, among all those that you have produced, that would serve for a waterproof garment ?—*A.* I think there are, sir.

Q. Which ?—*A.* I think in a general sense of the term "waterproof," there. Can I see Exhibits Y-1 and Y-2 ?

You see, "waterproof" is a relative term. Yes, I think these two, in connection with the use of garments, would have high water resistance. Those give the high water resistance. 30

Q. Those would be the best ?—*A.* I think so. I would say that they had a high water resistance.

Q. You defined "waterproof" yesterday for us as up to 10 cubic centimeters, very permeable, and from 10 to 50 centimeters resistant to water ?—*A.* Yes.

Q. And then above 50 centimeters ?—*A.* Resistant.

Q. And above one hour waterproof ?—*A.* Yes, sir.

Q. You are now defining as waterproof a material Y-1 ?—*A.* I said it was water resistant.

Q. You are now telling me you could use for a waterproof garment a material like Y-1, which is only, as I understand from my note, 10 centimeters, is it ?—*A.* 10 minutes and 20 minutes.

Q. So that neither of those come within the definition of "waterproof" that you gave us yesterday ?—*A.* I qualified myself by saying that that was a general interpretation ; waterproof and water resistant were rather indefinite terms in that they were dependent upon the condition of usage of the article ;

as the waterproof would depend upon the conditions; and that the conditions under which it was used must qualify the term "waterproof."

Mr. BIGGAR: Q. Then anything might be waterproof if it was sufficiently resistant to water for the purpose for which you desire it?—A. That is exactly so, sir.

Q. And gas-proof, I suppose we will define in much the same way?—A. I think that was generally accepted, sir.

Q. I do not think I asked you about ethylene dichloride. How do you use that?—A. As a liquid.

10 Q. As a liquid?—A. Yes.

Q. And you do not mix it with any volatile solvent?—A. No, sir.

Q. Could you use it in the solution from which cellulose derivative yarns were spun?—A. Yes, you could.

Q. How?—A. It would mix. My opinion is that it would mix in with the cellulose acetate and the other solvent that you were using.

Q. It is not volatile?—A. It boils at, I think, between 80 and 90. It has a boiling point between 80 and 90.

Q. Degrees centigrade?—A. It does not evaporate completely at air temperature.

20 Q. Acetone does, does it, in air temperature?—A. At room temperature given time, why, acetone will evaporate.

Q. I say, it will evaporate completely at ordinary temperatures?—A. At ordinary temperatures and given time.

Q. Well it does evaporate completely at ordinary temperatures?—A. Yes.

Q. And that is true or not true of ethyl alcohol?—A. Of course, you are asking me something rather difficult, because ethylene dichloride and water or alcohol will, having it at room temperature, if you leave them long enough.

Q. In other words, they will completely disappear?—A. Yes, sir.

30 Q. And that is true or not true of methyl alcohol?—A. My recollection is that methyl alcohol will evaporate.

Q. On the other hand, mono oil is non-volatile at ordinary room temperatures?—A. Yes, sir.

Q. And that is true of triacetin?—A. Yes, sir, that is true.

Q. And it is true of dimethyl phthalate?—A. Dimethyl phthalate is not entirely non-volatile; it is like camphor. It does disappear eventually. You cannot keep it absolutely staple.

Q. You mean at very long periods of time?—A. Given time, it will disappear.

40 Q. But the periods are very long, are they not?—A. The periods are, depending on the boiling points.

Q. But it is comparatively speaking very long in the case of triacetin? I mean, for example, supposing that we were comparing methyl alcohol and triacetin, the methyl alcohol, we will suppose, evaporated in an hour; taking the same comparable quantity of triacetin, roughly speaking how long would it take for it to disappear?—A. Oh, you say an hour for methyl alcohol?

Q. Yes.—A. I really do not know. It would be longer. It would be a longer time.

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Q. But as a matter of fact it is a length of time of an entirely different order is it not? I mean, if you had an amount of methyl alcohol which evaporated in an hour, a comparable amount of triacetin would take, say, six months, would it not, or something of that order?—A. I do not think there would be that difference; but I think it is rather difficult—

Q. An hour to three months?—A. No, I do not think so. If you have an open glass of one that would go in an hour and an open glass of the same amount of another, I think maybe one would go in an hour and the other would go in maybe 15 hours; something like that.

Q. You think it would be as short as that, do you?—A. I think maybe something like that. I mean, we are talking of an abstract question and I do not think we can get very far with it. 10

Q. You really do not know. I thought it was longer?—A. I have never tried it with triacetin, but I have tried it—I know with dimethyl phthalate it would go.

Q. Speaking of the moire fabrics that you referred to in your Examination-in-chief, there are certain of them that are composite fabrics, are there not?—A. No, sir, not sold as composite fabrics.

Q. Are there none of the moire fabrics which are made up of two layers?—A. No, you do not make up to sell, two layers. The operation of moire involves treating two layers together. 20

Q. Yes; in other words, they are composite fabrics made up of two layers?—A. No, sir. There are two layers, but I do not regard it as a composite fabric. They are together for purposes of operation.

Q. Oh, you mean that the two fabrics are treated simultaneously and then separated?—A. Yes, sir.

Q. And sold as individual fabrics?—A. That is right, sir.

Q. Now would you describe the process that is used for the purpose of making those?—A. The two pieces of fabric are placed together and the design is traced in the fabric; that is, the essential thing from your point of view, and the two layers are put on a single roller. The two pieces of fabric are then run in between hot steam rollers at a temperature of 150 to 160 degrees centigrade and subjected to the heat and pressure and wound up on the other side. They are then taken off the take-off roller and split apart, and you have your two pieces of moire fabric. The two backs are out and the two faces are in when it goes to the calender. 30

Q. And there is some pattern on the rollers which produces the moire pattern?—A. No, sir.

Q. Well I misunderstood moire then?—A. No, moire is not—you can get a moire without tracing a pattern at all. With what we call a wild moire you would have a pattern without doing any tracing. You can trace moire, trace your pattern, but that is a different technique altogether. That technique has nothing to do with hot rollers. 40

Q. You can get a perfectly plain moire, can you, without any pattern?—A. I do not know. No, no, moire has a pattern. I do not know what you mean.

Q. You will have to explain to me, because I have not understood how you got your pattern at all?—A. Have you ever looked through two pieces of wire

gauze and seen a watered appearance? Have you ever looked through two layers of fabric and seen the watered appearance?

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Q. But how do you produce this appearance in your moire fabric?—
A. It is due to the interference of one layer of fabric with the other. You move the picks in one fabric so as to control your design. It is rather a difficult think to explain.

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Q. You mean that it is some sort of effect produced upon one fabric by the other, is that it?—A. Yes, sir.

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ination—

Q. And what are these fabrics made of?—A. All celanese.
10 Q. And the temperature of the rollers is how much?—A. 150 to 160 degrees centigrade.

continued.

Q. And then there is no difficulty in separating the fabrics after they have got through the rollers?—A. Yes, you have to pull them apart.

Q. They stick a little?—A. You have to pull them apart.

RE-EXAMINED BY Mr. LAJOIE.

Re-exam-
ination.

Q. Mr. Platt, you have been asked by my friend, Mr. Biggar, to make a comparison between Exhibit Z-11-A, which you had made under the teachings of the Henri Dreyfus British Patent 173,021?—A. Yes.

Q. And figure 2 of United States Patent 1,903,960, to Camille Dreyfus,
20 Exhibit 5?

HIS LORDSHIP: As a matter of fact, I think Mr. Biggar abandoned that question. I am not sure, but I thought he did.

Mr. LAJOIE: I do not think so, my Lord. The questions extended along that line for a few minutes, I believe.

Q. And also with Exhibit 20 which has been stated to have been made under the patent in issue, 265,960. Also in this connection you have been referred to Exhibit Z-11-F, which has also been made by you under the teachings of the Henri Dreyfus patent just mentioned. Will you state what difference there is in the processes that have been used to produce these various samples,
30 having particularly in mind to compare Plaintiff's Exhibit 20 with Defendant's Exhibits Z-11-A and Z-11-F?—A. Just what is Exhibit 20?

Q. Exhibit 20 was filed by the Plaintiff as having been made under patent in issue, 265,960; also referred to as Patent No. 1.—A. Was this exhibit made—

Q. Do not say "this" exhibit; refer to the number.—A. What I want to know is was this exhibit made with a piece of cellulose and pressed together? You see, I do not remember what Exhibit 20 was.

Q. Well, I understand that Exhibit 20 is claimed to have been made under the teachings of patent No. 1 and by the use of one cotton fabric which
40 was united to an all-celanese fabric.—A. If my recollection serves me right about this sample, this was made with a fabric treated with a plasticiser fabric consisting of yarns treated with cellulose acetate, treated with a plasticiser and subjected to heat and pressure. That is Exhibit 20. And Exhibit Z-11-F was made by placing a film or sheet of benzyl cellulose on an open weave cotton

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fabric and subjecting them to heat and pressure. Exhibit Z-11-A is a piece of wire mesh fabric which has been covered with a solution of benzyl cellulose in benzene and allowed to dry.

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Q. I take it, therefore, that in the case of both Exhibits Z-11-A and Z-11-F —resort has been had to a coating of a solution ?

Mr. SMART : That is rather leading, is it not ?

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continued.

WITNESS : In one case here, as I mentioned, you have a benzyl cellulose solution, or a solution. In the second case you have a film or sheet, and in the third case you used a woven fabric containing yarns.

Q. The woven fabric is Exhibit 20 ?—A. In 20 you have woven fabrics 10 and yarns, and in Z-11-F you have sheets of films, and in Z-11-A you have a solution.

Q. In the case of Exhibits Z-11-A and Z-11-F, is use made of yarns of a cellulose derivative ?—A. No, sir.

Q. And in the case of Figure 2, in U.S. Patent No. 1,903,960, to Camille Dreyfus, has use been made of yarns of a derivative of cellulose for the purpose of uniting ?—A. Yes, sir, that is what the patent says. The picture here says so.

Q. In your opinion what is generally understood by the word "water-proof" when applied to garments, and to what extent you would distinguish the meaning of that word, if at all, from its application to other uses ?—A. Water- 20 proof means that it will stand up to water under the conditions it is going to be used for. A dress could be desired to have a certain resistance to water so that it will not spot, or a raincoat has got to stand up to rain or be a certain amount water-proof, and other articles would require more severe water-proofing.

Q. Is that term "water-proof" a relative term when applied to such garments ?—A. The term "water-proof" as used in the trade is relative, and no two manufacturers interpret it as being exactly the same thing.

Q. So you might buy, I presume, two water-proof coats and have one which would be much more impermeable than the other ?—A. Yes, sir.

Q. I presume there has to be a resistance to some extent to water, though ?— 30 A. Yes, sure ; it cannot be water-proof without being water-resistant.

Q. What has been your purpose in carrying out the three or four tests, I believe you stated ?—A. Three, sir.

Mr. CHIPMAN : Three.

Mr. LAJOIE : Q. The three tests as to permeability where there was a fair amount of permeability as compared with the two tests, I believe you stated you carried out, where the results showed a comparative impermeability ?— A. To cut down the margin of error.

Q. So when you speak of a possible error of one centimeter up or one centimeter down, that was actually cut out by the average that you struck ?— 40 A. It would be cut down by the average, yes.

Q. And that was the object of striking out an average ?—A. Yes, sir.

Mr. LAJOIE : I have no other questions, my Lord.

(At 1 p.m. the Court adjourned until 2.20 p.m.)

No. 19.

AFTERNOON SESSION, 2.20 p.m.

January 14, 1936.

CHARLES W. LEVINSON, Sworn, EXAMINED BY Mr. LAJOIE.

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tion—

Q. I understand Mr. Levinson, you are a chemist and patent attorney?—

A. Yes, sir.

Q. As such have you had special experience in the field of cellulose derivatives with which we are concerned in this case?—A. Yes, sir.

Q. Would you give us briefly your qualifications and experience in this
10 line?—A. I graduated from Johns Hopkins University with the Bachelor degree, specializing in chemistry, in 1915. The following year, that is from 1915 to 1916, I was employed as a chemist in the laboratory of the United States Navy in connection with the manufacture of nitrocellulose and the conversion of such nitrocellulose into smokeless powder. My duties there involved the testing of those materials and the study of their behaviour.

The following year I returned to Johns Hopkins and spent one year in graduate study in chemistry. After that for the following ten years, that is the years 1917 to 1927, I was employed as a member of the examining corps of the United States Patent Office, dealing with applications relating to
20 chemical inventions.

From 1927 until the present time I have been employed with The Celanese Corporation of America as chemist and patent attorney. Throughout that period of time all reports of all research work of all nature conducted by them, by the Defendant the Canadian Celanese Limited and Celanese Corporation of America have come to my attention for study. This study involved not merely study to find inventions but also scrutiny of these reports for discussion with those directing research as to what further research should be conducted along the various lines to progress with the art.

Q. I take it therefore you are familiar with the two patents in issue in
30 this case?—A. Yes, sir.

Q. May I direct your attention to patent 265,960. I draw your attention to paragraph 3, page 2, line 7, which refers to fabrics composed of or containing filaments or fibres of the thermoplastic cellulose derivatives. As we have been dealing with these matters all along would you state briefly what is meant by filaments and fibres as used in this paragraph?

Mr. SMART: Not as used in this paragraph, as used in the art.

Mr. LAJOIE: That will suit me just as well.

A. Filaments or fibres of cellulose derivatives mean the very fine, almost
40 microscopic elements that go to make up a yarn. An exhibit has been filed here, a hank of yarn, which I think his Lordship examined yesterday. If one strand of that yarn is examined with a magnifying glass it will be seen that it is made up of a large number of very fine filaments. That (showing specimen) is one yarn, it is composed of 20 to 50 individual filaments. In breaking this yarn I have noticed the filaments have spread apart very nicely and demonstrate

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that : perhaps his Lordship would like to look at this. You see how that one yarn has separated.

Q. You are dealing at present with Exhibit K ?—*A.* Yes, sir.

HIS LORDSHIP : That yarn being cellulose acetate ?—*A.* Yes, your Lordship.

Mr. LAJOIE : Is there any distinction between filaments and fibres ?—

A. The distinction that we usually make between the two is this ; in the ordinary cellulose acetate yarn these filaments occur as continuous lengths. That is during the manufacture the solution of cellulose acetate is extruded through these very fine orifices, it goes on and on and on, so that the filaments are continuous. 10
However for some purposes it is desired to make a yarn composed of short lengths. In that case the continuous filaments are cut down into short lengths, and we usually apply the term fibres to such short lengths, as against the longer lengths or filaments.

Q. I believe that reference has been made in this case to the coalescing of filaments. Would you explain what that means ?—*A.* The yarn, as we have said, consists of a large number of filaments which are very fine. Now if the yarn is treated with something that softens the cellulose acetate of which the filaments are made, these filaments tend to stick together and thus form a more or less unitary structure. That is your yarn now will consist of substantially 20
one unit rather than this large number of units, because of the sticking together. That is coalescence.

Q. That is the filaments fuse together ?—*A.* Yes sir.

Q. Is that an apt word for it ?—*A.* Fuse, merge.

Q. Now we have heard a great deal in connection with the word thermoplastic, which is used in this paragraph 3. You might give us the scientific meaning of that word ?—*A.* Thermoplastic means, becomes softened with heat, or becomes plastic with heat. It does not mean necessarily melting with heat but may involve a lower degree of softening, that is from a slight softening all the way to melting. 30

Q. The ending lines of that paragraph refer to filaments or fibres of non-thermoplastic or relatively non-thermoplastic materials. What is meant by these expressions, non-thermoplastic or relatively non thermoplastic ?—*A.* These expressions mean that the material does not soften to any appreciable degree when subjected to elevated temperatures. Examples of such non-thermoplastic materials contemplated are cotton, natural silk, artificial silk of the regenerated cellulose type, flax, etc., in other words the familiar textile fabrics.

Q. To conclude your explanation as to the meaning of these technical words, the paragraph refers to cellulose derivatives. Would you tell us just what is meant by those words ?—*A.* It is pretty hard to put it in simple language. We will 40
start with cellulose. Cellulose is a substance that forms the cell walls of vegetable matter. In other words, just as bones make the foundations of animals, cellulose forms the foundation or basis for the cells of vegetable matter. The familiar form of cellulose, and one of the purest, is ordinary cotton.

Now when cellulose is chemically reacted under proper conditions groups are introduced into this cellulose, such as acid groups or alcohol groups, and the resulting product is called cellulose derivative.

Q. Perhaps in this connection you might tell us the distinction between the organic and the non organic derivatives of cellulose?—A. Of the two types of cellulose derivatives there are organic derivatives and inorganic. An organic derivative of cellulose is one in which an organic group has been introduced, that is an organic acid or an alcohol.

In the case of an inorganic derivative of cellulose an inorganic group has been introduced, such as the nitric acid group in connection with cellulose nitrate.

Another term that occurs in this patent I think is organic ester of cellulose. Here we mean an ester of cellulose that is a combination of cellulose with an acid which is organic. For instance acetic acid. The ester formed with a combination of cellulose with acetic acid is cellulose acetate, therefore cellulose acetate is an organic ester of cellulose. On the other hand cellulose nitrate is an inorganic ester of cellulose because the nitric group is inorganic.

Q. Will you explain the distinction between an organic group and an inorganic group?—A. An organic group contains carbon. There are a few exceptions of groups that contain carbon that are not considered organic, but for our purposes we can consider that an organic group contains carbon whereas an inorganic group contains no carbon.

Q. Since you have referred to esters and ethers perhaps this is where I might ask you what they are and what distinguishes them?—A. An ester of cellulose is one in which an acid has combined with cellulose. An ether is one in which an alcohol group has been combined with the cellulose.

Q. Following these definitions I direct your attention to paragraph 4 of the patent, page 2,912. This paragraph reads :

“According to the invention woven, knitted or other fabric made
 “of yarns composed of filaments or fibres of a thermoplastic cellulose
 “derivative such for example as cellulose acetate, ethyl, methyl or benzyl
 “cellulose, nitrocellulose or other ester or ether of cellulose, or mixtures
 “of such cellulose derivatives is associated—”

30 I am pausing there. Will you first tell me whether cellulose acetate is an ester?—
 A. It is.

Q. And so is nitrocellulose?—A. Yes, sir.

Q. While ethyl, methyl or benzyl cellulose are ethers?—A. Yes.

Q. Now are all these esters and ethers specifically mentioned by way of example thermoplastic?—A. Yes, sir.

Q. Since that enumeration includes cellulose acetate, would you particularly consider this material from the standpoint of thermoplasticity?—A. Cellulose acetate is definitely thermoplastic, and as a matter of fact celanese, which is made of cellulose acetate, has many properties, or uses rather, because of this thermoplastic character. Cellulose acetate fabric has been embossed, permanently embossed, by passing the fabric between male and female membered rollers to emboss a design, which rollers are heated, and in this way an embossed effect is obtained which is permanent, because the material has been actually molded during this embossing operation, because of its softening under the action of heat.

A most striking illustration of the thermoplasticity of cellulose acetate is found in the phenomenon of ironing the same. Almost every housewife who

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has tried to iron a fabric made of celanese yarns has been confronted with the difficulty that she must not let her iron get too hot, otherwise the cellulose acetate material will coalesce or melt and stick to the iron, and if the iron is hot enough and the time it is applied long enough a hole will be made in the fabric.

Q. If these elements are reduced what happens, the time and the heat?—
A. As the elements are reduced you will get a less marked effect, so that the material will just appear stuck together, and as the time and or the temperature is further reduced you get less and less effect, until you reach the point where it is safe to iron the fabric.

Q. As coalescing filaments you referred to a moment ago in connection 10
with the thermoplasticity of cellulose acetate?—*A.* When such coalescence is caused by the sole effect of heat that is absolute proof of thermoplasticity. And of course coalescence does take place in this ironing phenomenon about which I have just spoken.

Q. Would you deal now with the nitrocellulose, which is also referred to in connection with thermoplasticity?—*A.* For nitrocellulose we have a somewhat different problem. Of course nitrocellulose is highly inflammable, and in some forms quite explosive. One form of nitrocellulose is used for making smokeless powder. There is a definite indication that nitrocellulose is thermoplastic. Of course, unfortunately, the point at which it becomes thermoplastic is so near 20
its explosive point that I must be frank to state that it would be quite dangerous to attempt to rely solely on the thermoplastic nature of nitrocellulose in order to shape the same. This warning is given in paragraph 19 of the patent, which states that although fibres of nitro-cellulose may be employed in practising this invention, it is less advantageous owing to the inflammability of nitro-cellulose. Therefore anyone who would want to use this invention—

Mr. SMART: Is not the Witness starting to argue the case?

Mr. SMART: Is not my friend's Witness starting to argue the case rather than give expert evidence?

HIS LORDSHIP: You cannot avoid a little of that. 30

Mr. SMART: He has been asked to explain a phrase in one part of the patent, and he is attempting to argue the meaning by virtue of this.

HIS LORDSHIP: He is simply pointing out that the patent states that. That is all there is to it.

Mr. LAJOIE: *Q.* Had you completed your sentence?—*A.* No, I had not. I was going to say because of this inflammability of this nitrocellulose one would use solvents, softening agents or plasticizers as indicated in the patent in order to reduce the temperature at which the desired effect is to be obtained.

Q. In such case would its danger point be modified?—*A.* I am afraid I cannot answer that definitely. Probably the danger point as such, that is, 40
the temperature at which the danger point would arise, may not be reduced considerably, but the point I was trying to make was that the temperature that you would have to use to get this desired thermoplasticity is removed from it.

HIS LORDSHIP: *Q.* I suppose, as a matter of fact, it is not used much in fabrics, is it?—*A.* No, your Lordship, nitrocellulose fabric, that is, yarns.

is too dangerous to handle as a commercial product. There was a method of making yarns by the nitrocellulose method, but the product was given a subsequent treatment to remove the nitric acid before it was sold so that it was safe to deal with.

Mr. LAJOIE : *Q.* By being so denitrated, it was not inflammable in the same way ?—*A.* No, it became ordinary cellulose.

Q. That same paragraph mentions the words “ or other ester or ether of cellulose ” Have you any reason to believe that any other ester or ether known or that might become known in the future might not be thermoplastic, and might not work properly under the patent ?—*A.* All the cellulose esters and cellulose ethers that have come to my attention have been thermoplastic, and therefore, the probabilities are that any others that may be discovered would be thermoplastic rather than non thermoplastic.

Q. In connection with methyl cellulose referred to, and which is stated to be an ether, will you state at what temperature it is soluble in water ?—*A.* I am afraid that I cannot answer that question categorically. There are many varieties of methyl celluloses, and their properties and nature depend on the method of making them. Some methyl celluloses have more methyl groups than others. The methyl celluloses that have few methyl groups are usually soluble in cold water, but these methyl celluloses have the peculiar property, rather unusual, of becoming less and less soluble, as the temperature of the water is increased. On the other hand, I recollect having come across references in the literature where methyl celluloses of a very high degree of methylation—that means the number of methyl groups—have been formed, and which are insoluble both in cold and in hot water.

Q. Would you accept, therefore, the broad statement that methyl cellulose is soluble in water at room temperature ?—*A.* I most definitely would not. As a matter of fact, Dr. Esselen had testified about examining a specimen of methyl cellulose, and finding it soluble at a certain temperature, I have forgotten which. Now the methyl cellulose that he dealt with was one that has been put on the market recently as a size for textile fabrics, and is deliberately water soluble because it is highly desirable that sizes should be water soluble so that they may be readily removed from the fabrics and so on by washing.

Q. That same paragraph 4, at page 2, line 26, states that :—

“ the associated fabrics are subjected to heat and pressure, with or without employment, assistance or application of plasticising or softening agents or solvents of the thermoplastic cellulose derivative, or derivatives.”

Will you explain to His Lordship, what distinction, if any, there is between these terms ?—*A.* It is very hard to distinguish between the terms “ plasticising agents, softening agents, or solvents.” As a group they act to soften the cellulose derivative to a more or less extent. Where to draw the line between these various substances is quite difficult and, in fact, almost impossible ; and therefor they are usually used as a group to designate any material that will act to soften the cellulose derivative.

Q. And what would you say their function was in carrying out the process under the patent ?—*A.* Their function in carrying out the process is to increase the softening effect so that the temperature used in the process may be decreased

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or the time or the pressure, or perhaps some other factors, but I cannot think of any at the present time.

Q. And that would apply to all of the plasticisers, softening agents or solvents that you have spoken of?—A. Yes sir.

Q. It has been suggested by a witness for the Plaintiff, I believe Dr. Esselen, that only high boiling non volatile softening agents were contemplated in the patent; do you agree with that expression of opinion?—A. I do not agree, and, as a matter of fact, I find that contrary to the statement in the patent. In paragraph 9 of the patent it states:

“Any plasticising or softening agents or solvents (preferably high-boiling or relatively high-boiling) of the cellulose derivatives may be employed.”

The statement that “preferably high-boiling or relatively high-boiling” materials may be used is an indication that low-boiling materials may also be used.

Q. Are all softening agents equally active or are there differences between them?—A. No, sir, their range of activity varies from very, very active ones that will act at ordinary temperatures to form if there is a sufficient amount of the same solutions. On the other hand, there are some that will not act except at elevated temperatures, and even at those temperatures some of them will not form solutions but will merely act to soften the material.

Q. In this connection how would you grade the softening agent referred to as being used at the St. Hilaire plant, which I understand is a mixture of acetone and methyl alcohol in the proportion of 75/25?—A. That is a very active solvent.

Q. Amongst the most active?—A. Yes, sir, among the most active.

Mr. BIGGAR: If I had asked that question, you would have objected.

HIS LORDSHIP: Q. What is acetone? I am not quite clear on it.—A. What is it?

HIS LORDSHIP: Yes.—A. It looks like water; that is, it is a freely flowing mobile liquid. I could give you the chemical formula.

HIS LORDSHIP: Yes.—A. Paranthesis C.H. —

HIS LORDSHIP: Can you not give that in non technical language, its main elements?—A. Its main elements are carbon, hydrogen, and oxygen; that is, there are two methyl groups—you will recall methyl alcohol—there are two methyl groups attached to the carbonyl group; that is a group containing carbon and oxygen.

HIS LORDSHIP: That will do.

Mr. LAJOIE: Q. Under the process referred to in the patent, what relation is there, if any, between the use of the softening agent and the heat and pressure referred to?—A. As the amount of softening agent employed is increased from zero up, the temperature required for carrying out the process to attain a given result is reduced.

Q. And what effect would that have on the range of permeability or adhesiveness?—A. With a given temperature and other conditions being equal, the more plasticiser or softening agent or solvent present, the less will be the permeability, and the greater will be the adhesion.

Q. When you say the more softening agent, would the nature of the softening agent also have something to do with it?—A. Yes. If the softening agent is more active under the conditions of treatment, there would be likely to be more effect of increase of permeability and adhesion up, of course, to a certain point.

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Q. Paragraph 4 that we are dealing with, page 2, line 30, reads:—

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10 “in this way the fabrics are united together and a composite sheet
“material is obtained in which the pores or interstices are reduced to
“extremely minute dimensions, or closed completely, by the melting or
“softening effect produced by the heat and pressure upon the filaments
“and fibres of the thermoplastic cellulose derivative or derivatives and by
“the uniting of the fabrics under the heat and pressure.”

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How could the heat and pressure reduce the size of the pores and interstices and close them completely, as referred to in this paragraph?—A. Under the action of the heat the cellulose derivative material of the yarns has become softened, and in this softened condition is being subjected to pressure which causes the cellulose material to move latterly from its original position, that is in yarn, into the pores or interstices; and also some of it will move vertically into the pores or interstices of the adjacent fabric.

Q. At line 14 on page 3, the same paragraph, we find the statement:—

20 “or a fabric of thermoplastic yarns may be disposed between two fabrics
“of cotton or composed of or containing other non-thermoplastic fibres.”

How does this application of the process compare with the Plaintiff's method for the manufacturing of collars as described by the witnesses?—A. The Plaintiff's method follows this teaching: that is, the passage just read calls for uniting three fabrics, the two outer ones being made of cotton and the inner one containing cellulose acetate or other thermoplastic derivative of cellulose. In the Plaintiff's process the two outer plies have been described as ordinary cotton shirting fabric, and the inner ply or so-called lining contains cellulose acetate yarn.

30 Q. Do you find in this patent, or would a person skilled in the art, upon examining this patent, find any suggestion that the cellulose derivative referred to may be present otherwise than in the form of yarns?—A. No, sir. Throughout the patent wherever the nature or form in which the cellulose derivative occurs is mentioned, it is always given as yarns, filaments or fibres. There is no statement or even suggestion throughout the specification of the patent that the cellulose derivative may be present in any other form.

Mr. BIGGAR: If your Lordship will allow me to intervene merely to point out that that is not true of the important part of the specification.

HIS LORDSHIP: Yes, that is a matter for argument.

40 Mr. BIGGAR: I only point out that the Witness is arguing the case and not making statements. But my friend sought to limit my Witness. He is making incorrect statements with regard to the contents of the specification.

HIS LORDSHIP: The Witness means the description.

Mr. BIGGAR: He means the disclosure.

WITNESS: Your Lordship, I am so used to calling this the specification and not the description, so that when I refer to the specification I had meant the description excluding the claims.

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Mr. LAJOIE : But you are not dealing with the claims in your testimony ?
—A. No, sir.

HIS LORDSHIP : I think Mr. Biggar explained in his opening what proportion of the yarns in the intermediate layer that the Plaintiff uses is cellulose ?

Mr. BIGGAR : One in three in the warp.

HIS LORDSHIP : One out of three ?

Mr. BIGGAR : Yes.

Mr. LAJOIE : The one being the yarn in the one direction and in the 10
other direction the filler. They are all cotton yarns without any cellulose acetate.

HIS LORDSHIP : Does the specification say what the proportion shall be ?

Mr. LAJOIE : No, because the patent is a broad one and use may be made of an all-cellulose acetate lining under the patent, or it may be a mixed fabric as we have referred to it. That is, partly cellulose acetate and partly cotton or other thermoplastic elements.

Q. Does the reference to filaments and fibres in the specification imply yarn ?

Mr. BIGGAR : I object, my Lord. After all, perhaps your Lordship would 20
prefer to let the Witness argue the effect of the specification, but my friend's last three or four questions have not been—

HIS LORDSHIP : I think the Witness answered that. Do not go too far on that. That is a matter for argument. There must be something that seems a bit complicated and should be cleared up.

Mr. LAJOIE : Yes. We are dealing with a chemical patent, my Lord, and I thought the question might be put if your Lordship agrees to it.

HIS LORDSHIP : What was your question ? I am quite willing to hear evidence as to the description claimed providing you do not go too far and ask the Witness to construe it. 30

Mr. LAJOIE : Q. Has the reference to filaments and fibres in this specification any relation to the presence of yarns ?—A. It means definitely the presence of yarns ; that is, the filaments or fibres are associated together in the form of yarn.

Q. Now I direct your attention to paragraph 5 of the patent, page 3, line 22, which refers to the intimacy of union of the fabrics. What relation, if any, have these terms with the adhesion of the composite material ?—A. The terms are synonymous, intimacy of union and degree of adhesion. They mean to me the same thing.

Q. In this paragraph 5 reference is made to the melting or softening effect, 40
degree of closing of the pores or interstices, intimacy of union, degree of impermeability, and it says that such may vary with the degrees and duration of heat and pressure whether with plasticisers or softeners or solvents, or whether they are employed, and with the number of fabrics united together ; then next the broad statement, " or other circumstances." Can you think of other circumstances which might affect the permeability of the combined fabric ?—

A. One circumstance would be the amount of the cellulose derivative present in the assembly of fabrics. That is, if the amount of cellulose derivative yarn is reduced, the degree of impermeability that is imparted will be diminished. For instance, if you have a fabric which contains yarns of cellulose acetate separated from each other by yarns of cotton, under the action of the process, the cellulose acetate material moves laterally from its original position, but two yarns of cellulose acetate are so widely spaced that they may be, the cellulose acetate resulting from them, may be prevented from joining together under any circumstances, and thus you would get an increased impermeability but not a total impermeability.

10 Q. Do you consider that there would be any effect on the permeability of the material by the presence of cellulose acetate yarns in the proportion given for Plaintiff's process, namely, one warp out of three and none in the filler?—
A. Yes, because under the action of the hot press the cellulose acetate material of the yarn would be spread and therefore would move over into the interstices or pores of one or all three of the fabrics present.

20 Q. Paragraph 6 at page 4, line 6, uses the terms "water-resisting" and "gas-resisting." Will you state what meaning is attached to those terms from a scientific standpoint, and perhaps you might compare them with the expressions "water-proof" and "gas-proof" which are also contained in the patent.—

A. The term "water-resisting" is applied to materials that do not have quite the degrees of impermeability of materials that are termed "water-proof." Then likewise, in connection with the term "gas-resisting" that implies a less degree of impermeability than gas-proofing. However, both of these terms do mean that there is an appreciable amount of impermeability.

30 Q. With respect to the words "water-proof" and "gas-proof" that I have just mentioned, are these relative terms and, if so, in what respect?—
A. They are relative terms and they mean that materials to which they are applied are proof against water or gas under the conditions to which they are to be put. For instance, take an overcoat, in order to serve the purpose made for some uses, may merely be what they call shower-proof, so that it will shed some water, but of course if it is subjected to water sufficiently it will leak through. On the other hand, the rubberized raincoats with which we are familiar are made to stand up against the rather severer conditions of water.

40 Q. Is any distinction to be made between permeability to water vapor and permeability to gas?—A. There is a marked distinction between the two terms, and one which cannot be lost sight of. For instance, in the familiar product that we all know as cellophane, that is transparent wrapping tissue, this material to the eye looks like a continuous sheet, and with respect to air it behaves that way. On the other hand, with respect to water vapor there is a different phenomena that is governing. By way of example, the test to which Dr. Esselen has testified is based on the test made for determining what is now called in the art moisture proofness of cellophane material. What he determined there was how much water vapor would be permitted to escape from a vessel in which there was water. Now that is not at all a measure of the permeability to gas, because, for instance, in this so-called moisture proof cellophane there is applied to the surface of the cellophane a very thin coating

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of a material that includes wax. That does not decrease the gas permeability of the product, but it does decrease the vapor permeability, because it does not let the water vapor contact with this sheet material and perhaps become passed through by dissolving or mixing on one side of the sheet, passing through the sheet as a solution—not exactly a solution—but I mean through wetted action, and then pass out.

Q. Do you consider that test made by Dr. Esselen as being a proper one as to permeability to water? You have spoken or compared it with permeability to gas. Now what about permeability to water?—*A.* Oh, of course, that test has no bearing whatsoever on determining the permeability of the material 10 to water, that is liquid water.

HIS LORDSHIP: Why do you say that? It was a test, and if it was not for water, what else?—*A.* That test was for water vapor rather than liquid water. That is why.

Q. That same paragraph 6, at page 4, line 7, uses the term, “without causing the filaments or fibres of the thermoplastic cellulose derivatives to disappear.”

Would you explain how the pores or interstices could be closed or reduced under those conditions?—*A.* We will have to read this passage to mean “without causing the yarns of the thermoplastic cellulose derivative to disappear” 20 rather than the filaments or fibres. That is to say under the action there described, of course, undoubtedly the individual fine filaments of the yarns will join together and merge; and then the next action is to cause the spreading apart of the cellulose material laterally and also vertically. Now, to get water resisting or gas resisting properties, the amount of spreading would have to be quite appreciable, and perhaps materials from adjacent yarns would have to meet. On the other hand, it would not be necessary that you should get such a flow of the material that you could no longer distinguish the places where the yarn was. That is, a good part of the yarn still remains in place, so that if you could look at it you could see that it is or was a fabric. 30

Q. Now, I direct your attention to paragraph 12 of the patent at page 6, line 5, where reference is made to heated plates or surface, or cold plate or surface. What is understood in the art by these terms “plate” and “surface,” as used in the patent?—*A.* “Plates” is ordinarily applied to hard, rather impervious surfaces, whereas the term “surface” of course includes surfaces other than those of plates, such as padded surfaces or a ceramic surface, and the like.

Q. The paragraph at line 4 of page 6 refers to pressure between heated plates or surfaces, or between a heated plate or surface and a cold plate or surface. How would this mode of carrying out the process compare with the 40 St. Hilaire method as disclosed by the Witnesses?—*A.* As I understand the testimony given with respect to the St. Hilaire method, there is an upper platen or plate of metal which is heated, and then there is a lower plate which, I believe, it was stated was padded. There is definite testimony that the upper platen was heated. As to the lower one, whether it was heated or not was not clear to me. Anyhow, assuming, first, that both were heated, you will have pressing between a heated plate and a cold plate—I mean a hot surface. I am confused there.

Q. I suppose it would come within the term "between a heated plate
" or surface " if both were heated?—A. Yes, if both were heated.

Q. And if you have only the upper platen referred to as heated, and not
the other, would the words "between a heated surface and a cold surface"
apply?—A. Yes.

Q. Now, Mr. Levinson, taking this patent 265,960 as a whole, what is
your opinion as to the advantages of the use of yarns of cellulose derivative
as a means of uniting fabrics in making a compound material, as compared
with the usual means of applying a coating of some kind.

10 Mr. SMART: I object, my Lord, that is asking the Witness to give an
argument which my learned friend would give at the close of the case. The
Witness has not been shown to have any personal experience with yarns of
that kind.

HIS LORDSHIP: I think the objection is well taken.

Mr. LAJOIE: My Lord, my point is this: we have a person skilled in
that art, having very special knowledge and experience in that line, knowing
all about the treatment of celanese fabrics—

HIS LORDSHIP: The way you put your question, as Mr. Smart says,
is wanting to engage in an argument, comparing the patent with previous
20 processes. If you want to direct his attention to something, put your question
in that way.

Mr. LAJOIE: I am quite willing to withdraw the form of the question,
my Lord.

Q. What advantages, in your opinion, are there in using yarns of a cellulose
derivative as a means of uniting fabrics, rather than using some coating or
exterior agent applied to the surfaces?

Mr. SMART: My objection to that question is on a different ground:
that this Witness is not qualified himself to speak of these advantages. The
special experiences to which my learned friend refers are, no doubt, extensive,
30 which the Witness has given; and are by virtue of his being a patent attorney
for the Celanese company and arguing on their behalf perhaps thousands of
applications. I have no doubt he could put the argument there very well, but
there is no point in his doing it in the witness box.

Mr. LAJOIE: If I put him in only as a patent attorney, it would have been
different; but he also claims—

HIS LORDSHIP: I do not see that it matters much, in the absence
of a jury, to ask the Witness the advantages which he perceives in this manner
of making the fabric we have been discussing, over other methods of applying
adhesive material. Most of the witnesses have dealt with that in one way
40 or another anyway. Will you tell us that, just briefly, because both the Plaintiff
and the Defendant claim it is a great thing,—just beginning a great fight over
it, by the look of things; and there is not much room for argument about the
point, as far as I can see.

Mr. BIGGAR: Except that we do not use an all celanese.

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HIS LORDSHIP: No, you have a variation which you say relieves you of infringement.

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What were the other methods used? Can you take that first, as the shortest way?

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Mr. SMART: I do not think, my Lord, that the Witness has qualified himself to say as to the other, that is as to the prior art. If he is referring to prior art, he should refer to specific examples.

HIS LORDSHIP: As a chemist and scientist, if you can separate yourself from your legal or dual personality, how would you describe the advantages of this method of binding three fabrics, say such as we have been discussing? 10

Mr. LAJOIE: *Q.* Will you describe it to his Lordship?—*A.* In the first place, because we are dealing with the cellulose derivative in the form of yarns, rather than in the form of coatings or sheets, we have a fabric which has the yarn woven in, of course, and which has spaces between the yarns; there are interstices between the yarns. On the other hand, in the case of a coating or a sheet, there are no interstices because those are continuous. Therefore, using your cellulose derivative in the form of yarns, you are starting out with something that is permeable, that is the fabric is permeable, because it has holes in it, and by this method you can unite the fabrics and get a material that is of any desired degree of impermeability that you may want, from the original permeability of your fabrics, by treatment until complete impermeability for gas-proof properties— 20

Q. You mean up to?—*A.* Up to—

Mr. BIGGAR: And including—*A.* Yes, sir.

Another important point is one that deals with the manipulation of the material. In the process of this invention we are starting out with fabrics. Your Lordship has seen all these fabrics used as starting material. They look and behave just like ordinary fabrics. As a result of that, they lend themselves to being cut and sewn and turned and folded and any other operation that one does ordinarily with fabrics, including those very many steps as to which Mr. Loew has testified, in the making of collars up to the point of the processing. Therefore it is possible to do all these things with the soft fabric; and then, after you have gotten the assembly in the form that you want, you can subject the same to this process of the patent and get your uniting. 30

On the other hand, with coatings or sheet materials, those things are quite difficult to handle in the same manner, because they are relatively stiff to begin with.

There is the third advantage, and that is take, for instance, coating: if you apply a coating of a solution of cellulose derivative to the fabric, and then you want to manufacture it for instance to make a collar of it, it is pretty messy, because the coating is damp, it has a solvent in it and it is sticky, and to have the ordinary factory worker deal with that would be quite a complication. 40

On the other hand, if such coating were permitted to dry thoroughly and completely, and then made into a collar, and even if a solvent were used, this coating is now in a rather continuous form, as compared with the form of the filament in which the cellulose acetate is. So that the solvent has greater

difficulty to reach all of the coating than it does in the case of yarns. And therefore the adhesion attained with the coating is poorer than it is when the cellulose derivative is in the form of yarns.

Mr. LAJOIE : Q. Now, Mr. Levinson, I direct your attention to Exhibit No. 20, which is claimed to have been made in accordance with the teachings of this patent. Will you state your opinion as to whether you consider this exhibit as being representative or not of the process and product obtained under the patent?—A. This exhibit made, according to the testimony of Dr. Esselen, represents just one of the many, many ways of carrying out the intention of the patent. In the first place, only one fabric, containing cellulose acetate, has been united to one cotton fabric. That is one form of the invention.

HIS LORDSHIP : There are only two pieces?—A. Only two pieces, yes, your Lordship. On the other hand, there is disclosed in paragraph 4 of the patent, towards the end, variations, that is three or four or more fabrics. Now, coming to the degree of treatment under which this exhibit has been prepared, there again just one extreme has been represented here, that is carrying out the process to such a point where there is apparently either waterproofness or gasproofness—of course I cannot tell just from the sample—but, anyhow, your Lordship can see that this material has been glazed over, that is the yarns have been entirely destroyed.

Mr. LAJOIE : Q. And is a film formed on the surface of this Exhibit 20?—A. It looks that way to me.

Q. Would you compare, Mr. Levinson, the process carried out by the St. Hilaire Lte., firm, as you have heard it described by the witnesses, as the one described in the Patent No. 265,960?—A. The patent describes the uniting of the plurality of fabrics, at least one of which contains yarns of a thermoplastic derivative of cellulose and specifically cellulose acetate.

In the St. Hilaire process, the same is done; that is, there are two layers of cotton united with an intermediate layer of fabric containing yarn of cellulose acetate. The patent teaches that this uniting is done by means of heat and pressure—

Mr. SMART : Do I need to interject again, my Lord, that the witness undertakes to tell the Court what the patent teaches and what is the meaning of it?

HIS LORDSHIP : It would be better not to ask the question at all. We have already had established the process carried on at St. Hilaire. You must not ask the witness a question the answer to which would appear as if he had to determine the question of infringement, unless there is something complicated about it, so that the Court requires assistance.

Mr. LAJOIE : It is only from that standpoint, my Lord, that I put the question. When the witness was referring to the patent, he was not construing it, but everyone reads in the patent that heat and pressure is referred to. He says here that in the patent heat and pressure are referred to, and he was to continue further his comparison with the St. Hilaire process.

HIS LORDSHIP : Mr. Levinson explained the process before, this afternoon.

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Mr. LAJOIE : Not as a whole, but touching on some points in connection with it. I asked him particularly about some particular features, but he did not describe the process as a whole. Here he is making merely a comparison—

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HIS LORDSHIP : Do not let us stop to argue about this. The question was answered.

Mr. LAJOIE : He was in the act of describing the process.

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HIS LORDSHIP : I think you had better not ; that is too dangerous. I can see from the thing before me as to whether or not St. Hilaire is the same.

Mr. LAJOIE : *Q.* Will you compare, Mr. Levinson, the effect of heat and pressure, as described in Patent No. 265,960, with its effect and use in the St. Hilaire plant, as described by the witnesses. 10

Mr. SMART : That is the same kind of a question.

Mr. LAJOIE : Oh, no.

HIS LORDSHIP : You have already answered that, have you not, Mr. Levinson ?

A. Your Lordship, I do not think I have quite answered that.

Mr. SMART : He has not said all he would like to say about it, but that is not the question. The question is whether Mr. Lajoie should not make his own argument upon it.

HIS LORDSHIP : Just read the question, will you ?

20

Mr. LAJOIE : *Q.* Will you compare, Mr. Levinson, the effect of heat and pressure, as described in Patent No. 265,960, with its effect and use in the St. Hilaire plant, as described by the witnesses.

HIS LORDSHIP : If that has not been done, I think it has been described twice. After all, no one could understand the technical and chemical terms.

Mr. SMART : Mr. Platt also dealt with this subject.

HIS LORDSHIP : I will allow the question.

WITNESS : In the St. Hilaire process the heat and pressure cause the uniting of the plies. Before the plies have been put into the so-called hot press, they are not united.

30

HIS LORDSHIP : Just as Mr. Loew explained. His explanation was correct ?—*A.* I do not remember the details of it, Your Lordship, I would not like to say definitely.

HIS LORDSHIP : The general process, or method, I mean.—*A.* Yes, I believe so.

Mr. LAJOIE : As to the process carried out at the St. Hilaire plant you are accepting Mr. Loew's description of it. Had you completed your answer as to the comparison you started to make ?—*A.* The temperature required for this uniting in the St. Hilaire process is reduced by the presence in the assembly of the mixture of acetone and methyl alcohol. 40

Q. In your opinion has the application of heat and pressure anything to do with the adhesion in that St. Hilaire process ?—*A.* In my opinion the application of heat and pressure is what causes the adhesion.

Q. Would you explain that?—A. Before the assembly is put into the hot press it is merely three fabrics sewn together that have been dampened. The acetone and methyl alcohol are still present, and therefore at that stage of course they could be pulled apart, because there is nothing to hold them together. Now when this assembly is put into the hot press, the temperature of the assembly is increased from the room temperature. As the temperature is being increased from room temperature, the cellulose acetate which has been softened by this acetone and methyl alcohol is further softened by the heat. It is a well known phenomenon that even a solution of cellulose acetate when it is heated becomes softer, that is, becomes more limpid, or liquid. So that you have a softening effect during the first part at least of this pressing operation, due to the action of heat.

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HIS LORDSHIP: We have had that over and over again. I do not think there is any contest between the parties as to that. Mr. Biggar of course will argue—and I am not saying anything about that one way or the other—that his solvent is something different, which distinguishes his process from yours. But you have got the cellulose acetate in the intermediate material, you have the solvent or softener, and you apply heat and pressure. That is the whole thing.

Mr. LAJOIE: That is quite right, my Lord. We have heard about it up to now on the part of the Plaintiff's witnesses, this is the first and only witness I am producing to explain our interpretation of the operations and chemical reactions that take place.

HIS LORDSHIP: The Plaintiff's witnesses helped you out on that, and your Mr. Platt. We all agree about that, the general idea.

Mr. LAJOIE: We have of course got to go a little further than the general lines. I know my learned friend wants to make an argument on what actually takes place in that hot press, according to the explanation given by Dr. Esselen. I want to meet that.

HIS LORDSHIP: You have the responsibility of the case.

Mr. SMART: I am willing to make the argument, I am objecting to my learned friend asking the Witness to do it.

Mr. LAJOIE: Then would you explain further what happens, and in particular what happens to the solvent?

Mr. SMART: He is now going into something he has not seen.

HIS LORDSHIP: I think that is a fair question to ask an expert.

WITNESS: After the temperature has been raised so that the solvent can evaporate, of course the solvent starts evaporating and the material dries. During that drying the union or uniting of the assembly is completed. At the moment that the process is over the cellulose acetate is at elevated temperature, of course, just what temperature it is hard to say, but somewhere below the temperature of the press. And because of the thermoplastic nature of cellulose acetate and the presence of some residual solvent, that cellulose acetate is actually softer at that temperature than pure cellulose acetate at room temperatures.

HIS LORDSHIP: But the acetone and methyl alcohol in the St. Hilaire case evaporates, it is volatile, is it?—A. Yes, it evaporates, of course not all of

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it will evaporate. It is very difficult to get out the last traces of a solvent from a cellulose acetate mass.

Mr. LAJOIE: In the St. Hilaire process would you be able to carry out the union of the fabrics as you have described without the application of heat and pressure?—*A.* I am sorry, the question is not quite clear to me.

Q. I want to know whether in carrying out the St. Hilaire process heat and pressure actually have any effect on the proper union of the layers of the composite fabric?—*A.* Oh yes, it is the heat and pressure that causes the uniting or union.

Q. Now I will ask you to deal with Patent 311,185, the second patent in issue. Will you give your opinion on a question that has already been dealt with in this case, namely, whether yarns of organic derivatives of cellulose are affected by humidity, and to what extent? I particularly refer you in this connection to page 2, line 21, paragraph 5, which states:—

“Because yarns of organic derivatives of cellulose are not affected by humidity, they will retain their stiffness under conditions wherein fabrics of other fibres will become softened.”

A. Of course, yarns of cellulose acetate are affected by humidity. But they are not affected by humidity with respect to losing their stiffness as are yarns of other fibres such as cotton, regenerated cellulose, wool, etc.

Q. Do you mean not to the same extent?—*A.* Yes, sir, to a very much less extent. 20

Q. In connection with paragraph 8 of the patent, starting at line 11, page 3, will you explain why the spun cellulose acetate yarn could be used as this softening material?—*A.* Perhaps I ought first to explain just what spun cellulose acetate yarn is. Earlier we had spoken about fibres, and I explained they are short lengths of filaments. Now these fibres are usually cut in the lengths of natural fibres, for instance they may be cut in the length of cotton fibres. Then they are subjected to the spinning process. For instance, if they have been cut to the length of cotton fibres, they are subjected to this spinning process used for making yarn from cotton. The term spinning in this sense is different from that we have been using previously in connection with the making of these artificial filaments. That is the spinning operation involves carding, and drawing and twisting. 30

Now, in spun yarn in this sense, in order to give any strength to the final yarn, it is necessary to impart a high degree of twist. If there was no twist to the assembly you would not have a yarn, you would have just short lengths parallel to each other and there is nothing to hold them together, so that in order to hold them together quite a high degree of twist is given to the spun yarn.

On the other hand when dealing with ordinary artificial spun yarn where you have continuous filaments there is no necessity for twist to impart strength because the filaments are continuous and do not require twist in order to hold them together. As a consequence the ordinary artificial silk yarn made of continuous filaments has a relatively low degree of twist, whereas the spun yarn will have a high degree of twist, and this high degree of twist imparts to the spun yarn a degree of stiffness that is greater than the stiffness possessed by yarn of the ordinary continuous filaments of relatively low twist. 40

Q. Now the following paragraph 9 :—

HIS LORDSHIP : Take paragraph 7, tell me what denier is ?—A. That is a unit of weight. You will recall that denier is the name of an old French coin. What they would do is, take a yarn of a given length, I forget the figure, I could get it if necessary, and then weigh this length of yarn to see how many deniers it would weigh. In other words, the larger the number of deniers, the heavier the yarn.

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10 Mr. LAJOIE : Paragraph 9, starting at line 25, page 3, deals with another application of the patent by the use of a solvent for the purpose of producing a stiffening material. Do you find any relation between the process described in this paragraph 9 by the use of a solvent and the process carried on at the St. Hilaire plant as described by the witnesses ?—A. Yes. In both cases a solvent is applied to a fabric containing yarns of cellulose acetate, and this solvent acts to coalesce the filaments of the yarn, to cause the yarns to adhere at the points where they contact with other yarns, and all of these things and evaporation of the solvent causes a stiffening effect.

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Q. Reference has been made by one of the plaintiff's witnesses, I believe Mr. Loew, to the breaking of the yarns in the carrying out of the process, and so preventing stiffness. Have you any remarks to make in this connection ?—
20 A. The stiffening effect produced by the phenomenon of the coalescence of filaments into a united mass and the adhesion of the adjacent yarns is far greater than any decrease of stiffening that may be produced by the breaking to which Mr. Loew testified.

Q. You have explained, I believe, in dealing with paragraph 9 a moment ago, that a solvent is used which stiffens the threads of cellulose acetate, do they not ?—A. Yes.

Q. Can you therefore explain how a stiffening effect can be obtained as a result of the softening ?—A. It sounds paradoxical but it is easily understood—

30 HIS LORDSHIP : They coalesce, is not that it ?—A. Yes, exactly. The softening causes the filaments to coalesce.

Mr. LAJOIE : The final words of paragraph 9, page 4, line 10, refer to the adding of a diluent such as water to the ethylene chloride. I believe this has been criticized on the basis that water does not mix with ethylene chloride. Would you give your views on that point ?—A. It is true that ethylene chloride and water do not mix, that is, when placed together they do not form a homogeneous solution. However if the ethylene chloride were emulsified with water, you would get a dilution of the ethylene chloride and a consequent diminution of its effect in the process.

40 Q. Would this be understood by persons skilled in the art reading this patent, or having read it at the time of its issue, namely, May 12, 1931 ?

Mr. BIGGAR : I object. My friend cannot ask this witness to say what those words mean unless they have some sort of technical meaning.

Mr. LAJOIE : It is not a question of what they mean, I am asking what is understood by a person skilled in the art at that time.

Mr. BIGGAR : I was putting my friend's question in a much more defensible way than he puts it himself.

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HIS LORDSHIP : I will allow that question.

WITNESS : That was a common well known expedient to obtain a mixture of two liquids which are not soluble in each other.

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Mr. LAJOIE : Will you refer to Exhibit Z-7, A to G, and express your opinion as to the use of the treated materials filed as exhibits as stiffening materials?—A. In my opinion they could all be used as stiffening materials.

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HIS LORDSHIP : What kind of stiffening is that ?

Mr. LAJOIE : By the use of a solvent, my Lord. A volatile solvent was applied to them and then was removed by evaporation forming a stiffening material, and these samples have been described as being permanently stiff. 10

Q. I would ask you now to take up the prior patents cited by the plaintiff. Would you first deal with the Kennedy Patent, U.S. Patent No. 590,842 ?

HIS LORDSHIP : Mr. Biggar, I was going to ask you before we conclude the trial, if you would be good enough to mention what patents are applicable to Patent No. 2 ?

Mr. BIGGAR : Yes, I will give your Lordship a list of each, or perhaps your Lordship would like me to mark in the index those which are applicable to the one patent and the other.

HIS LORDSHIP : Later.

Mr. LAJOIE : This patent has been cited against both patents 265,960, 20 and 311,185. Will you state what relation, if any, this patent has to the first patent, No. 265,960?—A. Kennedy relates to the preparation of water-proof cloth. In the patent it is stated that a woven fabric may have woven in its threads, fibres or strands of nitro-cellulose or its equivalent, acetate of cellulose. That is at line 50 of the page. In order to obtain water-proofness the patent states that the fabric is sprayed or otherwise treated with a suitable solvent which converts the nitro-cellulose into pyroxylin, and it states that the pyroxylin diffuses itself and impregnates the raw fibres without affecting —

Q. Did you mention that pyroxylin was nitro-cellulose ?

Mr. SMART : Yes. 30

WITNESS : Pyroxylin is nitro-cellulose, although in this patent there is a statement that may perhaps be confusing. For instance, if you look at line 58 it states, "The article containing nitro-cellulose or acetate of cellulose is then sprayed or otherwise treated with a suitable solvent which converts the nitro-cellulose into pyroxylin." Now, nitro-cellulose and pyroxylin are the same thing, I think, and what he is trying to say is that the fibres of the nitro-cellulose are reduced to another form and in that form it diffuses itself and impregnates the raw fibres. Now it makes the statement that as a result of the process the product is water-proof and remains uncoated or unglazed. It is quite difficult to see how that happens. Now apart from that it is to be 40 noted that threads of acetate of cellulose are mentioned. At the date of that patent, that is 1895 or 1897, threads of cellulose acetate were unknown as a commercial product.

HIS LORDSHIP : Q. Acetate of cellulose?—A. Yes, your Lordship. Now, in trying to see what this patent means, reference to the corresponding German patent, to Marsden—

Mr. LAJOIE : Is that Exhibit F ?—*A.* Yes. It is very helpful.

Mr. BIGGAR : I just want to put in an objection. The disclosure, on the assumption on which the Witness is now proceeding to go, is that in the first place the meaning of the words in the Kennedy patent are not readily intended to require explanation ; second, that there is some association between these patents beyond the fact that both of them became the property of the Marsden Company, and the third, that there is a connection between them, such that expressions used in the one can be used and modify the apparent meaning of expressions in the other. I submit that all those three assumptions
 10 which the Witness must make in order to proceed along the line he is now proceeding along are unsound.

HIS LORDSHIP : I see your point. Your objection will be noted, Mr. Biggar. I did not get the name of the patent.

WITNESS : That one is not in your book, your Lordship. It is Exhibit F.

Mr. LAJOIE : Would you proceed ?—*A.* The similarity of the two patents is quite apparent by comparing the drawings of the two. Now in the Kennedy patent there is no disclosure as to how to make threads of nitro-cellulose. We are dealing with a time that is very early in this art of artificial silk and it is important to know what sort of thing the patentee is talking about. On the
 20 other hand, in Marsden there is a disclosure of how the thread is made. That disclosure, on page 2 of the translation, beginning at the middle of the page, is this : take cotton fibres, that is such as occur on the plant, nitrate them to form fibres of nitro-cellulose and then spin that in the ordinary manner, that is, the ordinary cotton spinning manner. That method would be utterly inoperative. First of all, the nitrated fibre, the nitrated cotton fibres are too weak to withstand the drastic conditions of carding and perhaps drawing of a cotton spinning method, but apart from that, and more seriously, is that in the carding of fibres a large amount of static electricity is generated, and this static electricity would cause the nitro-cellulose fibres to explode. Now relating the Kennedy
 30 patent to the first patent, 265,960, the relevance, if any, is insignificant. Kennedy shows merely the treatment of some kind of a single layer of fabric. There is no uniting of fabrics which, of course, is the essential of the first patent ; and, of course, apart from there being no uniting, rather, as a result of there being no uniting, there is no uniting under heat and pressure.

Now, coming to the second Patent, 311,185, which relates to the preparation of a stiffening material, there is no indication or suggestion whatsoever in this Kennedy patent that the product resulting from the process of the patent is stiff. As a matter of fact, in the Marsden, German patent, there is a definite statement that it is not stiff.

40 *Q.* Is that towards the middle of the page in this paragraph, starting with the words " This process has the advantage " ?—*A.* Yes.

Q. And four lines below, " and does not become stiff and brittle but rather retains its natural properties."—*A.* That is right.

Q. Does that cover the points you desired to make ?—*A.* Yes.

Q. To your knowledge has this patent ever been put to use ?—*A.* To my knowledge it has not.

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Mr. LAJOIE : In dealing with these prior patents, Mr. Levinson, I would ask you to refer to Patent No. 265,960 as Patent No. 1, and to Patent No. 311,185, as Patent No. 2.

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Q. Then the Oliver Patent, No. 607,454, of July 19th, 1898, for belting, which has been cited against Patent No. 1 only, would you state briefly what is the object of this patent?—A. Oliver relates to the making of belting for driving bands for machinery; that is, belting that goes around pulleys to drive machinery.

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In accordance with Oliver, two layers of canvas or duck are impregnated with a solution of celluloid. Those two layers are shown on the drawings as "A." After each layer has been impregnated with the celluloid solution, they are permitted to dry and then are pressed together. There is no mention of the use of heat for this pressing operation. There has been an enveloping strip indicated in the drawing as "B," which also has been impregnated with celluloid solution and is placed around the assembly of the two fabrics, and that is pressed to get the final belting. 10

Now as the relationship of this patent to Patent No. 1 we find, first of all, that the cellulose derivative which is present in the celluloid is present in the form of an impregnation in the fabric. It is not present in the form of yarns or filaments, as described in Patent No. 1. Secondly, no heat is used for laminating in Oliver, while heat is described in Patent No. 1. 20

Q. May I draw your attention, Mr. Levinson, to the reference that has been made, I believe, by a Witness for the Plaintiff, to heat referred to on page 1, line 65, or exactly line 67? Would you state whether or not heat there is used in the same way as under patent No. 1?—A. No sir, the mention of heat in that passage relates merely to the drying of the impregnated fabric, which it is stated may be assisted with artificial heat.

The next passage then goes on to talk about the uniting, that is after they have been dried or before they are dried, but the passage dealing with uniting does not state that heat is used during the uniting process. 30

Q. By applying this patent, what sort of a product would be obtained?

Mr. BIGGAR : You put a piece in.

A. They have a belting material, which is quite remote from a collar.

Q. Will you refer to Exhibit Z-8 and state whether you consider this exhibit as being representative of such a product.—A. Yes.

Mr. BIGGAR : A composite water-proof material.

Mr. LAJOIE : Q. I understand this patent does not refer to cellulose acetate?—A. That is correct.

Q. It contains no reference to any organic derivative of cellulose?—A. That is right. 40

Q. Now will you take up the patent to Crowell, U.S. Patent No. 665,996, of 1901, which has been cited against Patent No. 1 only. First state briefly what is the object of this patent?—A. The object of the patent is to produce a compound stiffening fabric. The use to which this product is to be put is specifically described in the passage beginning with line 7 on page 2. There it is stated that the product is to be used for tip and counter stiffeners for boots

and shoes or box toes, and so on — those are the stiff materials that are put inside the shoes to give it a shape.

Q. Will you refer to Exhibit Z-9 (a) and Exhibit Z-9 (b), and state whether these exhibits are representative of the product which you are describing?—

A. Yes. Shall I go on?

Q. Yes, will you briefly state the relation of this patent to patent No. 1, if any?—*A.* According to this patent, the stiffening material is made in two steps. In the first stage, two layers of fabric are sized with a water-proof size, the composition of which is undisclosed. These two sheets are united together
10 to form a two ply material. Thereupon two of these two assemblies are united by the aid of a glue composition, such as animal glue to which glucose has been added in order to promote the absorptive powers of the glue composition for water.

Now, as to patent number 1, this Crowell does not show the use of yarns of any kind for causing the uniting of fabrics. The materials for uniting, in Crowell, are, in the first instance, a water-proof size, and in the second instance a glue.

Q. Is there any reference to the use of a cellulose derivative?—*A.* No, there is no reference to the use of a cellulose derivative in any form at all. Incidentally, the patent does not show the use of heat for causing uniting. It is
20 to be noted that the patent uses glue, which has been rendered even more absorbent to water by the addition of glucose to unite the two assemblies; and of course if such an assembly were subjected to the action of water, the glue would dissolve.

The ASSISTANT REGISTRAR: The Court is adjourned until 10.30 tomorrow morning.

(At 4.30 p.m. Tuesday, January 14, 1936, Court adjourned until 10.30 a.m. January 15, 1936.)

CHARLES W. LEVINSON, EXAMINATION BY Mr. LAJOIE (Resumed).

Q. Before resuming your evidence on the prior art I would like to direct
30 your attention to paragraph 17 of patent 265,960, particularly to page 8, lines 5 to 12 which read as follows:—

“By way of example cellulose acetate fabric may be first treated with
“small quantities of water-insoluble, non-volatile plasticisers, softeners or
“solvents of cellulose acetate before being associated with the other fabric
“for subjection to the heat and pressure. These quantities may vary, for
“instance, from about 1 per cent. to about 30 per cent. of the total quantity
“of cellulose acetate in the fabric, but more or less may be employed.”

In this instance cited by way of example is it an all-Celanese fabric that is referred to.

40 Mr. SMART: I object to this question. It involves a construction of the patent by the witness. My learned friend is referring him to one paragraph, asking him to give his opinion as to the construction of the document.

HIS LORDSHIP: What was the question?

Mr. LAJOIE: The question, which is introductory, is whether the fabric cited by way of example is an all-cellulose acetate fabric or whether it is a mixed fabric.

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Mr. SMART : That involves construction of the patent, which says either one or the other. If it can be read in the patent, we can read it, if it cannot, my learned friend cannot ask this witness to read it in.

HIS LORDSHIP : I do not think you can read it in if it is not there. Is there anything in the patent elsewhere relating to the question which you put ?

Mr. LAJOIE : The patent refers to fabrics made either entirely of cellulose acetate yarn or partly.

HIS LORDSHIP : Where is that ?

Mr. LAJOIE : That is found in several parts of the patent.

Mr. CHIPMAN : No. 3, line 4, "composed of or containing."

10

Mr. SMART : I do not question that other parts of the patent give examples in some cases of fabrics partly composed of cellulose acetate. The effect of those paragraphs I expect will be argued as to what they disclose, but this witness is not as an expert able to help us, because what he is attempting to do is to argue the construction of a patent. It is not a technical question whether a document means one thing or another if you are construing it as a whole.

Mr. CHIPMAN : Of course Dr. Esselen was asked precisely that sort of question.

Mr. SMART : No he was not.

20

HIS LORDSHIP : I think the objection must prevail.

Mr. LAJOIE : Assuming the example given refers to an all-cellulose acetate fabric, will you state how a person skilled in that art would be expected to calculate a percentage of plasticiser to be used in the case of a mixed fabric.

Mr. SMART : Will my learned friend change the question to how the witness would do it ?

Mr. LAJOIE : No, a person skilled in the art.

HIS LORDSHIP : I think that question is proper.

WITNESS : In case of a mixed fabric, that is a fabric containing both cotton and cellulose acetate of course the proportion of cellulose acetate in the fabric is considerably less than in a pure cellulose acetate fabric. Now when the plasticiser or softening agent or solvent is applied to the fabric in accordance with this example, of course the material goes to the whole fabric ; that is it is not possible to have the softening agent go only to the cellulose acetate yarn and not to the cotton yarn. Therefore only a percentage of the total amount of softening agent that is applied to the fabric will go to the cellulose acetate yarn in a mixed fabric. Therefore when treating a mixed fabric the proportion of softening agent to the weight of the fabric will be proportionately increased.

Q. And would the percentage in each case be with respect to the weight of the mixed fabric as a whole ?—A. Yes, the percentage of increase will be on the weight of the mixed fabric as a whole.

40

HIS LORDSHIP : When you talk about fabric you are talking of what we call the intermediate piece, as exemplified by the intermediate piece in the collars that are in evidence ?—A. Yes, my Lord, and in that case the amount of cellulose acetate is very small.

HIS LORDSHIP : Does the application of the softener to the outer and inner portions of the collar have any effect in dispersing the cellulose acetate when you come to apply heat and pressure, or does it only influence the intermediate piece?—*A.* My understanding of the process is that it will influence only the intermediate piece.

Mr. LAJOIE : Now will you refer to Weidig U.S. Patent No. 696,123, which has been cited against Patent No. 1 only, and will you state if this patent has any relation to said Patent No. 1?—*A.* Weidig relates to the preparation of a surgical dressing, and particularly to that type of dressing that is to be used as a substitute for plaster casts, splints and the like, to keep in place a broken bone. According to Weidig a cotton fabric, muslin, is treated with a nitrating acid mixture, it being stated that the treatment is such that only the exterior portion of the threads becomes nitrated, while the inner portion remains as a core of ordinary cellulose. The so-called cotton fabric when it is to be used is wrapped around the member of the body, and then a solvent for the nitrocellulose is applied, and as is stated in line 63 and following, after the solvent has been applied the nitrated cellulose becomes colloidized and the fibrous structure disappears. At line 63 : “When the solvent is applied the nitrated cellulose becomes colloidised and the fibrous structure is destroyed.”

20 Colloidised means that the material becomes a solid mass.

Mr. SMART : What line are you reading from?—*A.* Line 63, “when the solvent is applied the nitrated cellulose becomes colloidised and the fibrous structure is destroyed.”

HIS LORDSHIP : The language is in my copy, but not exactly as read.

Mr. LAJOIE : At line 63, my Lord. The witness' reference to line 59 he stated was an error ; but it is line 63, four lines below, “when the solvent is applied the nitrated cellulose becomes colloidised and the fibrous structure is destroyed.”?—*A.* By that process there is formed a solid, rigid mass of sufficient strength and rigidity to keep a broken bone, for instance, in place.

30 Comparising Weidig with Patent No. 1, we find, in the first place, that there is no uniting by means of heat.

HIS LORDSHIP : I must say I do not see any relevancy in this patent and do not require much time on it, myself.

Mr. LAJOIE : *Q.* I understand, Mr. Levinson that the nitrated cellulose requires to be denitrated before the process can be carried out?—*A.* I would rather put it that the cotton has to be nitrated.

Q. Before forming the nitrated cellulose?—*A.* Yes sir.

Q. Now, will you refer to the following patent to Lehner, U.S. Patent No. 713,999, which has been cited against Patent No. 2 only, and will you compare this patent with said Patent No. 2?—*A.* Lehner is directed to the manufacture of artificial horsehair, in which yarns either of nitrocellulose, viscose, artificial silk or cotton are treated so as to cause the individual filaments or fibres of the yarn to stick together.

40

With respect to the nitrocellulose and viscose the process is described in the paragraph beginning at line 73 of page 1, which states, “if the artificial forms of cellulose are used, such as artificial silk, viscose, nitrocellulose, etc.,

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I take a plurality of strands or filaments or a twisted thread of the same and subject such material to a bath preferably of ether or alcohol, thus effecting a dissolving action."

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This passage describes an utterly inoperative process. Neither ether nor alcohol alone is a solvent for nitrocellulose, although a mixture of the two is.

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With respect to viscose, neither ether nor alcohol nor a mixture of the two is a solvent for the same.

However, apart from this, Lehner does differ from Patent No. 2, first, in that it does not disclose material made of cellulose acetate or other organic derivative of cellulose; secondly, the treatment here is applied to individual yarns or perhaps two or three or four associated together. There is no treatment of a fabric with a stiffening agent, as is described in Patent No. 2. 10

Q. Does the patent cover for the denitrating of nitrocellulose?—A. Yes, sir, if reference is had to page 2, line 25, the statement is found "thereupon it may be further treated in the usual manner, that is, may be dyed, and if desired denitrated." After the nitrocellulose is denitrated, it becomes ordinary cellulose.

Q. Do you call that regenerated cellulose?—A. Regenerated cellulose.

Q. Would this regenerated cellulose be resistant to humidity?—A. No, sir, it would not; it is quite affected by humidity. 20

Q. Will you take the following patent, the Kempshall U.S. Patent No. 768,129, which has been cited against Patent No. 1 only, and will you compare the two?—A. Kempshall relates to the making of sheet material that is to be used as coverings or outer layers of golf balls. According to Kempshall, a fabric which is indicated in figure 2 by the reference numeral 3, is first impregnated with a solution of celluloid, and then it is placed between two sheets of celluloid and the assembly is united under heat and pressure. The product formed is a thick, tough and stiff product since it is to be used for golf balls; and he emphasizes the toughness and stability, for instance on page 2, line 27, "use in making the outer shells of golf balls and the like requiring a high degree of toughness and stability when subjected to wear and to blows." We have reference to toughness and stability of the material in line 34 of page 2 also. 30

This patent differs from Patent No. 1, first, in that the cellulose derivative is present not in the form of yarns or filaments or fibres, as in Patent No. 1, but in the form of heavy, continuous sheets of celluloid, and also in the form of the original impregnation of the cotton fabric.

Celluloid, consisting as it does of nitrocellulose and camphor, does not contain cellulose acetate, an organic derivative of cellulose. Moreover, the product of Kempshall could not be possibly used for making collars. 40

Q. Will you refer to Exhibit Z-10c, and state whether you consider this product as being representative of the Kempshall Patent which you are dealing with?—A. I do consider it representative.

Q. Will you also consider Exhibit No. 37 and state whether you consider this exhibit to be representative?—A. I do not, since the material is quite thin and would not serve the purpose of a golf ball covering, which has to be tough and stable and resistant to wear and to blows to which the golf ball is subjected.

Q. Dr. Esselen, in dealing with the Kempshall patent at page 88 of his deposition, has referred to Exhibit No. 20. The question was put to him :

“ Q. In Exhibit No. 20, is there celluloid on both sides ?—A. Just on “ the one side, the shiny side.”

Have you any comments to make in connection with that answer ?—A. I do not recollect what the Exhibit 20 is.

Q. I should then explain to you. Exhibit 20 was explained by the Plaintiff to have been made under patent No. 1, with the process disclosed under patent No. 1. You might tell us whether there is celluloid on the one side of Exhibit 20, under those conditions ?—A. There is no celluloid upon the shiny side of this Exhibit 20. The shiny surface consists of cellulose acetate ; whereas celluloid is a mixture of nitrocellulose and camphor.

Mr. SMART : That is obviously a clerical error.

Mr. LAJOIE : Oh no.

Mr. SMART : It was explained in the other part of Dr. Esselen's evidence what it was. It was made with cellulose acetate, not with celluloid.

HIS LORDSHIP : Well you wish that explanation made, Mr. Smart ?

Mr. SMART : Yes.

HIS LORDSHIP : Possibly the record could be corrected some time.

Mr. CHIPMAN : Yes, my Lord, I have two or three cases, one case where I was made to say exactly the reverse of what I said.

Mr. SMART : Yes, I am quite agreeable to correcting any clerical errors.

Mr. LAJOIE : Q. Will you now consider the Segall, United States patent No. 1,322,631, which has been cited against patent No. 1 only, and briefly compare the two ?—A. In Segall again we have the uniting of textile fabrics with sheets of celluloid by the application of heat and pressure. The drawings of Segall show the making of a rather thick product. As a matter of fact figures 5, 6 and 7 of the drawings show buttons. Segall has no special bearing on patent No. 1 for the same sort of reason that was pointed out in connection with Kempshall, namely there are no yarns or filaments or fibres of any cellulose derivative ; there is no cellulose acetate or other organic derivative of cellulose present.

Q. Does it deal with anything more than sheets of celluloid amalgamated with some fabric ?—A. No, it does not.

Mr. SMART : We never suggested that it did.

Mr. CHIPMAN : What ?

Mr. SMART : We never suggested in our evidence that it did more than that.

Mr. LAJOIE : I notice that at page 2, lines 127 and 128, reference is made to collars, cuffs and analogous articles ; what sort of collars and cuffs would that be ?—A. That would be the old fashioned celluloid collars which apparently are still on the market to some extent.

Q. Could a soft or semi-stiff collar be produced under this process ?—A. No, sir.

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Q. Will you now deal with Dryen, United States patent No. 1,377,761, and briefly compare the two patents?—*A.* Dryen is directed to a process of spinning nitro-cellulose solutions to make artificial silk, artificial horsehair, artificial straws, film bands and other similar materials. That is found in line 10 of page 1. The whole patent is directed to a special method of doing this, wherein a special solvent is used for dissolving the nitro-cellulose, and a special bath is used to coagulate the filaments that are extruded from such solution. Presumably this patent is cited because it shows artificial horsehair to be known. In that connection I would point out that the artificial horsehair is made from nitro-cellulose which is not an organic derivative of cellulose. Moreover, in the spinning of yarns and filaments, etc., from nitro-cellulose solutions, before the product is put on the market commercially the nitro-cellulose is de-nitrated to form ordinary cellulose. The patent does not mention this de-nitration step, but it is the common one in the art. 10

Q. That is, you consider it implied from the patent?—*A.* Yes, sir.

Q. And that would, as you have previously explained, produce regenerated cellulose which is much affected by humidity, I believe?—*A.* Yes, sir.

Q. Do you find any teaching in the patent as to the making of a stiffening material as a fabric?—*A.* No, sir, I do not. If the material produced here is a stiff material, it would be the artificial horsehair which is not, of course, a fabric. 20

Q. In the course of his examination on this patent, Dr. Esselen, at page 88 of his deposition was put the following question:—

“*Q.* You had the idea given there of using a cellulose acetate or other organic derivate of cellulose instead of nitro-cellulose,—I do not mean to say by the same process, but I mean to make horsehair?”

And then the answer was:—

“*A.* It suggests the possibility.”

Will you state whether you agree with this statement, and whether the method disclosed in the patent suggests the use of an organic derivative of cellulose or cellulose acetate?—*A.* As I have stated before, the patent is directed to a special method of spinning nitro-cellulose solutions in which, as is pointed out in the passage beginning with line 41, on page 1, the nitro-cellulose is dissolved in sulphuric ether, and ethyl alcohol, and the solution is directly coagulated in a bath of sulphuric acid while being forced through a suitable spinning orifice. That is the teaching of the patent. Now, ether and ethyl alcohol are not a solvent to cellulose acetate, and the spinning of a solution of cellulose acetate in a proper solvent would not be done in a bath of sulphuric acid, which would tend to hydrolize or saponify it so that both the solvent and the precipitating bath of this solvent would not be suitable for cellulose acetate. 30

HIS LORDSHIP: *Q.* Is ethylic alcohol the same as ethyl alcohol?—*A.* Yes, my Lord. And the sulphuric ether is the same as ether.

Q. What would be the difference between a solvent of acetone and—*A.* Acetone and methyl alcohol, my Lord?

Q. Yes, methyl alcohol and acetone, and acetone and ethylic alcohol?—*A.* Very slight difference. That is, a mixture of acetone and methyl alcohol has somewhat stronger solvent properties than a mixture of acetone and ethyl

alcohol in about the same proportions. Of course, in this patent there is no acetone, but there is rather ether and the ethyl alcohol.

Q. The patentee talks about a mixture of acetone and methyl alcohol?—

A. I am afraid I do not see that.

Q. Page 2, line 29.—*A.* You are quite right, my Lord; I apologise for that; I did not see that passage.

Mr. LAJOIE: *Q.* How would that reference affect your previous statements on this patent?—*A.* It would not affect my previous statement materially; that is, even if the mixture of acetone and ethyl alcohol were used
10 as the solvent for the cellulose acetate, still the sulphuric acid that is used for the precipitating bath would not be used in connection with cellulose acetate.

Q. Would not or could not?—*A.* Could not be used to obtain a commercial product. The sulphuric acid attacks cellulose acetate.

Q. Will you now give your attention to the Van Heusen, United States Patent No. 1,479,565, which has been cited against Patent No. 1 only? Has this Van Heusen patent any relation to patent No. 1?—*A.* Van Heusen relates to the making of collars. In making the collars, in one form of the disclosure of the patent, the plies of the fabric are coated on their inner surfaces with
20 cellulose in a cellulose solvent, such as cuprammonium solutions. That is found in the passage beginning with line 80 of page 1. The so-coated surfaces are brought together and are then united by suitable means. Now it is stated in the passage beginning with line 103 of page 1 as follows:—

“In the case of a solution of a cellulose derivative in an organic solvent, the solvent may be partly evaporated before the layers of the fabric are secured together. In other cases the pieces of fabric may be put together and pressed in a heated press to modify or change the binding material and convert it into its final form.”

We have therefore, in the case of a solution of nitro-cellulose, a statement that
30 the fabrics are secured together without stating how. On the other hand, in the other cases, that is, where a solution of cellulose in cellulose solvent is used, it is stated that heat and pressure are applied.

Now, relating Van Heusen to Patent No. 1, the only part that seems at all pertinent, is in connection with the coating of nitrocellulose. Of course, Van Heusen relates to coatings of nitrocellulose and not cellulose derivative in the forms of yarns, filaments or fibres. There is no direct disclosure of the use of heat for causing the sticking together when nitro-cellulose or cellulose derivative is used.

Q. In connection with the collar industry, what would be the difference
40 as to the advantages or disadvantages to be had from this Van Heusen patent as compared to the disclosures of Patent No. 1?—*A.* Van Heusen discloses the application of a coating of a solution to the plies of which the collar is to be made. Now, in the shirting factory with the type of employees there found, it would be a very difficult proposition to handle fabrics that had been coated and are sticky and to carry on a collar making operation with them. On the other hand, with the process of Patent No. 1, we are dealing with fabrics containing yarns of cellulose acetate which can be handled as ordinary fabrics

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and which can be cut and sewed, turned, etc., just like any other fabric to which the shirt-making operative is used to, and then finally the uniting step may be applied.

HIS LORDSHIP: In line 31 it speaks of a three-ply fabric?—*A.* Yes, My Lord, that is shown in figure 5.

Q. How is the piece applied?—*A.* My recollection is that it is applied to both surfaces of the inner layer. I will find that in a moment. I am afraid the patent is rather silent on that point. The description of figure 5 is found in line 117, page 2, and in that passage it is merely stated that the inner layer is secured to the outer layers by a suitable cementing material, which two layers 10 are indicated at 17 and 18 respectively.

Mr. LAJOIE: Under this Van Heusen patent would you be able to get the range of permeability?—*A.* No sir, you would not, because you are starting with a coating that is impermeable.

Q. To your knowledge has any use ever been made of this patent?—*A.* To my knowledge no use has been made of this patent. In this connection I would point out that the familiar Van Heusen collar on the market is not the type described in this patent.

Q. Do you find any reference in the patent as to the uniting of the plies being effected either before or after the collar has been built up?—*A.* Yes, sir. 20 This Van Heusen patent is the only one of all the prior art cited in this case that relates to collars. In the passage beginning with line 98 on page 1 we find:

“After the fabric has been coated and either before or after the collar has been built up therefrom the coating can be modified to complete it into a form better adapted for securing the layers of fabric together.”

This passage therefore shows the uniting of the layers after the collar has been made, and shows how a collar manufacturer would apply patent No. 1 process in the making of collars.

Q. Does the patent teach the use of heat in the process of uniting?—*A.* As I read the patent it does not teach the use of heat in the process of uniting 30 where a cellulose derivative is used, although it does teach the use of heat in a process where a solution of cellulose is used.

Q. Exhibit 38 was filed by the Plaintiff as being representative of this patent. In this connection I would refer you to Dr. Esselen's evidence at page 90, where this statement is found:

“That sample shows a composite sheet material which is made from two fabric webs which have been united under heat and pressure, after they have each been coated on one side with a nitrocellulose solution and part of the solvent has been allowed to dry.”

Do you consider this sample under those conditions to have been made strictly 40 under the teaching of that patent?—*A.* In view of the fact that Dr. Esselen used heat for the uniting I would say that in that respect he departed from the teaching of the patent.

HIS LORDSHIP: Well the patent does refer to the application of heat.—*A.* In connection with solutions of cellulose, but not in connection with solutions of nitrocellulose.

Mr. LAJOIE: Could you point out to his Lordship the reference.

HIS LORDSHIP : There is line 80 on page 2, from there on. What does that mean ?—*A.* Line 80, page 2, should be read in connection with the following sentence, beginning with line 85 :

“ For example if the cementing solution is a solution of viscose this
 “ may be treated by heat and pressure to convert the viscose into the form
 “ of regenerated cellulose as the binding agent. Solutions of cellulose in
 “ other cellulose solvents such as cuprammonium solutions may be
 “ similarly treated to convert the cellulose or cellulose compounds into
 “ their final stable form such that the layers of fabric will be intimately
 10 “ secured together by the binding agent formed in this way.”

Your Lordship will notice that there is no reference in this paragraph to the nitrocellulose.

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Mr. LAJOIE : In the following page of Dr. Esselen's testimony, 91, I find the following question put to the Witness :

“ Q. Now looking again at claim 25 of that patent ——— ”
 that is patent No. 1 ———

“ and apart from the question of the plasticity of nitrocellulose,
 “ what would you say as to the difference, if any, between that sample
 “ Exhibit No. 38, and a fabric of the kind described in the patent, claim 25 ? ”
 20 To which the Witness answered :

“ I can see no difference.”

Will you state if you agree with that answer, and whether you see any difference or not ?

HIS LORDSHIP : Are you objecting, Mr. Smart ? I always think it is unfortunate to mix up claims with questions. However that is practically the same as you find in the description.

Mr. SMART : My learned friend can argue what the claims mean I should think as well as the Witness.

HIS LORDSHIP : You may answer that.

30 WITNESS : In the first instance the claim says “ At least one of which
 “ contains a thermoplastic derivative of cellulose.” That is at least one fabric.

Mr. LAJOIE : That is Claim 25 of patent No. 1 ?—*A.* Yes, sir. Now the nitrocellulose has been applied as a coating——

Q. In Exhibit 38 ?—*A.* In Exhibit 38, and would be on the surface, therefore the fabric would not contain the thermoplastic or any derivative of cellulose.

Q. Would you now deal with the following patent, Schloss, U.S. Patent 1,614,258, which has been cited against patent No. 2 only, and briefly compare these two patents ?—*A.* Schloss is directed to the making of ribbons, in which a few strands of resilient cellulose material are woven near the edges. These
 40 strands are indicated as 8 and 9 on fig. 1.

Relating Schloss to patent No. 2 we find in the first instance that there is no organic derivative of cellulose. Apart from this the ribbon of Schloss could not be used as a stiffening material because, even if we assumed that the few strands of nitrocellulose and the like that are woven along the edges of the yarn impart stiffness to those portions, the body of the ribbon is of ordinary construction and is quite soft so that the ribbon as a whole could not be used as a stiffening material.

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Q. Dr. Esselen in dealing with this patent at page 91 makes this statement :
“ As cellulose material they mention nitrocellulose and organic
“ derivatives of cellulose.”

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tion—
continued.

Do you agree with this statement ?—*A.* No I do not. The passage in question, which begins with line 59 of page 1 calls for preferably resilient cellulose material, such as viscose, nitrocellulose, pyroxylin and the like. As to the meaning of “ or the like ” there is no reason to imply that this means cellulose acetate or other organic derivative of cellulose. “ Or the like ” may much more readily mean materials made by the cuprammonium process. This passage is rather vague, since it repeats itself in mentioning nitrocellulose and pyroxylin, which 10
are the same thing.

Q. Now will you deal with the following patent, namely, to Camille Dreyfus, U.S. Patent 1,634,613, which has been cited against patent No. 2 only, and state if you find any relation between this patent and patent No. 2 ?—*A.* Dreyfus relates to the treatment of yarns of cotton in order to impart to such yarns a permanent finish. In the process of the patent yarns of cotton are passed through a solution of cellulose acetate to impregnate the cotton yarns. Comparing this with patent No. 2 we find in the first place that the cellulose acetate in the patent is brought into the yarn from an outside source, whereas the stiffening effect produced in the patent No. 2 is due to an action of the cellulose 20
acetate material that is already present in the yarn.

Patent No. 2 deals with the treatment of fabric of cellulose acetate yarn, whereas this United States patent to Dreyfus deals with the treatment of individual yarns with a solution of cellulose acetate.

Q. Do you find in this patent any use being made of an organic derivative of cellulose in the form of filaments or fibres ?—*A.* No sir, the organic derivative of cellulose in this case is present in the form of impregnation.

Q. By means of a solution ?—*A.* Yes.

Q. Will you deal with the next patent, Neidich, U.S. Patent 1,651,404, which again has been cited only against patent No. 2 ?—*A.* Neidich relates 30
to the making of artificial horsehair from viscose. That is all it shows. Of course the product is regenerated cellulose and is not an organic derivative of cellulose. It is horsehair, and that is about all I can say about it.

HIS LORDSHIP : What is viscose ? It is cellulose I suppose in a form ?
—*A.* I should like to have an opportunity to explain this to your Lordship because you will probably want to deal with this.

When cellulose is treated with caustic alkali and carbon bisulphide and some water under certain conditions there is formed a thick viscous solution that is called viscose. It is given the chemical name of sodium cellulose xanthogenate. Of course this is just a theoretical product, that is you cannot 40
isolate it from its solution, because if you attempt to it decomposes.

Now this viscose in the making of silk is extruded through a jet with very fine orifices, but unlike the method we have been hearing of so much, that is the dry spinning method, this solution is forced through the fine orifices into a coagulating bath which is of an acid character. That acid neutralises the caustic soda present in the viscose and regenerates the cellulose of these fine filaments so that you have threads of regenerated cellulose.

Now in construing the prior art it is necessary to bear in mind that very often the final product, the threads that are sold, are called viscose threads, that means not that the thread consists of viscose but that it has been made by a process in which viscose was used.

Mr. LAJOIE: Would you now take up the Berard patent, British Patent No. 607 of 1856 which has been cited against Patent No. 1 only, and briefly compare them?—A. Berard relates to the application of nitrocellulose to fabrics either as a coating on one side of the fabric or as means for uniting two fabrics together. In Berard collodion is used, that means merely a solution of nitrocellulose in a solvent. This collodion may be cast on to a sheet of glass, and the film formed may then be united by pressure to cloth, or probably the film may be used to unite two fabrics together.

In another form, instead of preforming the sheet material the collodion is applied to the fabric in the form of coating. Here again we have a patent that differs from Patent No. 1 in that there are no yarns or filaments of cellulose derivatives but rather sheets or coatings. In Berard no heat is disclosed to be used for uniting, and of course Berard relates to nitrocellulose, which is not an organic derivative of cellulose.

Q. Will you now consider the patent to Wm Green, British Patent No. 9879 of 1889, which has been cited against Patent No. 1, and briefly compare them?—A. This Green patent is a tedious document, I have read and re-read it many times and I hope that now I understand what it says. As I understand this patent it relates essentially to a method of coating articles of all kinds.

In the passage beginning with line 4 on page 3 it says:—

“In carrying out this invention I coat and treat other threads, filaments, fabrics, paper, papier-maché, lace, fringe, trimmings, ribbons, perforated and embossed fabrics and paper advertising and other cards, buttons, flowers real or artificial, dress and other ornaments, fictile”——

That means ceramic I think.

“and other articles or vessels as vases, scent and other bottles, jewellery and other articles, materials or matters with octonitro-cellulose as above described.”

Now, coming to the part that deals with fabrics or the coating of fabrics——

Q. Would you permit me to ask you what is the coating of? You have referred to coating without stating what is used?—A. The coating used is called octo-nitro-cellulose, which is a form of nitro cellulose, although according to the description of the patent, after the coating is applied this octo-nitro-cellulose is treated to dis-engage some of the nitric acid. That description is found beginning at the end of line 45, page 2.

Now, coming to the reference to fabrics, there is a description of applying a coating of the cellulose octo-nitrate to the whole surface of the fabric. Also there is disclosed in the passage beginning with line 36, page 3, the coating of fabric only on portions, that is, the solution of this octo-nitro-cellulose is forced through jets on to a fabric in a manner very analagous to the application of icing on a cake, that is, squirting the material in a stream on to the surface.

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tion—
continued.

Relating Green to Patent No. 1, we find that Green relates wholly to a coating, that is the stream of this solution is applied in thin form if you please to the fabric to be coated. There is no preformation of either the yarns or of fabrics containing yarns of this cellulose nitrate. Moreover, there is no yarn used for the purpose of uniting.

This patent perhaps can be a little better understood by reference to the next patent, to Millar, which is quite similar and which has a drawing so that it can be seen just what it is.

Q. Before coming to the next patent I wish to direct your attention to Dr. Esselen's testimony found at the bottom of page 99. The following question 10 was put to him in connection with this patent :

“What would be the relation of a fabric so produced to the kind of thing described in the Dreyfus Patent, the first of the two patents in suit?—*A.* It would be very similar.”

Will you state if you agree with this statement?—*A.* I do not agree with this statement at all. To those of us with celanese companies, who have struggled with the problems of the manufacture of artificial silk, and who know the very delicate conditions —

Mr. SMART : I think this witness is going beyond his experience. He cannot say — 20

HIS LORDSHIP : I hope it will have some connection with it.

Mr. SMART : This Witness does not know what these companies have gone through. He has only been connected with them since 1933.

WITNESS : If your Lordship would permit me to answer Mr. Smart, I would like to point out how close I have been with these things.

HIS LORDSHIP : You can speak from your own practical experience.

Mr. SMART : What he is attempting to say are conditions of forty years ago.

WITNESS : No, of present conditions, if you please.

Mr. SMART : Will you not argue with me. Your counsel can argue if he 30 wishes.

HIS LORDSHIP : Proceed, and make it as brief as possible.

WITNESS : In short, in the making of yarn you must extrude these very fine filaments, these almost microscopic filaments, and bring them together to make a yarn and to make fabric from that you must weave the yarn in a fabric ; and of course in the very close relationship in a fabric, the yarns are intertwined or bound together to form a fabric.

HIS LORDSHIP : To form a yarn?—*A.* No, my Lord. In making a fabric, you must intertwine the yarn ; in weaving it goes in and out, and in knitting, and so on, the yarns must cross one another to hold it together. Now, 40 in this patent to Green, there is a suggestion of making a filament by just extruding a stream zig-zag fashion on to a fabric. It would be utterly impossible to use such an expedient to make anything that approached a yarn or a fabric, rather, as made from yarn which has been spun by the regular method. The streams or line of cellulose in Green merely would cross each other, but not

intertwine, as they are merely coated one on the other ; and it would be quite a different thing from a real fabric made by yarn.

HIS LORDSHIP : By fabric you mean a fabric like celanese ?—*A.* Yes, my Lord.

Mr. LAJOIE : *Q.* Would the thread, under the Green patent, contain filaments ?—*A.* No, sir, it would not. The thread would be just the product made from one stream.

HIS LORDSHIP : From one stream ?—*A.* Yes, my Lord. You see, in the Green patent he is squirting out—

10 *Q.* Explain that a little.—*A.* In Green he is squirting out a solution of cellulose. He has only one hole, not a plurality of holes such as are used to make yarn, as we understand it.

You see, in the making of yarn you must have a hole for each one of these fine filaments that Your Lordship has seen.

Now, in this case, there is no disclosure of having a jet with a lot of holes ; so that what is forced through, in Green, is just one stream, rather than something with a plurality of very, very fine streams.

20 Mr. LAJOIE : *Q.* Would this difference affect the flexibility of the product ?—*A.* Yes, with the relatively heavy stream used by Green, of course the material produced would be relatively heavy and not flexible, that is you would have a situation analogous to, for instance, treating a flexible yarn that has been made up of a lot of filaments and joining them all together to get this rather stiff material.

Q. How would such material compare with horsehair ?—*A.* If Green gets it fine enough even at that stage it would be something like horsehair ; but my own interpretation of Green is that he has something even thicker than horsehair.

30 *Q.* And what is your opinion as to its possible use for making fabric to be used in the collar industry, for instance ?—*A.* Well, the fabric produced by Green is merely a fabric with this coating of the octonitrocellulose, and as such would not be used for making collars.

Q. Dr. Esselen, at page 9 of his testimony was put a question :—

“ *Q.* And what about its being built up ? ”

To which he replied :—

“ *A.* It would be made up of a layer of fabric made from a cellulose ester on top of a fabric of some other material.”

Do you agree with his statement ?—*A.* No, I do not. The zig-zag coating of Green could hardly be called a fabric. A fabric, as I have explained, is something made up of yarns which intertwine to hold it together.

40 *Q.* To your knowledge, has there ever been made use of this patent ?—*A.* To my knowledge there has been made no use of this patent, or no use has been made of the patent.

Q. Will you now deal, Mr. Levinson, with the following patent, to Millar, British Patent No. 17,549 of 1898, which has been cited against both patents Nos. 1 and 2.

HIS LORDSHIP : I thought he was discussing Millar just now.

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Mr. LAJOIE : He just stated that there was some analogy with Millar, but I put some other questions to the Witness before dealing with Millar, which I am now asking him to take up, my Lord.

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WITNESS : Millar discloses a process very similar to that which we have been discussing in connection with Green. In Millar, a solution of nitrocellulose is forced from a nozzle on to a travelling belt.

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tion—
continued.

Q. Can you refer to the drawing in giving these explanations?—A. Very well, sir. Referring to figure 1 of the drawing, we see the F at the top is a reservoir for containing the nitrocellulose solution. The nitrocellulose solution is forced through the nozzle F 2 at the bottom, on to a sheet material that is 10 indicated at A and which is moved between drums.

It will be noted that this nozzle F 2 is of pretty good size ; it is not one that you would expect a very fine stream to pass through.

I think in this case it is shown that this reservoir F is reciprocated back and forth, while the band travels, and in that way there is extruded a stream of zig-zag fashion, for instance, as shown in fig. 3. The other figs. 4 to 8 show various sorts of patterns of streams that may be extruded by various mechanical manipulations of either the reservoir or of the band upon which the coating is being applied.

Essentially, the patent describes making a sheet material by taking this 20 extruded stream on to I think it is called an oilcloth surface, to which the extruded solution does not adhere ; so that upon drying it may be removed and be used as such.

In another modification, instead of using a non-adherent surface of oilcloth, there is a fabric that is used, and the coating is directly applied on the fabric in this manner. Here again we have just a coating of the cellulose nitrate in the form of streams of some kind on to a cotton fabric. In connection with the impracticability of this process it is well to note that in the passage beginning with line 35 of page 4, it is stated :—

“ To make the weft yarns, the speeds of the two parts are reversed ; 30
“ the cistern F travels across the whole width of the web during the time
“ in which the slow movement of the web advances only 1/20th of an inch.”

In other words it calls for moving this relatively heavy reservoir F back and forth while the surface upon which the solution is being coated is moved just one twentieth of an inch.

In other words, in order to make a material one inch in length it would be necessary to move this thing back and forth twenty times, that is ten one way and ten times the other way. It would be quite a long, tedious process to make anything in that way.

Q. Does your comparison made in connection with a previous patent to 40 Green as to icing a cake also hold with respect to this patent?—A. Yes, sir.

Mr. SMART : That is leading, somewhat.

Mr. LAJOIE : Do you find any reference to the use of heat in this patent ?
—A. I do not find a reference to heat in this patent.

Q. What sort of a product would you obtain under this Millar patent, would this be a textile-like product, or would it be otherwise?—A. The first

product, that is the one that has not been coated on to a cotton fabric but which has been coated on a non-adherent surface, from which it is subsequently withdrawn, would not be a textile fabric. It would be rather a sheet-like material, in which there is, of course, no intertwining of the component parts, because the whole thing has just been coated.

Q. Would this be soft or brittle?—*A.* Since it is made of nitro cellulose without any plasticiser, it would be quite brittle, especially in view of the fact that the streams from which it was made are relatively heavy or thick.

10 *Q.* I believe that you have stated that no use was made of yarns of cellulose derivative?—*A.* That is right.

Q. That, of course, would apply to your comparison with patent No. 1. What about the relation, if any, of this patent to patent No. 2?—*A.* I would say I cannot see any relation; just making the so-called threads of a solution of nitro cellulose. Presumably it is cited to show that rather stiff material has been made from a nitro cellulose.

Q. Do you find any reference to the making of a stiffening material in that patent?—*A.* No, I do not.

20 *Q.* Then will you deal with the following patent to Henri Dreyfus, British Patent 173,021, which has been cited against patent No. 1 only, and briefly compare the two?—*A.* Dreyfus relates to the making of a glass substitute; that is material to be used instead of glass in, for instance, chicken houses, although I do not think the patent mentions that.

According to Dreyfus, an open meshed metallic or textile fabric has applied thereto, either by coating or by uniting with a preformed sheet of cellulose ethers.

30 Relating this Dreyfus British Patent to patent No. 1, this British Patent does not show the use of cellulose derivatives in the form of yarns, but rather in the form of sheets or coatings. Also the patent itself, apart from the introductory part, relates to cellulose ethers which, while they are organic derivatives of cellulose, are not cellulose esters or cellulose acetate.

Mr. LAJOIE: Do you find a reference to anything else but the application of a film or solution, do you find any reference to the use of yarn?—*A.* No, I do not.

Q. I direct your attention to page 2 of the patent at line 104 and at the top of page 3, reading as follows:—

“or the fabric may be embedded by heat and pressure, for example, by means of heated rollers or other surfaces, into a solidified film, sheet, web, plate, or the like, and the ether or ether composition,” etc.

40 What do you understand by the word “web” as used there?—*A.* Web is the term that is applied to indicate or to mention a material. A web is a long, continuous sheet.

Q. I am pointing out to you Exhibits Z-11a to Z-11f, and asking you to state whether you consider these exhibits as being representative of the products obtained under this patent?—*A.* Yes, I would.

Q. Will you now refer to Exhibit 41 and state if you consider this exhibit as being representative of the product under such patent?—*A.* I would not.

Q. Will you give your reasons?—*A.* The patent is directed towards the

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tion—
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making of a glass substitute in which open mesh material is used. The fabric used in making this Exhibit 41 is very closely woven and has no transparency, and could, therefore, hardly be called a glass substitute.

Q. I now direct your attention to Dr. Esselen's evidence at page 100, towards the bottom:—

“*Q.* Will you compare the process disclosed?—*A.* The process described in this patent, it is stated, applies particularly to cellulose ethers, but there is an opening paragraph which states that it was well known at that time to carry out the process with filaments of cellulose esters.”

10

Now there may be a clerical error, but I would ask you to state whether you agree with the words, “it was well known at that time to carry out the process with filaments of cellulose esters”?—*A.* No. Undoubtedly, Dr. Esselen said or intended to say “films” rather than “filaments.”

Q. Now at page 100 the question was put to Dr. Esselen:—

“*Q.* How would the process there outlined compare with the one that is described in the patent in question?—*A.* It seems to me to be the same thing.”

Do you agree with that statement?—*A.* No, I do not. There is no disclosure in this patent of the use of a cellulose derivative in the form of yarns or filaments—in a uniting process.

20

Q. Will you now take up the following patent, Sponholz, British Patent No. 262,034, which was cited against Patent No. 2 only, and state if you find any relation between the two?—*A.* Sponholz relates to the preparation or treatment of fabrics to be used for bandages. Sponholz states that formerly bandages have been cut from a wider fabric and the edges of the bandages have been impregnated with a solution of acetyl cellulose, that is the same as cellulose acetate, in order to prevent fraying. Now Sponholz says, beginning at line 29 on page 1 that the edge moreover is frequently too thick and hard by the old method. Therefore he proposes to weave in to the fabric at those places where it has to be subsequently cut to form the strips of bandages, yarns of cellulose acetate, just in those portions which will form the edges of the cut strips. Then after the strips are cut he applies a solvent for the cellulose acetate to seal the edges.

30

Now relating Sponholz to Patent No. 2 we find first of all that Sponholz does not teach stiffening. As a matter of fact, the purpose of Sponholz is to avoid stiffening. But apart from that, assuming that stiffening is taught, this stiffening occurs only at the edges of the bandage and not in the intermediate or wide or greatest portion of the bandage; therefore such bandage could not be used as a stiffening material since the body of it is as soft as the untreated bandage.

40

Q. Do you find the teaching of the manufacture of the material to be used as a stiffening fabric?—*A.* No.

Q. As a fabric?—*A.* No, I do not.

Q. Will you deal with the following patent, the Le Faguays, Swiss Patent No. 53,333, which has been cited against Patent No. 1 and briefly compare it?—*A.* Le Faguays relates to the making of surgical appliances in which fabrics

of various natures such as cloth, leather, felt, rubberized fabric, etc., are united with one or more sheets of celluloid. The uniting is done with the aid of a solvent for the celluloid and in one example, I think the fourth one, heat is used. Now this patent again deals with the cellulose derivative in the form of sheets, not in the form of yarns, fibres or filaments.

Q. When you speak of sheets, do you mean sheets of celluloid?—A. Yes. Moreover there is produced a rigid article, that is, not flexible, that has to be used as a splint for supporting or holding in place broken bones and such things.

10 Q. Would you refer to this product as a textile fabric?—A. The product as a whole I would refer to rather as a plastic mass rather than a textile product.

Q. I now refer you to Exhibits Z-12a, b and c, and would ask you to state whether you consider these exhibits as being representative of the product under the patent?—A. Yes.

Q. Will you now refer to the Plaintiff's Exhibits 42 and 43 and state whether you consider these as also being representative?—A. No, I would not.

20 Q. Why?—A. Throughout the patent there is emphasis that the product formed is rigid. For instance, in line 4 in page 2 of the translation there is a description of a composite rigid sheet. Likewise at the end of example 2 there is a description that there remains a composite rigid sheet, and in the paragraph following example 4 on page 3 of the patent it is stated in the second sentence, "in one case or the other a piece of the dimensions desired is cut from a composite rigid sheet." So that is a description of what product is produced and, of course, these exhibits—

HIS LORDSHIP: Let me see those two exhibits.

Mr. LAJOIE: The Plaintiff's?

HIS LORDSHIP: Both.

Mr. LAJOIE: Yes. You have the two sets there.

30 Q. Will you now deal with the following patent to Nachmann, Swiss patent No. 77,238, which has been cited against patent No. 1 only.—A. Nachmann relates to the preparation of sole leather in which a plurality of fabrics are first individually impregnated with leather cement containing celluloid. After these fabrics have been partly dried they are pressed together and then the drying is completed. Here again we have no use of derivatives of cellulose in the form of yarns or filaments, the celluloid in this case being in the form of an impregnation. No heat is disclosed for the uniting, and the celluloid is not an organic derivative of cellulose.

Q. What sort of product would you obtain from this patent with respect to its stiffness or flexibility?—A. It would be a quite stiff product, the purpose of the product being for sole leather.

40 Q. I believe that covers the prior art that has been cited against the two patents in issue, Mr. Levinson. Following this review of the prior art cited against patent No. 1, would you state just briefly what in your opinion is Dr. Dreyfus' contribution to the art from the standpoint of patent No. 1?

Mr. SMART: I object to that, my Lord. The Witness should not be asked to say what your Lordship will ultimately have to say.

Mr. LAJOIE: I am not asking the Witness, my Lord, to state whether the patent is valid or not.

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HIS LORDSHIP: No, but you asked him whether Dr. Dreyfus has contributed anything to the art, and he has got to answer it yes or no.

Mr. LAJOIE: I am not asking what contribution—

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HIS LORDSHIP: He might as well put it the other way. Anyway the Witness has explained things pretty well, I think.

Mr. LAJOIE: I think so too.

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tion—
continued.

HIS LORDSHIP: He has made many matters quite clear to me.

Mr. SMART: He has given his evidence on each of the patents but he is not entitled to draw conclusions which your Lordship is going to do.

HIS LORDSHIP: No, I do not think that question is proper.

10

Mr. LAJOIE: Q. I direct your attention to Exhibit Z-13a which has been filed in connection with the last mentioned patent to Nachmann. Perhaps you might state whether you consider this to be representative of the product under the patent?—A. No. This exhibit is not representative. The translation of the Nachmann patent, which was a guide in making this, was wrong. The Nachmann patent calls for paper yarn, and that was translated as paper due to the fact that the word "papier" in the German, which was hyphenated, and the yarn occurred many words after it.

Q. What do you understand by paper yarn?—A. I would understand it to be yarn that was made by the spinning of wood pulp fibres as against cotton fibres, although it may mean something else. It may be a paper actually twisted together to form something that looks like yarn.

Q. Have you ever heard of its being made that way?—A. Well in recent years I have heard of yarn being made by the spinning of wood pulp fibres, but as to yarn made from paper as such, I do not recollect having come across that.

Q. Do these explanations that you are now giving modify in any way your previous statement as to the nature of the product that would be produced under this patent?—A. No, it does not.

Cross-exam-
ination—

CROSS-EXAMINED BY Mr. SMART.

30

Q. Mr. Levinson I would like you to give me the benefit of your experience with regard to the terms "plasticisers" and "solvents" apart from any connotation that you may infer from their use in these patents?—A. Yes, sir.

Q. I realize your point of view with regard to the patent, but I had hoped that there would not be any difference between Dr. Esselen and yourself in regard to the general use of these terms in the trade, as it were. Now, first, with regard to the term or the class of compound which would be indicated generally by the term plasticisers in the trade, there are a large number of such?—A. Yes.

Q. And often designated generally under the term "plasticiser"?—A. There are a large number that are designated as plasticisers, yes.

Q. And the purpose of those that are designated as plasticisers being generally to make the material to which they are added more plastic at some temperature?—A. Yes.

40

Q. I suppose the term "plasticisers" is derived from "plastic," that it has some relation to a plastic condition?—A. I have not investigated the etymology of the word. In the Exchequer Court.

Q. It would not be an inaccurate etymology?—A. I do not know. No. 19.

Q. Most of these plasticisers render the material to which they are applied permanently plastic?—A. I would put it relatively permanent, relatively more plastic. Defendant's Evidence.

Q. Nothing is entirely permanent in this world, and I suppose that if we leave a composition with a plasticiser in it exposed for an extended period of time its plasticity may disappear?—A. Well, I would go further than that, Mr. Smart; that some of the so-called plasticisers when used in a thin film, they will disappear. For instance, camphor cannot be used in nitro-cellulose lacquers because of the thickness of such a film. Charles W. Levinson. Cross-examination—continued.

Q. And taking camphor as an example, that sheet of celluloid which was filed as Exhibit "L" would have the camphor or a camphor substitute in it as a plasticiser?—A. Recent researches have shown that the camphor in the sheets of celluloid evaporates from the surface so as to form a sort of case hardening which prevents the camphor from the interior evaporating.

Q. Having given that explanation, perhaps you will answer the question which I will have the reporter read to you?—A. I think I have answered it as well as I could. 20

Q. I do not think you replied to the point I was asking you about. I will ask the reporter to read the question.

REPORTER: "Q. And taking camphor as an example, that sheet of celluloid which was filed as Exhibit 'L' would have camphor or a camphor substitute in it as a plasticiser?"

WITNESS: Yes, that is right.

Q. Now there are similar sheets made of cellulose acetate?—A. Yes.

Q. They would be almost indistinguishable in appearance from Exhibit "L"?—A. Yes. 30

Q. I have such a sheet here.—A. But as you stated, they look alike.

Q. You could not identify them?—A. No.

Q. You could not tell them apart?—A. No, just by mere visual inspection.

HIS LORDSHIP: Cellulose acetate?

Mr. SMART: Cellulose acetate.

Q. Cellulose acetate before it is made into the form of a yarn, or such as Exhibit "K," is a sort of heavy viscose liquid perhaps not unlike Exhibit "N"?—A. Well, before it is formed into yarn?

Q. Yes.—A. I would like to see it. Well, substantially, only my recollection is it is actually much thicker than that. 40

Q. Much thicker than that? Then, as I understand, in the process by which the yarn is formed, the material or the cellulose acetate in the form of this heavy viscose liquid is completely dissolved in acetone? Is that the first step, or perhaps you will tell me the first step?—A. The first step is dissolving the cellulose acetate in acetone to form that heavy viscous liquid that I described.

Q. This represents the cellulose acetate dissolved?—A. Yes.

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Q. What then is the form of the cellulose acetate before it is dissolved?—
A. It is in the form of granules or something of that kind, it depends on the method of preparation.

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Q. Is it a solid?—A. Yes in the form of granules or flakes or something of that sort.

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ination—
continued.

Q. And then we get it in a solution?—A. That is right.

Q. That is Exhibit "M" which we are using for the sake of illustration. We next project it through the nozzles?—A. That is right.

Q. Where it encounters hot air? A. In one form of making.

Q. One of the common forms?—A. Yes the common form but not the 10 only form.

Q. Then the solvent is evaporated?—A. In the dry spinning method.

Q. And is no longer left in the threads after spinning and so on?—
A. I would like to simplify these matters, but these things are not as simple as they sound. After that yarn is formed and comes out of the metier or spinning cabinet it still contains a fair amount of acetone, which after two weeks or so will substantially disappear.

Q. What do you mean by substantially, what order are you speaking of?
—A. I am not good at figures, but my recollection is somewhere around 10 or 12 per cent. of the weight of the yarn. That is the acetone is 10 per cent. of the 20 weight, something of that order.

Q. Now what was this alternative process that you speak of?—A. An alternative process is that known as the wet spinning process. In that case the cellulose acetate is dissolved in a solvent as before, but this solvent will not necessarily be volatile, as will appear as we go on. Such solution is then forced through a spinnerette, through the holes into a liquid bath which is a solvent for the liquid that has been used to dissolve the cellulose acetate, but which is not a solvent for the cellulose acetate. So as these streams of solution come into the precipitating bath the solvent goes out into the bath and you get a solidification. 30

Q. So that in one case you remove the solvent with the hot air and in the other case with a liquid which is a solvent for the solvent?—A. That is right.

Q. Now assuming that this sheet is of cellulose acetate (showing specimen). I do not know if the markings will enable you to identify it?—A. I am not familiar with this name. It might be I suppose for your purpose.

Q. Yes, nothing turns on that. A sheet of cellulose acetate would look just like this?—A. Yes.

Mr. SMART: Then I will have this marked as an exhibit for convenience in referring to it.

EXHIBIT No. 48: Filed by Mr. Smart: Specimen sheet of cellulose acetate. 40

Q. When you get it in that sheet form it has been mixed with some form of plasticiser I suppose?—A. That is the usual method.

Q. What kind of plasticisers are used for that purpose, can you name some?—A. Yes, there is diethyl phthalate, paratoluene sulphonamide—I would not care to go further, because some of these we use we do not like to disclose to the public.

Q. Yes, it is only for illustration. These plasticisers remain in the sheet Exhibit 48?—A. Yes, substantially so, with the limitation that eventually they will go if you keep them long enough.

Q. And it is the presence of plasticisers that gives the flexibility we find in the sheet?—A. Well I would say to a considerable extent, anyway.

Q. Now of those plasticisers you have named can you tell me something as to their specific gravity?—A. No, I am sorry I cannot.

Q. Or their boiling point?—A. I cannot give you definite figures.

Q. Are they high boiling?—A. They boil at over 100 C., I can say that.
10 Just what the point is I do not know.

Q. In what physical form would they be when incorporated with cellulose acetate to form this sheet?—A. I wonder whether you know what you are asking, because that is a mighty complicated thing to answer.

Q. Well I may be asking more than I think, or you may think I am asking more than I really am. You have named two plasticisers as illustrative of those which may be incorporated with cellulose acetate to form a sheet such as Exhibit 48, and I am asking only what the physical form of those plasticisers such as you have named would be?—A. Oh, I am sorry. They are generally liquids, there are a few that are solid.

20 Q. You only mentioned two?—A. I know the diethyl phthalate is a liquid. The paratoluene sulphonamide, mixtures of that at least are liquid also.

Q. They are both liquid?—A. I think so. I do not see these things very often.

Q. Are they a sort of heavy viscous liquid?—A. I really could not answer that, it is so long since I have seen them.

Q. If we take a look at the first patent, paragraph 9, where certain specific compounds are mentioned. The first is triacetin, can you tell me the physical nature of that?—A. You are taxing my memory. I have seen them at one time or other, I can just give my best recollection. My recollection is that triacetin
30 is a liquid.

Q. A heavy viscous liquid?—A. I do not recall its fluidity.

Q. Or its boiling point?—A. No, I am sorry.

Q. And I think you mentioned paratoluene sulphonamide?—A. Yes that group.

Q. That is a plasticiser that you said might be used to make Exhibit 48?—
A. Yes.

Q. And this diethyl phthalate you also mentioned?—A. Yes.

Q. Then paratoluene sulphonamide?—A. I have never seen that.

Q. It would probably be of the same type as the paratoluene sulphonamide?
40 —A. If you want me to guess, all right.

Q. And the next is the high boiling alkylated xylene sulphonamide, do you know that?—A. Yes, that is the mono oil, the specific example under that is mono oil.

Q. And that is a heavy viscous liquid? Or perhaps you can tell me what mono oil looks like?—A. I have not seen that for a long long time. I am sorry I cannot help you on those things.

Q. Then the next is monomethyl xylene?—A. That is mono oil. The other is just the group.

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Q. Of which that forms an example. We have been speaking of acetone a good deal, and there was some description of it. I have a bottle, that looks like acetone?—*A.* Yes.

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Q. And you can smell it?—*A.* Yes, it looks and smells like it.

Q. And that acetone is a complete solvent for cellulose acetate?—*A.* That is the variety of cellulose acetate with which we are dealing.

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ination—
continued.

Q. So that if I filled a tumbler with this acetone and put some of the yarn of Exhibit "K" into it it would disappear like sugar in water? I do not say with the same speed—*A.* It is not quite analogous, but for general purposes I suppose you can assume that.

10

Q. And if I wet a fabric with it and left it in the air it would just evaporate gradually?—*A.* Yes, eventually.

Q. Just like if I wet a handkerchief with alcohol?—*A.* But not all would evaporate. It would take a long long time to get the last traces of it gone.

Q. For instance, if I wet my handkerchief with it and in 20 minutes—*A.* Oh no, in 20 minutes there would be quite a bit left. It would take days and weeks before practically all of it was gone.

Q. It is volatile at room temperature, though?—*A.* Yes.

Q. And as the temperature increases it goes off faster?—*A.* That is right.

Q. Now there is no difficulty in applying a solvent such as this acetone to a sheet or fabric of cellulose acetate through another fabric?—*A.* Not if the fibre is thin enough.

20

Q. If it goes through and contacts with what is underneath, and leaves no mark on the outer fabric when it is evaporated?—*A.* Well that would depend on what was on that outer fabric. It is quite conceivable that the fabric may be dyed with dyes that would bleed under the action of the acetone.

Q. Well a white fabric then?—*A.* Yes, it could evaporate.

Q. And the outer material would be ultimately left in the same condition?—*A.* Yes.

Q. Now do you think that any of these plasticisers named in the patent to which we have just referred could be applied through another fabric?—*A.* Yes.

30

Q. Without leaving any mark on the other fabric?—*A.* That is they could be removed, perhaps not by evaporation but by some other method.

Q. By treatment with a solvent?—*A.* With a solvent for it.

Q. But if you use them in the same way I suggested acetone should be used, you would then have the outer fabric marked with the plasticiser, would you?—*A.* That is until it is removed it would be marking the outer fabric, just as acetone would be marking the fabric until it is removed.

HIS LORDSHIP : Has acetone been long known as a plasticiser or softener or solvent?—*A.* Yes and no, your Lordship. That is, it has been known as a solvent for nitro-cellulose for a long time, but with respect to cellulose acetate we have a rather interesting story.

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HIS LORDSHIP : We will hear the story this afternoon.

At one p.m. the Court adjourned until 2.15 p.m.

AFTERNOON SESSION—2.15 p.m.

January 15, 1936.

CHARLES W. LEVINSON, CROSS-EXAMINATION BY Mr. SMART
(Resumed).

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Mr. SMART: Q. Mr. Levinson,——

Mr. CHIPMAN: I think the witness was in the middle of an answer at the adjournment.

HIS LORDSHIP: Yes.

10 WITNESS: The acetone soluble variety of cellulose acetate has been known since about 1904. Before that, the cellulose acetates that were known were not soluble in acetone. So that in answer to your question I would say that acetone has been known as a solvent of cellulose acetate since that date around 1904.

Mr. SMART: Q. Mr. Levinson, in your examination you have expressed some views as to the meaning of the phrase "plasticiser, softening agents or solvents" as used in the first patent, and I would like to ask you if you draw any distinction between the class of substances indicated by that phrase and the class of substance indicated by the phrase "solvents, softening agents or swelling agents" in the second patent?—A. I would say that there is no
20 distinction between the two sets of expressions.

Q. Now, I am going to go into some of the remarks on the prior art which are perhaps less fresh in memory, having been gone into yesterday; and I think I will go backward, starting with the more recent ones. The last one you dealt with was Nachmann, but I am referring to Le Faguays. You spoke of the rigidity of the fabric. I take it the rigidity would depend on the thickness of the sheet of celluloid used?—A. The thickness both of the sheet of celluloid used and the thickness of the fabric used.

Q. But the fabric would not be what imparted stiffness?—A. But the celluloid getting into the fabric would impart stiffness, and if you had a thicker
30 fabric and the celluloid went further in, it would be stiffer.

Q. And consequently if you had quite a thin sheet of celluloid, the rigidity would be very much less?—A. Generally speaking, yes.

Q. Sheets of celluloid are made quite thin?—A. There are sheets of celluloid made not too thin; when they are thinner they are not referred to as sheets but rather as films.

Q. Well, how thin a sheet can you obtain of celluloid?—A. Are you using the term "sheet" in your sense or in my sense, Mr. Smart?

Q. Well sheet or film—I mean we are not talking about a matter of words?
—A. Well, I want to make it clear that it is possible to cast foils of celluloid
40 which are on the order of thickness of the familiar cellophane.

Q. If a sheet of that thickness were united with the textile fabric, you would have a relatively flexible composite sheet?—A. I would say so.

Q. Then go next to the Dreyfus British Patent No. 173,021. You were asked in your examination as to the meaning of the word "web." Without looking at the patent, perhaps you can tell me whether it is true that the word "web" has been generally used to indicate a woven fabric?—A. Not

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continued.

particularly in the textile art, that is. People who buy the goods I have never heard talking about a web.

Q. Some people might use one word and some another, but it has been used in the textile field to indicate a woven fabric?—A. I am trying to recall whether I ever have seen it in that connection, although I will admit that it would not be a wrong use of the word to refer to a long continuous sheet of fabric as a web of textile fabric.

Q. And that is one of the meanings in the dictionary for the word, is it not?—A. To tell you the truth, I have not looked up the dictionary at all.

Q. I observe that in Murray's New English Dictionary the first meaning given is "a woven fabric." There is nothing in your experience which would disagree with that meaning as one of the meanings which "web" may have?—A. As I say, I do not recall having come across the use of the term "web" in my experience in connection with the use of textile fabrics.

Q. Nor in connection with the patents of the Canadian Celanese Company?—A. As far as I can remember, but of course I have not dealt with all the patents.

Q. You deal with a good many of them?—A. Yes.

Q. I will ask you to look at the Patent No. 293,858, British patent of the British Celanese Limited, particularly the second paragraph, and say whether the word "web" there is not used to describe a ribbon or fabric of cellulose derivative which is woven?—A. What paragraph is it?

Q. The second paragraph.

Mr. CHIPMAN: My Lord, do we interpret one patent by the terms of another? The context would show the difference.

HIS LORDSHIP: Oh, yes, it is not a very good way, but it may help.

WITNESS: You are quite right, and if I may I would like to read the passage so that we will know what we are talking about.

Q. Read the passage?—A. The passage says: "This invention relates to the manufacture of ribbons or webs from a wider piece of fabric." In other words, the web there is defined exactly as I said, a long and continuous strip.

Q. Of woven material?—A. In that case it was used in that connection.

Q. And where it is used in the same meaning, in British Patent 299,042 to the British Celanese Limited, page 1, line 19 and line 32, it means the same kind of thing?—A. Does not this refer to the other patent?

Q. Yes?—A. It is the same type of expression which occurs in this one as in the other patent referred to.

Q. Yes, and I have no doubt you will agree that I might find other instances in patents of the word "web" being used to describe woven fabric in a long, continuous woven fabric?—A. You are quite correct, that is the meaning of the term.

Q. Now will you also turn to Green and Millar. First, in Green, as that is the first in order of date?—A. I will have to ask you to bear with me, as my copy does not correspond with yours, so that I can find it.

Q. Yes. I think you said that there was only one tube or jet for forming the thread or ribbon in that case?—A. I do not know that I said that. What I had in mind was that the jet had only one hole.

Q. But there might be a number of jets?—*A.* If you call my attention to the passage, as I testified this morning — I cannot keep this patent in mind ; it is too complicated for me. In the
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Q. You undertook to say this morning that there was only one jet. Is that right or not?—*A.* I do not remember if I said that, but if I did, I meant where there were jets there was only one hole in a jet. No. 19.
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Q. But you are not prepared to say that there are not more than one jet disclosed in the patent?—*A.* No, I am not, but if you refer me to passages I will be glad to deal with it. Charles W.
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ination—

10 *Q.* I will refer to page 3, line 41 : “ In some cases more than one set of “ tubes may be employed.” continued

Mr. CHIPMAN : Just a minute, as I have a copy with different paging.

HIS LORDSHIP : The paragraph commences : “ In treating fabrics or “ other articles ” — the sixth paragraph.

WITNESS : Yes, I have it.

Mr. SMART : *Q.* You were wrong, if what you said meant that there was only one jet?—*A.* If I said so, yes ; but this does not contradict the thought that I was conveying, that with a device like this relatively thick streams would be extruded, as compared with the thin filaments of artificial silks.

20 *Q.* We will go on to the thickness of the threads in a moment. But according to my notes, you then said that there was a single jet, but you now agree that there are a number of them.

Mr. CHIPMAN : I am putting the point that I do not think the Witness said that.

HIS LORDSHIP : Oh, the Witness can handle himself. I have lost the line.

Mr. SMART : Line 41.

HIS LORDSHIP : Your question is whether there is one or more streams from each tube.

30 *Mr. SMART :* That is what the Witness now says he meant ; but the structure is that there may be a number of tubes?—*A.* That is right.

Q. You rather gave me the impression this morning that you spoke of this as a continuous sheet extending or forming a continuous sheet. It is true, is it not, that it is proposed that these jets should move, in order to produce the zig-zag effect, so that the threads would be held together?—*A.* I am afraid, *Mr. Smart*, that you misunderstood me. I said, in one form there was a continuous film cast on the fabric ; and then I went on to deal with this other form.

40 *Q.* I did not catch that. Maybe it did not get in in the way you thought it should. In any event, there is one form in which there are threads which are zig-zagged to connect with each other?—*A.* If you want to call such things threads, yes.

Q. As a matter of fact, they are described as threads, are they not, in this patent?—*A.* Yes, they are described as threads.

Q. And you referred to the stiffness of the thread. They are really described as ordinary threads, are they not?—*A.* I do not recall ; but I was testifying

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as to my interpretation as to what happens, in view of my knowledge of this type of thing.

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Q. You never built any machine like this Green machine?—A. No.

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ination—
continued.

Q. Then, will you look at the last paragraph of the specifications, where it describes the threads as possessing a silky lustre and pliability like or similar to those made by the Japanese. Now that is comparing it to Japanese silk, is it not?—A. Yes.

Q. Then the next sentence refers to using those threads in connection with real silk and other silk. You see that, don't you?—A. If you will bear with me a moment on this, I want to just see what is the context of this paragraph in respect to the rest of it. 10

Q. You have answered my question, Mr. Levinson. If your Counsel wants to ask anything more.

Mr. CHIPMAN: The Witness should be allowed to complete his answer.

HIS LORDSHIP: Oh, he is to be allowed to read in order to answer your question.

WITNESS: I am trying to find out just what the "threads" in this paragraph refer to. As I read this paragraph—of course I may be wrong—the threads referred to here are not the threads made by the process, but rather the threads with which the material is coated; because in the same paragraph it refers to the paper or pulp that is referred to, and my recollection of the patent is that the paper or pulp is placed on the fabric that is to be coated with this octo nitro acetate. 20

Q. But I was asking you about the last sentence of that, which was "threads and filaments." By the way, the phrase "threads and filaments" as used there, perhaps you will tell me the distinction you draw, if any, between threads and filaments as used in that section?—A. The threads and filaments referred to in this sentence are not the threads or filaments which are formed—

Q. You are not answering my question.

Mr. CHIPMAN: My learned friend should let the Witness answer. 30

A. The threads and filaments referred to in this sentence do not refer to the form of the nitro octo acetate that is produced, but rather to the threads or filaments which it is stated in the beginning of the patent are coated with this octo nitro cellulose. These threads or filaments are described—I do not find the description of those threads or filaments, but the description of coating such threads or filaments is found on page 3, beginning with line 9: "In coating threads, I cause them to pass through the octo nitro cellulose and then through an aperture by which also superfluous liquid is removed, and then through water and on to bobbins."

Q. Now, perhaps having given that explanation you will answer my question. Perhaps you would like to hear the question read again, or can you answer the question now?—A. Yes, the threads or filaments theretofore referred to are the ordinary textile threads or filaments, which may be cotton, silk, wool or something of that sort. 40

Q. You have not yet answered the question. My question was whether

you drew any distinction between the term " thread " and the term " filament " ?
—*A.* Apparently in this ancient patent the two are used synonymously.

Q. Well, then, taking your view as to the threads referred to at the beginning of that sentence, they, when coated, would still be relatively small in size, would they not ?—*A.* I suppose so. In the process described of passing threads through the solution, relatively little solution will be taken on, so that they will still be relatively small.

Q. And this patent, as a matter of fact, refers to the articles which might be made, as collars, cuffs, and so on, at line 33 of page 5 ?—*A.* Yes, but it does
10 not tell how it is to be done.

Q. That would be a grave omission in describing a process to be applied to collars and cuffs ?—*A.* Not at all, but if you are trying to apply this disclosure to a uniting process I would say it would be a very grave omission.

Q. As to applying the material to making collars and cuffs ?—*A.* I do not follow you.

Q. To use the material which this patent tells you how to produce for collars and cuffs. Would there be any difficulty in that ?—*A.* No, just cut it out and sew it, or something of that sort.

Q. Will you next refer to the Millar patent. Again there are a number of
20 nozzles disclosed, not just a single one you referred to ?—*A.* If you refer to a passage where it occurs all right. Of course my testimony was directed that the nozzles had only a single hole rather than a plurality of holes. If the patent says there are a plurality of nozzles—

Q. You undertook to describe the process without referring to the patent.

Mr. CHIPMAN : Mr. Levinson referred to the drawing and gave the figures in the drawing.

Mr. SMART : The Witness needs no assistance from my learned friend.

Mr. CHIPMAN : I am not giving assistance, but I correct my learned friend if he makes statements which are not correct.

30 WITNESS : Do you want me to read the whole patent to find the passage or will you help me ?

Mr. SMART : I am quite prepared to help you to correct yourself. Page 4, line 53 ?—*A.* Yes. There it is stated that there may be two cisterns each furnished with a number of nozzles.

Q. And the product is a fabric resulting from this process ?—*A.* Not a textile fabric.

Q. Well a fabric of the material from which the threads are formed ?—
A. No. As I explained this morning, a textile fabric is a material which is
40 formed by the interlacing or intertwining of yarn. In this case any contact between the components of the material is due to the fact that one is laid on to or into the other.

Q. Is that a special definition of the term fabric that you are using ?—
A. Not at all. Textile fabrics comprise three groups ; woven, knitted and netted, and in each of those there is some sort of intertwining of the yarn.

Q. Does that not indicate that the fabric is generally any arrangement where the threads are connected together ?—*A.* No.

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Q. In a net?—*A.* In a net the yarns are actually twisted on to each other.
Q. You draw a distinction between where they are twisted together and where they are united some other way?—*A.* That is net. In woven, you have two sets of yarns at right angles to each other, and one set is going in and out with respect to the other set.

Q. This is described by the inventor as a fabric?—*A.* Yes.

Q. And it is even described, as to one form of it, as being a calico or plain cloth?—*A.* That is the other modification, where this solution is cast on to a base fabric of calico and cloth.

Q. Are you sure of that?—*A.* Yes.

Q. Will you look at line 41, page 4 where it says the tissue will appear as an open calico or plain cloth as shown in page 6?—*A.* That of course is just the description of what the material looks like.

Q. Then you were wrong in your previous answer, that the term calico and plain cloth was applied only to the end fabric?—*A.* Well your question was worded applied to, as describing it as such. Here it simply states that it looks like it.

Q. In any event the term open calico or plain cloth is in this patent, is it, as applied to the tissue resulting from the process?—*A.* I cannot agree with you, sir, in your use of the term "applied."

HIS LORDSHIP: You distinguish between applied and appear.—*A.* Exactly. The statement in the patent is that this material looks like it.

Mr. SMART: Look at the paragraph beginning line 35, page 4. It first describes how to make the weft yarn, doesn't it?—*A.* You say it first describes. Let us accept it. I do not know what you are getting to.

Q. Then it describes how to form the warp yarns?—*A.* The wording is not quite that, but I will accept that for the moment.

Q. An ordinary fabric is ordinarily composed of weft yarns and warp yarns, isn't it?—*A.* Yes.

Q. Then this paragraph, having described the weft yarn and the warp yarn, states "the tissue will appear as an open calico or plain cloth"?—*A.* That is simply to define what would happen if you have two sets of threads crossing each other at right angles, it will be reticulated and will appear like calico or plain cloth.

Q. Now you spoke, in dealing with that patent, as to the character of the thread or filaments as to their being stiff or not. Is it not true that before denitration the threads or filaments of nitro-cellulose are soft?—*A.* That depends entirely on the size of those filaments. If they are a fine size they will be soft, if they are quite thick they will be harsh.

HIS LORDSHIP: Is this patent cited against Patent No. 1 or No. 2?

Mr. SMART: Both.

Q. Then if you will go back to the Van Heusen patent, No. 1,479,565. I think what you said implied that there is no penetration of the fabric by the cellulose derivative in this case. Is that so?—*A.* No appreciable penetration.

Q. The patent does refer to the penetration of the fabric by the cellulose derivative used?—*A.* In the passage that strikes my eye (page 2, line 19) the

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reference to penetration is: "in such cases the binding agent may be permitted to penetrate to a greater depth in the two ply fabric without appearing on the outside of the collar," which means it has not gone all the way through, even to this extent.

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7 Q. The degree of penetration, I suppose would be controlled by the amount of cellulose derivative used?—A. Not necessarily. There are quite a few factors, the time, the temperature, the pressure employed and the amount of solvent. In other words, how far you push the cellulose derivative through the fabric.

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10 Q. And if you used a small amount it would hardly go into the fabric at all?—A. If you had a sufficiently small amount.

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ination—
continued.

Q. And the selection as to what amount of time and pressure would be the kind of thing that would be done by a person skilled in the art?—A. Yes, but in following the teaching of this patent he would be careful not to have it go too far.

Q. Well it would not be very attractive in any of these collars if the binding agent came through on the outside of the collar, would it?—A. No.

20 Q. I think in referring to this patent you stated that it was the only patent in the prior art referring to the making of collars?—A. In the prior art cited in this case to the present time.

Q. I rather think you overlooked Segall for one?—A. Segall mentions collars, but it is not specifically directed to the making of collars as this patent is.

Q. That is what you mean?—A. Yes.

Q. I gather from what you told me about the thickness of celluloid sheets, that if you used a thin sheet or film as we referred to, the article produced would be flexible?—A. Yes.

30 Q. In referring to the Kempshall patent, the earlier one, I think you referred to using a solution of celluloid. No doubt you meant a sheet of celluloid?—A. No, when I referred to a solution of celluloid I was referring to the treatment of the fabric 3. The description is from, in line 66, page 1, which states:—

"in fig. 4 the fabric sheet 3 is indicated by a greatly enlarged frag-
mentary portion thereof shown embedded in a relatively large quantity
of celluloid material as 8, which, in the preferred form of my improvement
in the manufacture of moldable sheet material will usually have a relatively
plastic character as compared with the preliminary-prepared sheet or
sheets two and four."

I think the passage beginning at line 96, page 1, is helpful.

40 Q. There is nothing in the earlier paragraph you have just read which is helpful?—A. Oh yes. It says that the fabric sheet has embedded therein a large quantity of celluloid material.

Q. Is it your view that that indicates celluloid material in any form?—A. In the form of a mass embedded in the interstices of this fabric sheet.

Q. There are other forms of the invention in which the celluloid is shown as a sheet, are there not?—A. In all forms the celluloid is used in the form of a sheet which is united with this fabric, which will also have celluloid in it. In all forms there is a sheet of celluloid used in the uniting process.

Q. You were referring then to the incorporation of the celluloid material

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into the fibrous material?—*A.* That is right. If you will look at Fig. 4 you will see the picture of what that is.

Q. You also cast doubt on the capacity of this material to be used for a collar?—*A.* Are you referring to Kempshall?

Q. Yes?—*A.* Yes.

Q. So that in your view the expression "or other article" on line 8, page 1, would not indicate any extension of the uses to which the compound fabric can be put?—*A.* "Or other articles" may mean a multitude of things.

HIS LORDSHIP: Well, I will have to construe that, I suppose. I see what Mr. Smart is after.

10

Mr. SMART: While we are speaking of fabrics, let us clear our ideas a little. I have not looked at the dictionary, but my impression is that there are a variety of felts called fabrics?—*A.* Yes. As a matter of fact, if you look up the meaning of the word fabric, you find it means anything that is manufactured. The correct term to apply to the things we are talking about is "textile fabric." I think paper is a fabric, leather is a fabric, anything that is manufactured or fabricated is a fabric.

Q. You have to have the context?—*A.* That is right.

Q. At the beginning of your examination you referred to the effect of ironing on cellulose acetate fabric, that is one composed entirely of cellulose acetate. Perhaps you can tell me how long that effect that you there described taking place on a cellulose acetate fabric has been known?—*A.* As far as I have known it, I should say since the beginning of 1928.

20

Q. But not earlier than that?—*A.* My connection with this industry started just a little prior to that.

Q. And you cannot speak as to anything earlier?—*A.* With respect to that, no.

Q. Your knowledge with regard to cellulose acetate starts then?—*A.* Oh no.

Q. Except as far as you may have studied chemistry?—*A.* My knowledge as to certain specific things will date from various times. Some knowledge I have now with respect to cellulose acetate I acquired only a few weeks ago.

30

Q. But as to ironing in any event, it came since that time?—*A.* Yes.

Mr. SMART: The Celanese Company does not sell any of this compound fabric in the assembled form?—*A.* To my knowledge it does not.

Q. You spoke of some of the advantages of using yarns as a uniting medium. I think with one of them it was possible to assemble the materials to be united before they are actually united?—*A.* That is right.

Q. I gather that would be a very considerable advantage?—*A.* Well, you do not know how to evaluate these advantages, but I consider it quite an advantage.

40

Q. In describing the St. Hilaire process which you summarized, you spoke of the cold press and the moistening of the fabric in the cold press but did not refer to any pressure being put on there. You understood that there was a pressure of 10 to 20 pounds?—*A.* I understood that that was testified to, yes.

Mr. LAJOIE: Of 10 pounds, I believe, not 10 to 20 pounds in the wet press?

Mr. SMART: On the wet press?

Mr. LAJOIE : On the wet press it is definitely 10 pounds.

Mr. SMART : On the second patent you suggested that the ethylene dichloride might be emulsified when mixed with water. There is no direction to emulsify in the patent ?—*A.* No specific direction, no sir.

Q. I should have asked a question or two about the Kennedy patent. You spoke as to whether or not strands of nitrocellulose or its equivalent, acetate of cellulose, were known in 1897. I suppose you meant commercially known ? They were in fact known in the laboratories ?—*A.* As to cellulose acetate strands, my recollection is that they were not known in the laboratory. Of course, as to
10 nitrocellulose strands they were known.

Q. They were known, and the method of producing them was well known ?
—*A.* Yes, sir.

HIS LORDSHIP : They are referred to in many of these patents—cellulose acetate.

Mr. SMART : Yes.

WITNESS : But we are dealing with a very early date, my Lord, in this case.

Mr. SMART : *Q.* In an example given in figures 4 and 5, the two strands of the rope when the process was finished would be united together as a result of
20 the process ?—*A.* Will you just bear with me for the minute to study this ?

Q. Yes ?—*A.* As to whether that actually would happen in the process, I do not know, but the patent itself states that that does not happen.

Q. Yes ?—*A.* You will note in the paragraph beginning with line 57 that reference is had to figures 1 and 4, figure 4 being the figure that shows the rope. Then after describing the process we find a description in line 65 as follows :—

“ The pyroxylin diffuses itself and impregnates the raw fibres and their
“ interstices of the ordinary threads, so that the appearance and structure
“ of the article are not changed, and so that it is made waterproof and
“ remains uncoated or unglazed and presents its ordinary texture structure.”

30 I interpret that to mean that all of the pyroxylin that is present goes right into the strands and that none of it is left between the strands.

Q. I am suggesting to you that the strands are in contact with each other and are then treated with this solvent, and that the result would be to cause the strands to adhere to each other ?—*A.* The patent tells me otherwise.

Q. The patent says nothing about the—*A.* Oh, that passage I read means exactly that to me, sir, because it says the pyroxylin diffuses itself and impregnates the raw fibres and their interstices of the ordinary threads. That is, the pyroxylin goes right into the threads so that the appearance and structure of the article are not changed. Now, if there was any between the threads or
40 any between the interstices of the fabric, the appearance would be changed ; and it goes on to say, “ so that it is made waterproof and remains uncoated “ and unglazed.” Uncoated or unglazed means that all of it is inside the strands and that there is none on the outside or between it to cause any coating or glazing.

Q. I am suggesting that if the strands were uniformly impregnated there would be some on the surface as well as inside ?—*A.* If that happened, yes.

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Q. Now you are familiar, Mr. Levinson, with the British patent which is stated to correspond with the Patent No. 1 in suit, that is the one filed on January 23, 1925 ?

Mr. LAJOIE : Have you got the patent ?—A. No, I have not.

Mr. SMART : Q. The number is 248,147.—A. I am not too familiar with it. I really have not studied it, but perhaps I can help you.

Mr. SMART : My learned friend stated he was going to file a copy of that. Have you a certified copy of that ?

Mr. LAJOIE : No. I filed a certified copy of the application in order to establish the priority date. 10

Mr. SMART : Yes, I see. Perhaps you will refresh your memory by looking at that ?—A. Very well sir.

Mr. LAJOIE : Is that the patent.

Mr. SMART : Yes.

Q. You are familiar with that patent ?—A. Oh I have read it at some time or other.

Q. And you have dealt with it numbers of times ?—A. No, I will not say numbers of times. In the preparation of this case I did not see it, and therefore I did not study it.

Q. But you had to study it in connection with the prosecution of other 20 patents in the United States ?—A. I suppose so. I deal with so many, of course I could not possibly give you a definite answer on that.

Q. And do you remember arguing before the United States Patent Office that the disclosure of that patent shows the yarns of organic cellulose fabric with another fabric in such a manner as to substantially close the interstices of the compound fabric for the purpose of forming a waterproof or gasproof material ?

Mr. LAJOIE : My Lord, I object to the question. I understand my learned friend is quoting from the British patent. I cannot see the pertinency of it. Are we going to start interpreting the patent ? It either has the same meaning 30 as the Canadian patent or it has not. If it has then it simply confirms it. If it has not, the Court is not called upon to deal with the British patent.

Mr. SMART : My learned friend did not listen to the question when he made his objection.

HIS LORDSHIP : I do not feel like allowing the question, Mr. Smart, for the reason that I am not at all interested in what takes place in the United States patent office. I have always refused, except in one or two cases when I thought I would save time by allowing a counsel who could not be stopped, to put in some document. I have always adopted the rule that we have nothing to do with what occurs in the United States patent office. I do not know if 40 it is even fair to ask one who is a patent solicitor how he argued on one case, and how he argued in the other. I have heard you, Mr. Smart, and I suppose the other gentlemen of the Bar, on two sides of the same question. It gets you into a phase of the issue that does not help very much. I should think you might ask a question which would serve your purpose as well.

Mr. SMART: I think the answer to the last one will do. The way I am putting it is not with a desire to get—

HIS LORDSHIP: He was not a witness. If he were a witness in a trial in the United States and swore to that certain thing which you were cross-examining on, I think that would be quite different.

Mr. SMART: The position is that this Witness appears here as an expert, and he was then and is still the patent attorney for the Celanese Company, and on their behalf he puts forward views in the United States patent office which are directly contrary to the view which he expresses as an expert here. Now, if that does not seem relevant to your Lordship, I will not press the question.

HIS LORDSHIP: As a rule, I dislike persons, as solicitors, of any body, giving evidence as experts.

Mr. SMART: Q. Now will you look at Exhibit "M." That is a small bottle of cellulose nitrate, 20 per cent. solution?—A. It is marked 20 per cent. celluloid. It is not quite the same as cellulose nitrate. Celluloid is a mixture of cellulose nitrate and camphor.

Q. And that is the celluloid, not the cellulose nitrate as it is marked?—A. Yes.

20 Q. But a solution of 20 per cent. cellulose nitrate would have about the same appearance as that?—A. Oh, substantially, I think it would probably be somewhat thicker.

Q. And it is used commercially as a paste in that form?—A. Yes, I think as a leather cement or something of that sort.

Q. It is used as a leather cement and things of that sort?—A. Yes.

Q. The cellulose acetate paste from which the yarns are made in the spinning process looks and acts very much like a solution of cellulose nitrate in 20 per cent. solution of cellulose nitrate?—A. I think I told you this morning that actually it is considerably thicker.

30 Q. Yes, and it is common to use up the waste threads of cellulose acetate by dissolving them again in the acetone and using them in the process?—A. It is done, yes.

Q. I think that duco-cement is cellulose acetate in acetone—it is often used?—A. I am not sure; my impression was that it was a nitro-cellulose and dissolved, but I really do not know what duco-cement is.

Q. But with a mixture of cellulose acetate in acetone you make a good cement?—A. I hardly think so. I think some resin would be necessary in the solution to get the proper adhesion.

40 Q. You have no knowledge on that subject?—A. Just my knowledge about the lacquers of cellulose acetate where it is necessary to incorporate resin to get adhesiveness.

Q. I am told that there is a cement existing of cellulose acetate in acetone?—A. As I say, I do not know.

Q. Now you referred to the sample Z-8 made under the Oliver patent. The patent on line 95 indicates that the drying of the composite material—A. Line what, sir?

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Q. Line 65 : that the drying of the composite material would be aided by heat. That is right, is it?—*A.* Yes.

Q. And that sample Z-8 might fairly be described as being a composite waterproof material?—*A.* Yes.

Q. And the fabric contains thermoplastic derivatives of cellulose?—*A.* Yes.

Q. Now will you look at paragraph 18 of the first patent. I want to follow through your understanding of the different kinds of composite fabrics referred to in this paragraph. The first fabric referred to is one composed of two fabrics, one wholly composed of thermoplastic filaments and the other composed wholly of other non-thermoplastic filaments. Is that right?—*A.* I do not quite follow you there, sir. 10

Q. That is the first four lines. It is a little puzzling.—*A.* It states :—

“ Instead of employing for association with fabric composed of yarns of thermoplastic filaments or fibres, fabric consisting wholly of yarns or silk, cotton or other non-thermoplastic fibres or filaments.”

There is mention of two things there, yes, sir.

HIS LORDSHIP : What paragraph are you reading from?—*A.* 18, sir.

Mr. SMART : *Q.* The first fabric is a solid, let us say solid celanese fabric and a solid non-celanese fabric?—*A.* Yes.

Q. Then go on to the second one which I would take to be a mixed fabric to be associated with a fabric of non-thermoplastic? 20

Perhaps you will say what the next alternative is included in the words—

HIS LORDSHIP : Is the British specification much like the Canadian specification?

Mr. SMART : Yes.

HIS LORDSHIP : And the American specification?

Mr. SMART : Yes, just the same.

HIS LORDSHIP : Which was the older?

Mr. LAJOIE : The British. The British was the first specification.

HIS LORDSHIP : Was that prepared in England? 30

Mr. LAJOIE : Yes, my Lord, so I am informed.

HIS LORDSHIP : Mr. Levinson did not prepare it.

WITNESS : No, that was before my day.

Mr. SMART : *Q.* The second alternative fabric, I am suggesting, is a fabric composed of all thermoplastic fibres with a mixed fabric. Is that right?—*A.* Yes, that is right.

Q. And the third alternative suggested in that paragraph is a mixed fabric with a mixed fabric?—*A.* Well, you have jumped to the next sentence, I think, Mr. Smart. In the second sentence there is that alternative of mixed fabric.

Q. Yes, I am dealing with the whole paragraph?—*A.* There was still another alternative which you skipped, in the last part of the first sentence, and that was why I did not follow you. 40

Q. What is the alternative?—*A.* “ Or consisting of or comprising yarns composed of a mixture of thermoplastic filaments or fibres with non-thermo-

“plastic fibres or filaments.” In that case you would associate one fabric composed wholly of thermoplastic derivatives with a fabric which is composed wholly of yarns which in turn are made of thermoplastic derivative filaments or fibres, as compared with that of the mixed fabrics.

Q. The third alternative was mixed?—A. Yes.

Q. The solid fabrics of cellulose acetate, for example, would contain very much more cellulose acetate than the mixed fabrics?—A. Of the same construction, yes.

10 Q. And the specific example given in this patent, when it comes down to a specific example, as in paragraph 15, is a specific example of two fabrics associated together, one being a cellulose acetate fabric, and the other non-thermoplastic?—A. I am afraid I did not follow you there, Mr. Smart. What paragraph?

Q. Paragraph 15, for instance.—A. I do not get it out of that paragraph, Mr. Smart.

Q. That really carries on from paragraph 14, if you will look back at 14?—A. May I have your question again, please?

20 Q. When it comes to a specific example in the specifications, the specific example given is the association of all thermoplastic fabric with all non-thermoplastic fabric?—A. That depends on your interpretation of the term occurring in the first line of the paragraph, “fabric made of cellulose acetate yarn”; in the first part of the patent, for instance in paragraph 3, the expression is used, “fabric composed of or containing filaments or fibres of “thermoplastic cellulose derivative or derivatives.” There you have two alternatives. That is a fabric consisting wholly of the thermoplastic cellulose derivatives, and one merely containing it, that is a mixed fabric. Now, in this paragraph 14, you have the term “fabric made of cellulose acetate yarn.” I think still the implication is that the fabric consists wholly of cellulose acetate yarn; in view of the opening paragraph of the patent, the term may also mean

30 containing the cellulose acetate yarn; that is a mixed fabric.
Q. There is no definite statement about it, when it comes to the specific example, that is a matter of construction?—A. Just from that passage; but perhaps if I studied it a little closer from that point of view, I may be able—

40 Q. I thought it was a specific example of the two fabrics, reading it myself. I suppose we can argue as to the construction. What I want, however, for you to do for me is to make a comparison between the amount of cellulose acetate that would be contained in the composite sheet finally made in different ways. Now, if you unite a sheet of, say, celanese, and a sheet of cotton of about the equivalent weight, then you would have about 50 per cent. cellulose acetate?—A. That is right.

Q. And if you make a sandwich with an intermediate sheet of celanese and outer sheets of cotton, you would have about one-third?—A. Again of the same weight.

Q. But when you come to a fabric such as used by St. Hilaire, where you have every third thread of the lining only, I think there you come to proportions of about 1 to 18?—A. Let us put it a proportion of one to thirteen to eighteen.

HIS LORDSHIP: Are you through Mr. Smart?

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Mr. SMART : Yes, my Lord.

HIS LORDSHIP : Do you propose calling another witness ?

Mr. LAJOIE : No, my Lord.

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HIS LORDSHIP : I want to call your attention to this, that there are left just two days this week. If the argument cannot be finished on Friday, you will have to come back on Monday ; and if you do not finish on Monday, I would not likely be able to hear you for several weeks.

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Mr. SMART : I do not see any reason why we could not finish tomorrow.

RE-EXAMINED BY Mr. LAJOIE.

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Q. Mr. Levinson, I would like to direct your attention to the Green patent 10 which you have been speaking about, and particularly I would like to draw your attention to paragraph 4, starting at page 3, line 4, with the words " in carrying " out this invention. I coat and treat other threads, filaments, fabrics, paper, " etcetera "—I want to know whether this passage to which I am drawing your attention helps you to answer further the question which was put to you by the learned Counsel for the Plaintiff, as to what was meant or intended by the words " threads and filaments " in the ending paragraph of the specifications ?—A. Yes. This is another passage similar to the one that I have referred to, to show that the threads and filaments, in the case referred to, were those that were coated, and not formed by the process. 20

Q. Now will you consider the Kempshall patent, that you have also dealt with in connection with the meaning of the words " or other articles " in line 8, page 1, which my learned friend has been asking you about ? In this connection I point out page 2, line 45. Do you find anything there which helps you in interpreting the words " or other articles " ?—A. The expression occurring there is : " in the outer shells of golf balls or like articles." Since " like articles " is referred to as having outer shells it would appear that like articles are very much like golf balls.

HIS LORDSHIP : The words " like articles " are used in several places in that patent. 30

Mr. LAJOIE : Now, in connection with the Kennedy patent, I believe you have been asked as to when cellulose acetate became known as a laboratory product. I believe you have stated that in 1897, the date of the Kennedy patent, it was not known as such. Do I take it the reference there to cellulose acetate strands is prophetic ?

Mr. SMART : I object to that.

WITNESS : I have already said so in my direct examination.

Mr. SMART : If you will wait until my objection is finished. I think putting words of that kind into the mouth of the Witness is most objectionable.

HIS LORDSHIP : I think so. 40

Mr. LAJOIE : Of course if I were presenting the question for the first time, but the Witness has already dealt with it. I am quite willing to withdraw the question, and put it in a different form.

Q. Considering the date of the Kennedy Patent, 1897, how do you account for the reference in this patent to the words "acetate of cellulose" as applied to threads, fibres, or strands?—*A.* It was a prophecy on the part of the patentee.

HIS LORDSHIP: I do not see what it has to do with the case anyway, because Dreyfus does not claim to have invented cellulose acetate. That has nothing to do with that which you claim to be invention.

Mr. LAJOIE: It is not a vital point in the case.

HIS LORDSHIP: I do not see how the Witness can say that is prophesy. It might have been known a century before that.

10 **Mr. LAJOIE:** You referred to fig. 4 in the Kennedy patent, and have stated that the cellulose derivative, nitro-cellulose I believe, was impregnated or diffuses itself in the threads. May I refer you to fig. 5 and ask you whether according to your interpretation fig. 5 represents the finished product?—*A.* The patent states that fig. 5 is a showing of the finished product, and in that figure it is noted that there is no showing of any cellulose derivative between these twisted strands.

Mr. LAJOIE: The Defendant rests, my Lord.

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20 **GUSTAVUS J. ESSELEN, Recalled. EXAMINED BY Mr. SMART**

Q. You have already been sworn. Perhaps you will straighten us out a little on this question of plasticisers and solvents. You have heard all the evidence that has been given, perhaps you can put your own views in a summary way, having regard to what has been said.

Mr. CHIPMAN: My learned friend has made his case, I do not think he is entitled —

HIS LORDSHIP: It does not matter much. Mr. Levinson went into it quite fully.

30 **WITNESS:** There are three expressions, plasticisers, softening agents, and solvents. Perhaps it is easiest to deal with them backward. A solvent is obviously a material which dissolves. In the case of cellulose acetate acetone is a very common solvent.

A plasticiser is a substance which is used in connection with a cellulose ester to impart permanent pliability, or as has been explained, to make it more plastic or more easily plastic. Now there is a very clear cut distinction between a solvent and a plasticiser. I should explain that in the earlier days of this art when materials were being sought to act with cellulose acetate the way camphor acts with cellulose nitrate, those materials were often referred to as softeners for lack of a better term at that time. Since then the term plasticiser has arisen, 40 and usually plasticisers and softeners and softening agents are synonymous.

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As I said, there is a sharp distinction between a solvent and a plasticiser. If I understood correctly there have been suggestions that acetone was a plasticiser. I hope I have not understood correctly, because if I did, it is the first time in my connection with cellulose acetate that goes back more than 20 years that I have ever heard anyone even hint that acetone is a plasticiser.

Plasticisers are chosen because of their relatively permanent character, they remain in the material. Acetone is obviously a very volatile solvent. There is an intermediate class of materials known as the high-boiling solvents which sometimes act temporarily as plasticisers, but remove more or less quickly. The point I would like to make is that acetone is never in the terms 10 of the industry referred to as a plasticiser. It is a solvent.

Q. You can identify this—*A.* Yes, I brought that with me.

Q. —as acetone, that is Exhibit 49. And Exhibit 48 is a sheet of cellulose acetate with plasticiser?—*A.* That is a sheet made from cellulose acetate and plasticiser.

Q. You heard what has been said as to the adhesion of the liner and other fabric with a cold press alone. Perhaps you could indicate to us something as to the adhesive qualities of cellulose acetate when moistened with acetone or alcohol?

Mr. CHIPMAN: That was all covered in chief. 20

HIS LORDSHIP: Be very careful.

Mr. SMART: Evidence has been directed on this point.

Mr. CHIPMAN: We were answering my learned friend.

HIS LORDSHIP: Unless something new arose, do not go over ground you should have gone over yourself. However, there is not much to be gained by objecting to it, I suppose.

WITNESS: When cellulose acetate is moistened with acetone, it becomes very sticky and adhesive.

Mr. SMART: There was some discussion by a Witness on the other side as to the tests you made as to permeability. Perhaps you could reply to that? 30
—*A.* I naturally listened to that with particular interest. If I understood the Witness correctly, he did not definitely make the statement that that method of testing was not to be relied upon. He criticised it because it had been used in connection with the testing of cellophane. That is perfectly true. It has also been used in the testing of uncoated fabrics and other similar permeable materials. It is a test which is used regularly in my laboratory for the purpose of testing the permeability of fabrics by gases and vapour.

Q. There was some discussion as to the effect of calendering or shining the surface of cotton or paper fabrics?—*A.* There was some evidence presented as to the production of a shiny, glossy surface on cellulose acetate fabrics, as 40 I remember, particularly on one side of the fabric, by passing it through a calender stack which had one steel and one paper roll. It is true such a gloss can be applied as described. It is equally true a similar gloss can be applied to cotton or paper, and it is a regular manufacturing process to do so. The common cotton fabric sateen has the gloss applied to it in a similar manner.

Attention was called to the fact that when this gloss was applied to a cellulose acetate fabric, it is permanent, whereas when applied to a cotton fabric, it is not permanent, and some conclusions were drawn that the permanence of the finish on the cellulose acetate was due to the fact that it was thermoplastic, and the surface was affected from that point of view. In my opinion the effect in both cases, whether cotton or paper or cellulose acetate, is a mechanical effect. It is possible to produce a shine by simply putting the cellulose acetate between two polished plates. The reason it is permanent on cellulose acetate is because, as has been so well described by Mr. Platt, I think, it is difficult to wet cellulose acetate with water, whereas if you put a drop of water on cotton it is absorbed at once, and the cotton, which has been compressed on the surface to give it a shine, at once swells back to its original condition, and at the point where you applied the drop of water the surface lustre is lost. But the experiments which I have run in my laboratory indicate that cellulose acetate is not thermoplastic at around 150 C. which is the temperature which I think was mentioned in connection with the applying of the shiny finish to the cellulose acetate fabric.

In other words, in my opinion that shine to which reference has been made, is purely a mechanical effect.

20

CROSS-EXAMINATION BY Mr. CHIPMAN.

Q. And these investigations to which you have referred were not put before the Court?—A. They have been in part. They are observations which I made, I am not sure whether I testified to them or not. I thought I did. I shall be glad to tell you about them if you want to know.

Q. No, if they were not put before the Court, I am not interested.—A. I think they are in my earlier testimony, but I am not sure.

Q. And whatever you are referring to as your tests, comprise simply what you put in before the Court, and certain other investigations of which you spoke in cross-examination but which we have not got?—A. I am sorry I cannot remember at this moment how much of it has been put in. There is absolutely no secret about it, I am willing to tell you all about it.

Q. Then you referred to certain permeability tests. The only permeability tests you have shown us are the tests for moisture, vapour, are they not?—A. That is right.

Q. Then you referred to plasticisers, solvents, and softeners. I suppose you will agree that a solvent softens?—A. Under certain conditions I would say that a solvent softens, but as I explained before, there is a sharp line of demarcation between softeners so-called and solvents, so-called.

Q. But I want an answer to my question. I suppose you will agree that in practice a solvent softens?—A. No, I would not agree that a solvent softens when it is dissolved.

Q. What happens to the object to which the solvent is applied?—A. It becomes dissolved.

Q. But it becomes soft before being dissolved, does it not? I suppose if we had the little experiment to which my friend Mr. Smart referred of putting

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No. 20.
Plaintiff's
Evidence
in Reply.

Gustavus
J. Esselen
(recalled).
Examina-
tion—
continued.

Cross-exam-
ination—

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Gustavus
J. Esselen
(recalled).
Cross-exam-
ination—
continued.

part of that hank of yarn in a tumbler and pouring your bottle of acetone on it, the first effect would be that the yarn would soften?—*A.* It would depend largely on the relative proportions. I can conceive of conditions under which it would be softened first.

Q. And any application of that acetone to that hank of yarn would really be an application of a violent softener?—*A.* No, it would be the application of a solvent.

Q. And in effect that would be the application of a violent and extreme softener?—*A.* I object to referring to acetone as a softener.

Q. I am not using your scientific terminology, I am using my own, and I 10 ask whether a solvent is not in effect an ideal softener?—*A.* Well I cannot admit that acetone is an ideal softener.

Q. Then will you give me ordinary every-day meaning of the word softener?—*A.* In this industry?

Q. No, just take the ordinary every-day meaning of the word. I suppose you will agree that if you wanted to soften that hank of cellulose acetate yarn you would find it very difficult to discover anything more ideal than the contents of your bottle of acetone?—*A.* If I wanted to permanently soften it I could not do it with acetone.

Q. Never mind permanently soften, soften for a moment of time?—*A.* Yes, 20 if I wanted to soften it to make an adhesive out of it I could do it with acetone.

HIS LORDSHIP: Did you ask Mr. Levinson on cross-examination if acetone would soften?

Mr. SMART: No my Lord. It is a matter of words, I think, rather than the action that takes place.

HIS LORDSHIP: I would not have allowed your question to Dr. Esselen if I had known that had not been asked. However—

No. 21.

DONALD HOWARD STEWART, Recalled. EXAMINED BY Mr. SMART.

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in Reply.

Donald
Howard
Stewart
(recalled).
Examina-
tion—

Q. You have already been sworn. I want you to look at Exhibits Z-2, 30 A to E, do you observe any difference in colour between those samples?—

A. Yes, sir.

Q. If there was a difference of that kind in the processing of a collar used in shirt making what would be the result, the difference between the original shirt and the collar that came from the process?—*A.* You mean in a fused collar?

Q. Yes.—*A.* We would reject it as a second.

Q. Is it necessary to match the collars and shirts in tone and shade?—*A.* Absolutely.

Q. Can you tell from inspection whether or not these samples have been 40 scorched?—*A.* In the making of the old-time regular shirt, the scorching of the fabrics is of course most important, and when differences in shade such as this

occur, it usually is simply from having the irons too hot when pressing, which gives this different shade in the fabric.

Mr. CHIPMAN: My Lord, I understood in the cross-examination of Mr. Platt that a totally different theory was advanced by my learned friend. He was not asked as to scorching; it was suggested that some chemical had caused the discolouration. I do not think my learned friend is now to open a new attack on the basis of scorching.

HIS LORDSHIP: What is the relevancy anyway, Mr. Smart? The question here is whether Dreyfus invented a new method of making certain material, not whether the iron burned in the making of it into collars. We are not trying the question of collars, are we?

Mr. SMART: No, my Lord, but certain statements were made with regard to these exhibits, and there has been evidence of the conditions under which they were produced.

HIS LORDSHIP: By the Defendant's Witnesses?

Mr. SMART: By the Defendant's Witnesses. These are the experimental samples and I am putting in evidence as to what could have caused the difference in the samples.

Mr. CHIPMAN: In the cross-examination of Mr. Platt he did not speak of scorching, my learned friend suggested that the cause of this discolouration was some chemical. Now my learned friend is taking a new line, which I do not think is proper.

HIS LORDSHIP: I do not recall that myself.

Mr. SMART: In the Z samples the fault is the chemical, but I am now going on to the T samples.

Q. Will you look at T-1, 2, 3? Do you observe any difference between the colour of the samples?—A. The difference in the colour of these samples is very noticeable.

Q. Which are the lighter ones?—A. T-1 and T-2 are very much lighter than the T-3.

Q. Can you suggest anything to which that difference might be due?—A. From the point of view of a collar I should think it had either been done by scorching or some chemical, to cause such a change of colour.

T-1 and T-2 are very much alike, but T-3 is entirely different.

CROSS-EXAMINATION BY Mr. LAJOIE.

Q. Do you find T-1 and T-2 about the same in colour?—A. No, there is a slight difference between them.

Q. Yes, which one is lighter than the other?—A. I would say that T-1 was lighter than T-2.

Q. I suppose you would agree that the difference is not great?—A. It is great enough so that a shirt made of one material with a collar of the other material attached to it could not be sold as a first quality shirt.

Q. You are not suggesting that T-3 is made of the same material as T-1

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and T-2, are you?—*A.* I do not know. I have merely been asked as to the appearance.

Q. You find it is a different colour completely?—*A.* Yes, of the same design.

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Q. Yes, the same design, but we are only speaking of the colours —*A.* Yes.

Q. There may be different shades or colours of the same design, might there not?—*A.* Yes.

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continued.

Q. Did I understand you to state that Exhibit Z-2a was scorched?—
A. I do not think I made that statement.

Mr. SMART: That is the Reply, my Lord.

10

HIS LORDSHIP: Do you wish to proceed with argument now?

Mr. SMART: I think I could probably save your Lordship's time by arranging my argument, and starting in the morning.

At 4.25 p.m. January 15th, 1936, Court adjourned until 10.30 a.m., January 16th, 1936.

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No. 22.

Formal Judgment.

IN THE EXCHEQUER COURT OF CANADA.

Thursday, the 26th day of March, A.D. 1936.

Present:

20

THE HONOURABLE, THE PRESIDENT.

Between

B. V. D. COMPANY LIMITED *Plaintiff*

and

CANADIAN CELANESE LIMITED *Defendant.*

THIS ACTION having come on for trial at the City of Ottawa, on the 8th, 9th, 10th, 13th, 14th, 15th, 16th, and 17th days of January, A.D. 1936, before this Court in the presence of counsel for the Plaintiff as well as for the Defendant, AND UPON HEARING READ the pleadings herein, AND UPON HEARING the evidence adduced at trial and what was alleged by counsel aforesaid; THIS COURT WAS PLEASED TO DIRECT that this action should stand over for Judgment and the same coming on this day for Judgment.

30

THIS COURT DOTH ORDER AND ADJUDGE that, as between the parties hereto, Defendant's patent number 265,960 is valid and infringed by the Plaintiff and that the present action of the Plaintiff asking for a declaration that said patent is invalid and that it did not infringe the said patent be and the same is hereby dismissed.

AND THIS COURT DOTH FURTHER ORDER AND ADJUDGE that the Defendant's patent number 311,185 is invalid, null and void.

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AND THIS COURT DOTH FURTHER ORDER AND ADJUDGE that there be an apportionment of the costs of both parties to this action, only the Defendant to tax its costs of the action as though the action had been wholly dismissed, and three quarters (3/4) of the amount of such costs to be recoverable by the Defendant against the Plaintiff and one quarter (1/4) thereof to be recoverable by the Plaintiff against the Defendant, to be set off.

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By the Court,

(Sgd.) ARNOLD W. DUCLOS,

Registrar.

10

No. 23.

Reasons for Judgment of McLean, J.

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JUDGMENT RENDERED MARCH 26th, 1936.

MACLEAN, J.

This is an action for the impaechment of two Canadian Patents owned by the Defendant, numbered 265,960 and 311,185, assigned to it by the patentee Camille Dreyfus, and alternatively for a declaration that certain soft collars or shirts with such collars attached, manufactured by the Plaintiff, do not infringe the said patents of the Defendant. Patent No. 265,960 corresponds with British Patent No. 248,147 which issued in March, 1926, and with United States Patent No. 1,903,960 which issued in April 1935; the date of invention here relied upon in respect to Patent No. 265,960 is the date of the application of the corresponding British patent, January 23, 1925. In all cases the patentee was Camille Dreyfus, and he is president of the Defendant Company herein.

20

The patentee is, I think, by profession a chemist, but at any rate he was associated with the early development of cellulose acetate as a commercial product.

Patent No. 265,960, which I shall first consider, issued on November 16, 1926, on an application filed on December 18, 1925, by Camille Dreyfus. The controversy arising over this patent relates so largely to the language and construction of the descriptive portion of the specification, and so much time was devoted to it by Counsel, that it seems to me desirable to quote it almost in its entirety even though it be lengthy. This might also be advantageous in the event of this judgment coming before another Court for review. I shall adhere to the numbering of the paragraphs found in the copy of the specification filed with the Court under the rules, and in the evidence, I think, there will be found numerous references to paragraphs of the specification by their numbers. Paragraphs two to twelve inclusive are as follows:—

30

“2. This invention concerns the manufacture of new fabrics or sheet materials having waterproof to gasproof ‘properties’ or capable of other applications.

40

“3. According to the invention, a fabric or sheet material is made

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“ by uniting under appropriate conditions of temperature and pressure,
“ woven, knitted or other fabric composed of or containing filaments or
“ fibres of thermoplastic cellulose derivative or derivatives with woven,
“ knitted or other fabric composed of or containing filaments or fibres of
“ non-thermoplastic or relatively non-thermoplastic material.

“ 4. According to the invention woven, knitted or other fabric made
“ of yarns composed of filaments or fibres of a thermoplastic cellulose
“ derivative, such for example as cellulose acetate, ethyl-, methyl-, or
“ benzyl-cellulose, nitro-cellulose or other ester or ether of cellulose, or
“ mixtures of such cellulose derivatives, is associated with woven, knitted, 10
“ or other fabric made wholly or partly of yarns, composed of filaments or
“ fibres of a non-thermoplastic or relatively non-thermoplastic material,
“ for example as silk, cotton, linen, artificial filaments or fibres of the
“ cellulose type, or wool or mixtures of any of such non-thermoplastic
“ filaments or fibres with each other or it may be with filaments or fibres
“ of a thermoplastic cellulose derivative or derivatives, and the associated
“ fabrics are subjected to heat and pressure, with or without employment,
“ assistance or application of plasticising or softening agents or solvents
“ of the thermoplastic cellulose derivative or derivatives; in this way 20
“ the fabrics are united together and a composite sheet material is obtained
“ in which the pores or interstices are reduced to extremely minute
“ dimensions, or closed completely, by the melting or softening effect
“ produced by the heat and pressure upon the filaments and fibres of the
“ thermoplastic cellulose derivative or derivatives and by the uniting of
“ the fabrics under the heat and pressure. Two of such fabrics, i.e., one
“ of each of the two classes specified above, may be associated and united
“ together as referred to, or the respective fabrics may be disposed in any
“ desired relative number in alternation with each other. Thus for
“ example a fabric of cotton or composed of or containing other non-
“ thermoplastic fibre may be disposed between two fabrics of cellulose 30
“ acetate or other thermoplastic yarns; or a fabric of thermoplastic yarns
“ may be disposed between two fabrics of cotton or composed of or
“ containing other non-thermoplastic fibres; or four fabrics, two of each
“ class, may be disposed so that the fabrics of the thermoplastic yarn
“ alternate respectively with the fabrics of cotton or composed of or
“ containing other non-thermoplastic fibres, and so on.

“ 5. The extent of the melting or softening effect, degree of closing
“ the pores or interstices, and intimacy of union of the fabrics, and therefore
“ the degree of impermeability of the compound fabric or material produced,
“ can vary with the degrees and duration of heat and pressure employed, 40
“ and with whether plasticisers, or softeners or solvents are employed, and
“ with the number of fabrics united together, or other circumstances.

“ 6. Thus for example the heat and pressure (with or without
“ employment or assistance of plasticising or softening agents or solvents)
“ may be such as to unite the fabrics together and close or reduce to minute
“ dimensions the pores or interstices of the compound or combined fabric
“ and render the same water-resisting or even gas-resisting, without causing

“ the filament or fibres of the thermoplastic cellulose derivatives to
 “ disappear. Or the heat and pressure may be such as to cause the filaments
 “ or fibres of thermoplastic cellulose derivatives to melt and disappear
 “ partly or entirely.

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10 “ 7. It is to be understood that the degrees and duration of heat and
 “ pressure are interdependent and that all or any of these conditions may
 “ be varied according to circumstances or requirements. For example,
 “ the less the heat, the greater or longer is the pressure required to produce
 “ a given effect or vice versa ; or again, the same conditions of heat and
 “ pressure may be applied for more or less time to produce the effect in
 “ a more or less pronounced degree.

20 “ 8. The degree of the melting effect and the degree of intimacy of
 “ union of the component fabrics, may be increased or accentuated by
 “ the employment, assistance or application of plasticising or softening
 “ agents or solvents of the thermoplastic cellulose derivative or derivatives
 “ as referred to, and it is to be understood that such agents or solvents,
 “ may be applied to or incorporated in any or all of the component fabrics
 “ before the application of the heat and pressure to the associated fabrics
 “ for example, by the application of such agents or solvents in solution in
 “ volatile solvents thereof that are not solvents of the cellulose derivative
 “ or derivatives and that alternatively, such agents or solvents may be
 “ incorporated in the filaments or fibres of thermoplastic cellulose derivatives
 “ in the production thereof, for example by employing such agents in the
 “ spinning solutions from which they are made.

30 “ 9. Any plasticising agents or solvents (preferably high-boiling or
 “ relatively high-boiling) of the cellulose derivatives may be employed.
 “ As some instances there may be mentioned triacetin, paratoluene sulphon-
 “ amide or its derivatives, diethylphthalate, paratoluene sulphonamide,
 “ and high-boiling alkylated xylene sulphonamide derivatives or prepara-
 “ tions (for example, monomethyl xylene sulphonamide).

“ 10. As the melting or softening effect is increased or accentuated by
 “ the plasticising or softening agents or solvents, one can employ less heat
 “ and/or pressure for the production of a given effect when such agents or
 “ solvents are employed.

“ 11. The invention is particularly applicable when fabric of cellulose
 “ acetate yarns is used as the component thermoplastic fabric of the com-
 “ pound fabric or material, and will hereinafter be described in this connec-
 “ tion, it being understood, however, that fabric of other cellulose esters
 “ or cellulose ethers may be employed as before indicated.

40 “ 12. The heat and pressure may be applied in any appropriate way
 “ to the associated fabrics to be united together, for example by passage
 “ between pressure rollers, one or both of which is or are heated, or between
 “ a heated roller and a heated or cold plate or surface, or by pressure
 “ between heated plates or surfaces or between a heated plate or surface
 “ and a cold plate or surface, or by passing the associated fabrics under
 “ tension over a single heated roller, e.g. a calender roller, or by any other
 “ suitable means. In cases where the associated fabrics are passed through

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“ pairs of pressure rollers, the rollers in each pair may rotate at the same or
“ at different speeds. Where the fabrics are passed under tension over a
“ single heated roller, the roller may with advantage be rotated in an
“ opposite direction to the travel of the fabric.”

The specification then proceeds to give a more detailed description of the
manner in which the invention may be carried into effect, and that is in the
language following :

“ 14. A woven or warp knitted fabric made of cellulose acetate yarn
“ is associated with woven or knitted fabric of silk, cotton, linen or other
“ fibre, preferably after being coated or treated with a plasticising or 10
“ softening agent or solvent on the face that is to contact with the latter
“ fabric, and the associated fabrics are subjected to heat and pressure to
“ unite the component fabrics together and give a material possessing
“ a desired degree of resistance to penetration by water or gases, according
“ to the degree and duration of temperature and pressure, the conditions
“ of heat, pressure and time being interdependent. The less the heat, the
“ greater or the longer is the pressure required to produce a given effect,
“ or the same condition of heat and pressure may be applied for more or
“ less time to produce the effect in a greater or less degree.

“ 15. Thus for example the associated fabrics (preferably with the 20
“ cellulose acetate fabric treated with a plasticising or softening agent
“ or solvent) may be passed between heated pressure rollers, as in a calender,
“ the conditions of heat, pressure and time being interdependent as before
“ mentioned. For instance the associated fabrics may be passed slowly
“ through heated calender rollers at temperatures between 100° and 180° C.
“ under pressures of from about 300 to 600 lb. or more per square inch,
“ according to the degree of melting or softening effect on the yarns of the
“ cellulose acetate fabric and the degree of impermeability desired in the
“ resulting compound material. The fabrics may be passed repeatedly
“ between the heated rollers if desired, according to the degree of effect 30
“ required.”

“ 16. Or again the associated fabrics may be passed once or repeatedly
“ between a heated roller and a cold roller or platen, or they may be pressed
“ between a heated plate and a cold platen. Or the heat and pressure
“ may be applied in any other suitable way.

“ 17. The application of plasticising or softening agents or solvents
“ of the cellulose acetate or other thermoplastic cellulose derivatives to
“ assist the melting effect and the union of the component fabrics as
“ hereinbefore referred to is especially of advantage where a high degree
“ of impermeability to water is desired or for obtaining gas proof properties 40
“ in the compound material. By way of example cellulose acetate fabric
“ may be first treated with small quantities of water—insoluble, non-
“ volatile plasticisers, softeners, or solvents of cellulose acetate before being
“ associated with the other fabric for subjection to the heat and pressure.
“ These quantities may vary for instance from about 1% to about 30% of
“ the total quantity of cellulose acetate in the fabric, but more or less may
“ be employed. The non-volatile plasticisers, softeners or solvents may

“ be applied by spraying, dipping or otherwise, dissolved in a volatile solvent
 “ which does not dissolve the cellulose acetate, or in any other convenient
 “ way. Any suitable plasticisers, softeners or solvents and any suitable
 “ volatile vehicle therefor may be used. As one example monomethylxylene
 “ sulphonamide may serve as a plasticiser and benzol as a vehicle, a suitable
 “ proportion being for instance about 20 grams of the sulphonamide dissolved
 “ in 100 grams of benzol for each 100 grams of cellulose acetate fabric.
 “ When the volatile solvent of the plasticiser or softener evaporates, the
 “ plasticiser or softener remains distributed evenly on the cellulose acetate
 10 “ fabric so that when this is associated with the other fabric and subjected
 “ therewith to the heat and pressure, it assists the melting or softening
 “ effect on the cellulose acetate yarns and the union of the component
 “ fabrics and closing of the pores or interstices of the component fabrics,
 “ thereby producing a compound material having waterproof to gas-proof
 “ properties according to the degree of dissolving or melting effect etc.,
 “ produced on the cellulose acetate by the condition of heat, pressure and
 “ time employed.

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“ 18. Instead of employing for associating with fabric composed of
 “ yarns of thermoplastic filaments or fibres, fabrics consisting wholly of
 20 “ yarns of silk, cotton or other non-thermoplastic fibres or filaments, one
 “ may employ for association therewith ‘mixed’ fabric consisting of
 “ a mixture of thermoplastic yarns with yarns of silk, cotton, linen,
 “ artificial silk of the cellulose type, wool or other non-thermoplastic
 “ fibres or filaments, or consisting of or comprising yarns composed of
 “ a mixture of thermoplastic filaments or fibres with non-thermoplastic
 “ fibres or filaments. Or one may even, though with less advantage, employ
 “ only such mixed fabrics for making the compound material under the
 “ effect of heat and pressure with or without application of plasticising or
 “ softening agents or solvents, the heat and pressure causing more or less
 30 “ melting or softening of the thermoplastic yarns, filaments or fibres and
 “ uniting the component fabrics together to form a compound material
 “ possessing greater or less degree of resistance to penetration by water or
 “ even gases, according to the temperature, pressure and duration of
 “ pressure or other conditions.”

The specification then states that fabrics made with yarns or fibres of nitro-
 cellulose filaments or fibres may be employed in practising the invention but
 this, the patentee states, is less advantageous owing to the inflammability of
 nitro-cellulose. The last paragraph is as follows :

“ 20. The compound materials made according to the invention may
 40 “ be employed more particularly for applications where resistance to pene-
 “ tration by water or gases is desired, for instance as waterproof materials
 “ for garments, coverings, etc., or as material for airships or other gas
 “ container, but materials made according to the invention may be employed
 “ for any other technical or industrial applications.”

There are twenty-five claims in this patent, the first twenty-four being
 process claims, the twenty-fifth being a claim for the product. Mr. Biggar, in
 his opening, divided the claims into five groups, which grouping seemed

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acceptable to Counsel for the Defendant. The first six claims relate to a process for making a composite sheet material by heat and pressure, in which one fabric at least contains a "thermoplastic derivative of cellulose." Claim 6 may be mentioned and it is as follows :

" 6. A process for the manufacture of composite sheet material which comprises applying to a fabric containing a thermoplastic derivative of cellulose a softening agent in solution in volatile solvents which are non-solvents of said derivatives, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure."

In the claims 7 to 12 inclusive the expression "organic derivative of cellulose" 10 is used instead of "thermoplastic derivative of cellulose" as in the first six claims. Claim 12 of this group is typical and is as follows :

" 12. A process for the manufacture of composite sheet material which comprises applying to a fabric containing an organic derivative of cellulose a softening agent in solution in volatile solvents which are non-solvents of said derivatives, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure."

In Claims 13 to 18 inclusive reference is made to a fabric containing a "cellulose ester" and Claim 18 may be mentioned and it is as follows :

" 18. A process for the manufacture of composite sheet material which 20 comprises applying to a fabric containing a cellulose ester a softening agent in solution in volatile solvents which are non-solvents of said ester, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure."

In claims 19 to 24 inclusive reference is made to a fabric containing "cellulose acetate" and claim 24 is as follows :

" 24. A process for the manufacture of composite sheet material which comprises applying to a fabric containing cellulose acetate a softening agent in solution in volatile solvents which are non-solvents of said acetate, associating it with another fabric, and uniting the fabrics by 30 subjecting them to heat and pressure."

The twenty-fifth claim, the product claim, is as follows :

" 25. A composite sheet material comprising plurality of fabrics, at least one of which contains a thermoplastic derivative of cellulose, which fabrics have been united into a single sheet by the application of heat and pressure."

I shall attempt to state as briefly and as accurately as I can, the substance of the process described in the specification, and, I think, I can best do this by reference to that form of the invention whereby it is proposed to unite three pieces of fabric into a composite sheet, the intermediate fabric containing 40 thermoplastic yarns of cellulose acetate. Dreyfus suggests the uniting of three pieces of textile fabrics, by the use of thermoplastic yarns of cellulose acetate woven into the intermediate fabric, which yarns become soft and adhesive, when heat and pressure is applied. The intermediate fabric may be partly or wholly composed of yarns of cellulose acetate. By the application of this process the interstices or pores in the united fabric become more or less closed by the softening and diffusion of the thermoplastic yarns, and thus acquire air and water resisting

properties, depending upon the degree of intimacy of union of the component fabrics required, the degree and duration of heat and pressure, and according to circumstances and requirements. The specification recommends that before softening the cellulose acetate yarns by heat, that some suitable plasticising or softening agent or solvent, be applied to assist or accelerate the softening of the cellulose acetate yarns in the intermediate fabric. The specification points out that the plasticising or softening agent, or solvent, may be applied to the associated fabrics before the application of heat and pressure, for example, in solution, or the same may be incorporated in the fibres of the thermoplastic

10 cellulose acetate yarns when being produced. The associated fabrics are then to be passed between pressure rollers, such as calender rollers, one or both of which may be heated; the temperature and pressure will vary, according to circumstances and requirements. When the process is carried out in this way, the three fabrics are united into one single sheet or fabric, and it is claimed that never before was it suggested that three fabrics could be united, in this way, into a composite fabric. This substantially outlines the main features of the alleged invention disclosed in Dreyfus.

At some stage it will be necessary to describe the process employed by the Plaintiff in the making of its unstarched collars in order to determine the issue

20 of infringement, if subject-matter is found, and this would seem to be as convenient and appropriate a stage to do so as any other. In doing so I will use almost the precise words of one of the Plaintiff's witnesses, Mr. Loew. He stated that the Plaintiff's collar consists of three plies of material, that is to say, two outer plies of ordinary shirting material, cotton, and an intermediate material cut from a sheet, a "lining" he called it, which contains threads of cellulose acetate; every third warp thread being composed of cellulose acetate. The collar in its three plies is first cut and sewn in a way usual in the collar industry. It is then sent to what is called the wet press, which consists of two metal platens, both of which are padded, and the pads are thoroughly dampened with a solvent

30 composed of 75 per cent. of acetone and 25 per cent. of alcohol. The collar is placed between the two platens, where it is subjected to a mechanical pressure of ten pounds, to the square inch, and there it remains for nine or more seconds, according to the weight and fineness of the weave of the fabrics; the adjustment is one to be determined by the experience of the operator of the press. This softens the cellulose acetate threads and the three plies of fabrics are more or less adhesively united. The effect of the acetone-alcohol mixture on the cellulose threads in the lining is that it "swells" or "jellifies" the same; when pressure is applied the two outer plies of the collar are pressed on the "lining" material, and what is called the "knuckles" of the cellulose acetate threads,

40 which are now soft, are forced into the threads of the overlying cotton fabrics. The collar is then placed in a hot press which has one polished metal surface and another that is padded with cotton. This press is heated by steam at a pressure of about fifteen or twenty pounds which keeps the press at a temperature of about 250°F. When the collar is placed between the platens of the hot press, the press is closed with a pressure of from ten to twenty pounds to the square inch of the collar. The acetone solvent, which is volatile, is evaporated in order, it is claimed, to harden the cellulose acetate and to prevent

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its spreading or flowing and forming a film. It was stated by the same witness, that if the collars, as they came from the wet press, were allowed to dry they would adhere but not so well as compared with the final adhesion acquired after they have gone through the hot press. This witness also stated that the cellulose acetate would disperse or flow vertically and partially sidewise, and the latter flow would assist in effecting the adhesion. That generally describes the process used by the Plaintiff in the production of its collars, and according to its own witnesses.

The validity of Dreyfus is attacked on four grounds: (1) that the specification is ambiguous; (2) that the specification is misleading; (3) that the alleged invention had been anticipated, and (4) that if on any fair interpretation of the patent there is any novelty, the novelty was obvious, and on that ground the patent should not be supported. The last point relates to subject-matter and will be discussed later. I shall first consider the question of anticipation, and this relates only to prior publications, there being no evidence as to prior user. 10

It has been held time and again that a prior published patent must be read as it would have been read without the knowledge of subsequent researches or improvements disclosed in subsequent patents or publications. It is unsound to re-read prior publications in the light of information first imparted by a later patentee, or as was once said, you must not look at prior documents with an eye which has been sharpened by a subsequent patentee. In the case of *Canadian General Electric Company v. Fada Radio, Ltd.*, (1) it was held that any information as to the alleged invention given by any prior publication must be for the purpose of practical utility, equal to that given in the subsequent patent. The latter invention must be described in the earlier publication that is held to anticipate it, in order to sustain the defence of anticipation. Where the question is solely one of prior publication, it is not enough to prove that something described in an earlier publication could have been used to produce this or that result. It must also be shown that the specification contains clear and unmistakable directions so to use it. It must be shown that the public have been so presented with the invention that it is out of the power of any subsequent person to claim the invention as his own. And an improvement, claimed to be invention, must not be dismissed as unpatentable merely because of some vague adumbration of it in the prior art. 20 30

Applying these principles to the prior publications cited in this case it seems to me they are all irrelevant. Not one of them, I think, describes or gives directions to use the idea described and claimed in Dreyfus. Not one of them contains the suggestion of uniting two or more fabrics by making use of thermoplastic yarns of a cellulose derivative woven into one of the fabrics to be united; most of the cited prior art suggests the application of an adhesive substance to be applied to some of the fabrics or materials involved. As Mr. Lajoie expressed it, if in 1924, that is prior to Dreyfus, one were given all the prior art cited, he could not have learned from all of them the process of uniting fabrics according to the process described by Dreyfus. I propose to refer only to two of the prior publications cited, Kennedy and Van Heusen. 40

Kennedy, United States Patent No. 590,842, relates to a waterproof cloth and the process of making the same. The specification states that a fabric may

have woven or intertwined into it threads or fibres of cellulose, along with the ordinary threads in the fabric. To obtain a waterproof cloth the patent directs that the fabric be sprayed or otherwise treated with a suitable solvent which converts the nitro-cellulose into pyroxylin (which the Defendant's Witness Levinson stated to be the same thing as nitro-cellulose), and the acetate of cellulose into a substance analogous to pyroxylin. It is not easy to understand this specification. At any rate the patent suggests that the fibres of nitro-cellulose are altered to another form and in that form diffuse themselves and thus "impregnate the raw fibres, and their interstices of the ordinary threads,"

10 without changing the appearance or structure of the article, and which is made waterproof though remaining uncoated or unglazed. Kennedy shows merely the treatment of a single layer of fabric. There is no suggestion of uniting two or more fabrics in the manner disclosed in Dreyfus; and consequently there is no reference to the application of heat and pressure in uniting two or more pieces of fabric one of which contains yarns of thermoplastic cellulose derivatives. I do not think it can possibly be said that Kennedy is an anticipation of Dreyfus. They express altogether two different ideas.

Van Heusen, United States Patent No. 1,479,565 relates to the making of collars. In one form of the disclosure the plies of the fabrics are coated on

20 their inner surfaces with an adhesive or cementing material, for example, solutions of cellulose derivatives such as cellulose nitrate in suitable solvents, or solutions of cellulose in cellulose solvents, such as cuprammonium solutions. The coated surfaces are brought together and united by appropriate means. Again the patent states that three plies of fabric may be used and only the intermediate ply coated with the adhesive to give it an adhesive surface, and the two outer layers can be secured to this intermediate layer by reason of its adhesive surfaces. In other cases, the patent states the pieces of fabric may be put together and pressed in a heated press to convert the cementing material into its final form and thereby uniting together the separate layers of fabric.

30 Now there is no reference in Van Heusen to the use of a thermoplastic cellulose derivative in the form of yarns, woven into one of the two or more fabrics to be united, and which may be cut and sewn and handled like any other fabric, and this, I think, on grounds of utility, would be much more desirable and convenient than dealing with pieces of fabrics that were coated with a cementing material. Van Heusen in my opinion is not an anticipation of Dreyfus.

Before passing to another topic, I must refer to the United States patent to Woodman and Dickie, No. 1,716,255, which was assigned to Celanese Corporation of America. This patent apparently does not relate to the uniting of textile fabrics according to the process of Dreyfus. This patent was first published in

40 the United States on June 4, 1929, it having been applied for on December 8, 1925; the caption states that the same application was filed in Great Britain on January 10, 1925. In Great Britain patents are published when they are accepted, while in the United States they are not published until they issue. The patent to Dreyfus was published in Canada before Woodman and Dickie was published in the United States, and there is no evidence as to the date of publication in Great Britain. Woodman and Dickie was mentioned in the Plaintiff's particulars of objections as a prior publication. When it was tendered in evidence

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its reception was objected to and the point was reserved for decision until the end of the trial. In the end Mr. Smart stated that he did not rely upon Woodman and Dickie as an anticipation. He stated plainly that, by reason of Section 61 of the Patent Act, he could not attack Dreyfus on the ground of anticipation by setting up this patent even if Woodman and Dickie was a prior invention, because he could not show that the patent was in any way made public before the application of Dreyfus was filed in Canada, which was on December 18, 1925. Sec. 61 (1) and S. S. (a) of the Patent Act reads as follows:—

“ 61. (1) No patent or claim in a patent shall be declared invalid or
“ void on the ground that, before the invention therein defined was made 10
“ by the inventor by whom the patent was applied for it had already been
“ known or used by some other inventor, unless it is established either that,
“ (a) before the date of the application for the patent such
“ other inventor had disclosed or used the invention in such
“ manner that it had become available to the public.”

Mr. Smart was desirous that Woodman and Dickie should be received in evidence in case Section 61 of the Patent Act should be construed in a way different to that in which he says it has been construed. I do not know that this provision of the Patent Act has ever been judicially construed, but its meaning would seem quite clear. Woodman and Dickie must be rejected as a prior publication and 20 if it is not admissible on that ground then, I think, there is no reason for its reception at all, and it is refused.

On four grounds it is claimed that the patent in question is ambiguous. It was contended that ambiguity, if deliberate, would void a patent, and if the ambiguity or obscurity was avoidable it would also void the patent, whether the effect was due to design or to carelessness or lack of skill, and that, I think, is on the whole, a fair statement of the law. A specification must be sufficiently explicit in describing the nature and ambit of the invention, to ensure to the public the benefit of the discovery, when the period fixed in the grant as the period of monopoly comes to an end. The four grounds on which ambiguity 30 is alleged are, (1) that it is doubtful on the specification whether or not the alleged invention is confined to relatively impermeable fabrics, (2) that it is doubtful whether the patent is confined to the use of threads of cellulose derivatives woven into the fabric or whether it extends to a fabric which contains a cellulose derivative subsequently applied in any form or manner, (3) that the specification does not make clear whether the alleged invention is confined to thermoplastic derivatives of cellulose or whether it extends to any derivative, thermoplastic or not, that can be made adhesive, and (4) that it is not clear whether the patent is confined to the use of softening agents as mentioned in the claims or whether it extends to the use of volatile solvents, 40 such as acetone-alcohol which the Plaintiff employs as a softener or solvent.

Before discussing these points I would observe that a specification is to be read and construed like any other document. All that the statute requires is that the specification correctly and fully describe the invention and its operation or use, and that the claims should state distinctly the things or combinations which the applicant regards as new. And one cannot look at the specification divorced from the art as it existed at the time of the specification.

The claims have to be interpreted in the light of the descriptive portion of the specification, the "dictionary" it is sometimes called. A specification will not be bad if it turns out afterwards that it does not describe the best possible way of performing the invention; all that is necessary is that it should give the best method known to the patentee. Neither is it incumbent on the patentee to describe all the possible advantages which may in future accrue from the improved use of his invention. He is only bound to give the world the benefit of such information as he possesses. A specification will be sufficient which contains directions enabling a person having a reasonable competent knowledge and skill of the subject to make the article described without further invention, though it may be necessary for him to make some trial and experiment before succeeding in carrying out the process. And finally, a specification is addressed to skilled workmen, and chemical patents are addressed to persons possessing chemical skill to an extent varying with the subject matter.

Turning now to the first ground on which ambiguity is alleged. It was urged that it was difficult to say whether or not the invention is confined to relatively impermeable fabrics. And probably this is the important and difficult point in this case. The specification states in several places that in uniting multiple fabrics, according to the process therein described, the pores or interstices of the composite fabric will be more or less closed, or reduced in dimensions, and thus take on water and air resisting properties, all depending upon the quantity of cellulose acetate yarn employed, the intimacy of union of the fabrics required, the degree and duration of the heat and pressure applied (heat, pressure and time being interdependent), whether or not softeners or solvents are employed—the use of which is recommended where a high degree of impermeability to water or air is desired—the number of fabrics to be united, and the weave of the fabrics involved. That is essentially what the specification here has to say concerning "impermeability" or "resistance to air and water" and the specification states that this will vary according to the conditions just mentioned, and according to requirements.

I assume all textile fabrics, in varying degrees, possess air and water resisting properties and when several are united, according to Dreyfus, these properties would probably be emphasized, particularly if the composite fabric when made was intended to be relatively impermeable against air and water. I would infer from the evidence of Mr. Platt that in the textile trade, the water and air resisting properties of a fabric are always a matter of concern to the textile manufacturer, and that it is the practice to measure the air and water resisting qualities of a fabric by well known means, and that these properties would vary according to the use to which the fabric was to be put. Mr. Platt, a witness for the Defendant, made many tests of uniting fabrics according to the process of Dreyfus, and he found that air and water resistance varied just as suggested in the specification. According to these tests the quantity of thermoplastic yarns of cellulose acetate employed, the degree of heat and pressure, the quantity and kind of softeners or solvents used, and other factors, determined the degree of adhesion and the relative air and water resisting properties of the composite fabric.

The point raised by the Plaintiff under the head just mentioned may be put

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this way: Dreyfus describes only a process for the manufacture of relatively impermeable fabrics, and it is only the use of such fabrics that the patent directs; the process will make a relatively waterproof fabric or material, something that will resist penetration by water or air, and that was all the patentee had in mind; if the process be applied to the making of collars, the collars would disclose a stiff glaze that would be non-porous, and generally the process would be utterly unsuitable for the making of collars: and that a true construction of the specification limits the invention, if any, to relatively impermeable fabrics or materials, or alternatively, that the specification is ambiguous and therefore void. The Defendant contends the specification is clear and unambiguous and that on a fair construction it is not to be limited to relatively impermeable fabrics; and that the process described in the specification can be applied to the manufacture of such things as the collars in question. 10

Turning now to the specification itself. The paragraph numbered two in the specification states that "the invention concerns the manufacture of new fabrics or sheet materials having waterproof to gas-proof properties or capable of other applications." The words "other applications" mean, I should think, that the process is capable of application for the making of fabrics where waterproof to gas-proof properties are either not required or are of no importance. Having mentioned one application of the invention, the "other applications" must mean something distinguished from that which is already mentioned. 20 The last paragraph of the specification makes this more plain. It says: "The component materials made according to the invention may be employed more particularly for applications where resistance to penetration by water or gas is desired, for instance as waterproof materials for garments, coverings, etc., or as materials for airships or other gas containers, but materials made according to the invention may be employed for any other technical or industrial applications." Here, "technical or industrial applications" means, I think, fabrics or materials which would have a use different from those uses which are particularly given as examples earlier in the paragraph, and would include any 30 "material made according to the invention," where resistance to penetration by water or gas was of little or perhaps no importance at all. I have no doubt but that is what the patentee had particularly in mind, in 1925, as the then best use to which he knew his process might be applied, was a fabric or material where resistance to penetration by water was desired, or, as the last paragraph of the specification puts it, "compound materials made according to the invention may be employed more particularly . . . where resistance to . . . water . . . is desired"; but, the specification states that "materials made according to the invention may be employed for any other technical or industrial applications." I can find nothing in the specification which would, 40 on any fair or just construction, indicate that the patentee intended to limit his territory to relatively impermeable fabrics, or to limit the uses to which the invention might be applied. There is no claim for a fabric which is relatively impermeable, it is the process of uniting two or more textile products which is claimed, and the product made according to the process. I might further add that it is a principle in patent law that a man need not state the effects and advantages of his invention, nor is he obliged to be omniscient. The patentee

here has stated a few of the effects or advantages of his invention, for illustrative purposes, that is to say, that a composite fabric may be made by the process described, which will be water and air resisting to the degree desired, but he impliedly states that there are other effects, advantages and uses to be obtained from his invention.

The next point made against the patent on the ground of ambiguity is that it is doubtful whether the invention is confined to the use of yarns of cellulose derivatives, or whether it extends to a fabric which contains the cellulose derivative subsequently applied. I think it is quite clear that the
 10 specification is limited to yarns or threads of cellulose derivatives, that is to say, the thermoplastic yarns of cellulose derivatives are woven into one at least of the fabrics to be united, and that is the first step in the invention. I cannot think that the specification is in any way ambiguous upon this point.

The next point of attack under the head of ambiguity is that it is in doubt whether the specification is confined to thermoplastic derivatives of cellulose, or whether it includes any cellulose derivative, whether thermoplastic or not. In this connection it was urged by Mr. Biggar that if the invention was confined to the use of thermoplastic derivatives then the Plaintiff did not infringe because cellulose derivative acetate was not thermoplastic. It seems to me that
 20 the specification is not in doubt about that. It includes any cellulose derivative that is thermoplastic. To sustain this point one would have to hold that yarns of cellulose derivative were not thermoplastic, and that is a point that will be discussed later.

Coming now to the last point in the attack on the specification on the ground of ambiguity, which is, that there is a doubt as to whether the expression, "plasticising or softening agents, or solvents" include volatile solvents, such as acetone-alcohol, which the Plaintiff uses, in the manner already explained. On behalf of the Plaintiff it was also contended that acetone-alcohol, a very active solvent, particularly in low temperatures, is not a softening agent, and
 30 it was pointed out that the claims refer only to softening agents. Lengthy arguments were addressed to me on this point but I do not think it necessary to review the same, or the evidence directed to this point. I entertain no doubt whatever but that those to whom the specification was addressed would regard "softening agents" and "solvents," as meaning substantially the same thing, in making a practical application of Dreyfus, and they would understand the behaviour or effect of softeners, or solvents, in interpreting the specification. The practical effect of the acetone solvent, I think, is to soften the yarns of cellulose acetate, and the Plaintiff's own evidence is really to that effect. If the Plaintiff's solvent is a volatile one it is still a solvent, and the
 40 specification covers any suitable solvent, volatile or non-volatile. It matters little whether acetone is described as a softener or as a solvent. The specification covers both. Further, if we assume that acetone was an invention of the Plaintiff, that would not relieve it of infringement if there was subject matter in Dreyfus. I think that is quite plain as a matter of patent law. I do not think that one can reasonably say that there is ambiguity in the specification in so far as this point is concerned.

Then it was contended that the specification is misleading, first, on the

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ground that cellulose acetate is theoretically but not practically thermoplastic in the range of temperatures mentioned in the specification. It seems unfortunate that there should be any disagreement upon a point like this. My conclusion is that the contention is not in fact correct. It is admitted that the ethers mentioned by the patentee are thermoplastic. The esters are also admitted to be thermoplastic, and so the controversy narrows down to the question whether cellulose acetate is thermoplastic, and a somewhat similar criticism is made of nitro-cellulose. I have already stated that a thermoplastic derivative of cellulose is one that softens or becomes plastic on the application of heat and of this, upon the evidence before me, I have no doubt. Mr. Levinson pointed out that a product composed of cellulose acetate, such as the fabric sold under the trade name of "Celanese," has been permanently embossed by heated rollers, that is to say, cellulose acetate has been molded during the embossing operation because of its tendency to respond to the action of heat. The same Witness also stated that experience had shown that every housewife who has attempted to iron a fabric made of cellulose yarns had found that she must not allow her iron to get too hot, otherwise the cellulose acetate fibres or yarns would coalesce or melt and stick to the iron, causing a hole in the fabric if the iron was hot enough and long enough applied, and I am disposed to accept this evidence as being in fact correct. Mr. Lajoie contended that the best evidence as to the thermoplasticity of cellulose acetate, within the range of temperatures mentioned in the specification, came from the Plaintiff itself. Exhibit No. 29 was put in evidence by the Plaintiff and it represents a union of two fabrics, one composed entirely of cellulose acetate, the other being a cotton fabric. These two fabrics were united by the application of heat and pressure. They were subjected to a pressure of 600 pounds per square inch at a temperature between 150° C and 160° C, for five minutes. The result was that the cellulose acetate fabric had a glazed appearance which does not appear on the cotton fabric and Mr. Lajoie contended that the glaze was due to the softening of the cellulose fabric. I am inclined to think, though I do not rely on it, that this does demonstrate that cellulose acetate is not only thermoplastic, but that it is thermoplastic within the temperatures and pressures mentioned in the specification; and the test or experiment represented by this exhibit was made without the aid of a solvent or softener. Counsel for the Plaintiff, I should say, contended that the glaze on the cellulose acetate fabric was merely an effect produced by the pressure of the heated rollers. The contention that cellulose acetate is not thermoplastic, to say the least, has not been established.

Next, the patent is said to be misleading on the ground that methyl-cellulose is not waterproof and is soluble in cold water, or water at room temperature. Dr. Esselen, for the Plaintiff, stated that he examined a specimen of methyl-cellulose textile finish and found it soluble at a certain temperature. On the other hand Mr. Levinson, for the Defendant, was definitely of the opinion that methyl-cellulose was not soluble in water at room temperature; and he further stated that the methyl-cellulose that Dr. Esselen referred to had come on the market recently and was deliberately made water soluble because it was highly desirable that textile sizes should be water soluble so that they might be

readily removed by washing. On the evidence I must hold this ground of attack is not established. Even the evidence of Dr. Esselen, on this point, left me with the impression that he himself was a little uncertain as to the opinion he expressed.

The specification is also said to be misleading because it states nitro-cellulose to be thermoplastic. Nitro-cellulose, as the specification states, is highly inflammable and the point taken is that before it could be made thermoplastic by the application of heat the fabric containing it would burn, and it would be dangerous to operatives. It is agreed that nitro-cellulose can be made
 10 safely thermoplastic by the use of a softener, and this probably would be known to those to whom the specification was addressed. Paragraph 19 of the specification, which I did not reproduce, is as follows:—

“ Whilst fabrics made with yarns or fibres of nitro-cellulose filaments
 “ or fibres may be employed in practising the invention this is less
 “ advantageous owing to the inflammability of nitro-cellulose.”

I do not think the public could be misled by this. The specification in effect warns those to whom the patent is addressed not to use nitro-cellulose yarns and the reason therefor is stated. I cannot think there is any substance in this
 20 point. I think the patentee in mentioning the danger of using fabrics made with yarns of nitro-cellulose has prudently met all legal requirements, otherwise the specification might have been attacked on the ground of insufficiency; it also is indicative of good faith in describing the invention. In the case of *Gold Ore Treatment Co. vs. Golden Horseshoe Company*, (1) Lord Dunedin said that if a patentee puts forward a process without a warning note that if certain things are done it will be a failure, the specification will be insufficient unless the danger is such as common knowledge or ordinary practice will avert.

Then it is claimed that the patent is bad because the expressions “ organic
 “ derivatives of cellulose,” “ cellulose esters,” and “ cellulose ethers,” are so broadly stated in the patent as to include many derivatives of cellulose, laboratory
 30 products, not mentioned in the specification, many of which are not commercially available, and many of which could not have been known to the patentee. I hope I understand and have stated this point accurately. The classes of substances which I have mentioned were and are perfectly well known but it may well be that there are many species of the same classes not commercially available, known only to laboratory workers, and the list may grow. It seems to me that it is immaterial, if other species of the classes mentioned, but which fall within the general description of such classes, are not specified, or were unknown to the patentee. I do not think the patent should be condemned on this ground.

40 I turn now to the difficult question, true of so many patent cases, as to whether or not there is invention in Dreyfus. That is a question of fact. It will be seen that the alleged invention is essentially a process for the uniting of two or more textile fabrics so as to produce a composite fabric. To unite fabrics by some adhesive, applied in one way or other, such as coating, spraying or impregnating, was known to the art. Dreyfus seems to suggest an entirely new idea, and that is the uniting of fabrics by making use of yarns, filaments or fibres, of thermoplastic cellulose derivatives, which are woven, at least into

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one of the fabrics, and uniting the fabrics in the way I have already described. To suggest the uniting of three pieces of fabric in this way, I think, was a novel step and called for the exercise of the inventive faculty, and, I should also think, required research and experimental work; and I do not think it was obvious. The idea was I think quite novel and patentable, and an idea may be patentable. Subject matter is demonstrated by the fact that the Plaintiff in the manufacture of its collars follows almost precisely the process which Dreyfus describes in his specification. Collars are not mentioned in the patent, and there is no reason why they should, but the patent does describe a process whereby, for example, the Plaintiff's united three-ply soft collar may be made and is being made. The Plaintiff enjoys and employs, in a practical way, all the advantages described in Dreyfus. A patentee need not state the effect or advantage of his invention, if he describes his invention so as to produce it, and that, I think, Dreyfus has done. 10

Even if Dreyfus had slightly erroneous views as to the effect or influence of some of the various factors which he has mentioned in carrying out or procuring the advantages of his invention, for example, the precise behaviour and effect of the thermoplastic yarns, whether softened or not, or the precise contribution which heat and pressure, and their degrees, make in carrying out his process, that would not militate against him because he has shown the practical advantages of his invention, and I think he has shown how the public can obtain those advantages practically, however narrow or wide, as has the Plaintiff. See Moulton, L.J., in *Z. Lamp Works vs. Marples*, 27 R.P.C., at page 746. I am of the opinion therefore that there is invention and that the patent is valid. In this action I do not think it is necessary to discuss the claims separately, or in the groups mentioned. It seems to me they are all valid claims. 20

There remains for decision the question of infringement. The Plaintiff claims that it does not infringe Dreyfus, in the making of its collars. First, it is said, the Plaintiff does not make a composite fabric, and that its collar is not a composite fabric. Then it is claimed that the Plaintiff does not make use of a fabric containing thermoplastic yarns of cellulose acetate, that is to say, that the cellulose acetate yarns in the intermediate ply of its collar is not thermoplastic at all. Next it is claimed that if the yarns of cellulose acetate in the intermediate ply has thermoplastic qualities, no reliance is placed upon heat and pressure whereas, it is said, Dreyfus depends exclusively upon the thermoplastic qualities of cellulose acetate yarns and the bringing about of adhesion by heat and pressure. And finally it is claimed that the collar made by the Plaintiff is even more permeable or porous than it was before being processed. I have described the Plaintiff's process, and in doing so I relied on the evidence of one of its own Witnesses. From that evidence, and other evidence, I should think it is beyond controversy that the intermediate ply which the Plaintiff employs in the making of its collars contains a predetermined quantity of thermoplastic yarns of cellulose acetate to the square inch, and that heat and pressure is used and relied upon to make a merchantable collar. Neither do I think it has been established by the evidence that the Plaintiff's collar is more porous after it is completed than it was before going through the process described, and I doubt if it can be established. It seems to me the 40

Plaintiff in the practical sense, uses precisely the process described in Dreyfus in making collars and that is done by uniting three pieces of fabric in the manner already described. The collar is a composite fabric. That there are slight differences between the process described in Dreyfus and that followed by the Plaintiff is not of importance. For example, one of the platens in the press used by St. Hilaire Ltd. is padded, but, as explained by the Witness Loew, that was necessary because the edges of the collar are thicker than the body or central portions, and if the platens were both faced with metal the pressure would be concentrated upon the edges and the other parts of the collar would not receive the necessary pressure. The process which Dreyfus describes and that employed by St. Hilaire Ltd. are substantially the same. I am of the opinion therefore that there is infringement of Dreyfus by the Plaintiff.

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I come now to consider the second patent in suit. The specification states that the object of the alleged invention is to produce a fabric containing organic derivatives of cellulose that is suitable for use as a stiffening material wherever such a fabric is necessary. Paragraph 4 of the specification is as follows :—

“ In the making of garments, particularly outer garments such as suits, coats, top coats, etc., the use of stiff material is necessary in certain places to help retain the shape of the garment. Likewise it is often desirable to use a stiff fabric as an inner lining in neckwear such as cravats, to impart desirable stiffness to the same. Heretofore, coarsely woven fabrics made of wool, cotton, or the like, reinforced or not by stiffer material such as hair, have been used for this purpose. These materials are open to the objections that they are apt to soften when damp and are often bulky.”

The specification describes several methods of carrying out the invention. The stiffening material may assume the form of a comparatively open mesh fabric made of cellulose acetate yarns, and in order to impart stiffness the yarns should be of a “ high twist,” or the fabric may be made of “ spun ” cellulose acetate yarns, which means, as I understand it, that the yarns are cut into comparatively short lengths and the short lengths are spun in a manner analogous to cotton or wool yarns, which yarns it is said form a fabric which is much stiffer than the yarns made of continuous filaments of cellulose acetate. Then it is stated that in the spinning of the yarn, other fibres, such as cotton or wool, may be incorporated with the cellulose acetate yarns and a stiff fabric may be made of this mixed yarn. Another method of carrying out the invention is to treat a fabric containing organic derivatives of cellulose with a material tending to stiffen it, such as a solvent or swelling agent, which may be applied by brushing, spraying or dipping. The specification points out that yarns of organic derivatives of cellulose are not affected by humidity as are many other yarns and will retain their stiffness under conditions wherein fabrics of other fibres will become softened.

I do not propose to engage in a lengthy discussion of this patent. In the first place, it seems quite clear to me that the Plaintiff does not infringe this patent. I see nothing in the teachings or directions of this patent that resembles

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the process carried out by the Plaintiff in the making of its collars ; this patent relates to something entirely different.

Further, I do not think there is patentable novelty or subject matter in this patent. There may be some novelty in the patent but something further is necessary to secure a monopoly. There is no invention, I think, in the weaving of a fabric of yarns of organic derivatives of cellulose merely by using yarns of a high twist, yarns of a certain denier, or spun yarns, in order to get a stiffening effect ; that in plain language only means the using of more yarns or threads, of well-known yarns or threads, whose behaviour was known, in the weaving of a fabric, in order to get a stiffening or strengthening effect in the fabric. It was urged by Mr. Lajoie that Dreyfus was the first to suggest the idea that these yarns could be used for the purpose of obtaining a stiffening material, and that this was the invention. Even on that assumption I do not think the idea contains subject matter. I hardly think this called for the exercise of the inventive faculty. Examined qualitatively or quantitatively, I do not think there is that degree of novelty or of subject matter in this patent which would justify a patent monopoly. Having reached that conclusion it is not necessary to say more. The Plaintiff must therefore succeed in respect of this patent. 10

In the result the Defendant succeeds upon the issues relating to the first patent, No. 265,960, with costs, and similarly the Plaintiff in respect of the second patent, No. 311,185. The main contest related to the first patent and occupied by far the greater part of the time of the trial of the action, and that I should think would also be true of the preparation for trial. There will be an apportionment of costs, the basis of which will be fixed on the settlement of the minutes, the one set of costs to be set off against the other. 20

No. 24.

In the
Supreme
Court.

Factum of Appellant (The B. V. D. Company Limited).

No. 24.
Factum of
Appellant

IN THE SUPREME COURT OF CANADA.

Between

THE B. V. D. COMPANY LIMITED (Plaintiff) Appellant ; 30

and

CANADIAN CELANESE LIMITED (Defendant) Respondent.

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No. 23A.

Statement of Case.

In the
Supreme
Court.

No. 23A.

Statement
of Case and
Notice of
Appeal,
28th March,
1936.

IN THE SUPREME COURT OF CANADA.

Between

THE B. V. D. COMPANY LIMITED (Plaintiff) Appellant

and

CANADIAN CELANESE LIMITED (Defendant) Respondent.

STATEMENT OF CASE.

This is an appeal from the Judgment of the Exchequer Court of Canada
10 dated March 26th, 1936, insofar as it maintains the validity of Patent
No. 265,960 and adjudges that patent to be infringed by certain shirts and collars
manufactured by the Plaintiff.

NOTICE OF APPEAL.

TAKE NOTICE that the Plaintiff intends to appeal and does hereby
appeal from that part of the Judgment herein dated March 26th, 1936 which
relates to Patent No. 265,960.

Dated at Ottawa the 28th day of March, 1936.

SMART & BIGGAR,
Solicitors for the Plaintiff.

20 To :

The Registrar of the
Exchequer Court of Canada
Messrs. Belcourt & Genest,
Ottawa Agents for the Solicitors
for the Defendant.

PART IV :	VALIDITY OF THE PATENT			In the
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PART I

NATURE OF CASE AND JUDGMENT

1. This is an appeal from the judgment of the President of the Exchequer Court dismissing the Plaintiff's action for a declaration either that a patent, 20 No. 265,960, granted on November 16th, 1926, to one CAMILLE DREYFUS on an application filed on December 18th, 1925, was invalid and void or that it was not infringed by the Plaintiff's manufacture of certain shirt collars as the Defendant had claimed in a still untried infringement action brought by it against the Plaintiff in the Superior Court of the Province of Quebec.

Note : See the patent specification, p. 403 ff., the pleadings, pp. 1-5, and the formal judgment, pp. 286-7. (The judgment also declares invalid another patent No. 311,185, but there is no appeal with respect to that adjudication.)

2. The patent specification describes the invention as relating to "fabrics 30 "and sheet materials and the manufacture thereof," but is in fact concerned only with certain types of composite fabric sheets partly composed of derivatives of cellulose and "having waterproof to gas-proof properties or capable of other "applications."

Note : See the specification, p. 403/8.

3. The validity of the patent was attacked on the ground that the claims are so framed as to include what was old and to cover more than the Applicant for the patent could claim to have invented and also on the grounds of lack of invention, of the ambiguity and misleading character of the specification and of anticipation. It was also contended that, if valid, the patent could not be 40 interpreted as covering the process actually used by the Plaintiff and that it had therefore not been infringed.

4. The case is remarkable in, that (1) the alleged invention appears to have been regarded as being without commercial value for ten years after it was made and (2) that information as to the work which led to it was not only not offered (as it usually is) but was refused when asked for by the Plaintiff. Neither of these points is referred to in the judgment.

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5. The alleged inventor, CAMILLE DREYFUS, was examined for discovery both in his capacity as President of the Defendant Company and as its assignor. On this examination the Defendant obstructed every line of inquiry, including that directed to elicit information as to the work which led to the invention, and successfully opposed an application made by the Plaintiff to the learned President of the Exchequer Court to compel DREYFUS to attend again for examination in order to answer the questions which the Defendant's Counsel had instructed him not to answer. In the result the case contains nothing to indicate the history of the invention. Its date, as relied upon by the Defendant, was taken to be January 23rd, 1925, that being the date upon which the applica- 10
tion for a corresponding British Patent No. 248,147 was filed in Great Britain.

Note: See the examination for discovery of DREYFUS, pp. 10-48, particularly at pp. 43/43-45/24 and 46/40-47/12. As the Defendant's Counsel quite truly said at the end of the examination, "We objected to practically everything" (48/4).

See also the Plaintiff's notice of motion to require the Defendant to attend for further examination and the order thereon, p. 432 ff.

6. It appears from the examination for discovery of DREYFUS that he had been President of the Defendant company since about 1926, that he was President of an associated United States company and a Director of an associated company 20
in Great Britain. Each of the latter two companies he described (in French) as "colossale," which must mean something very considerable since he said that the Canadian Company had 2,500 employees. He also stated that each of the three companies obtained the benefit of any invention made by a member of the staff of either of the others and admitted that in addition to the corresponding British patent there was also a corresponding United States patent No. 1,903,960.

Note: See the examination for discovery of DREYFUS, pp. 17/3 ; 19/11 ; 38/6-20 ; 40/6 ; 40/36.

7. Apart from this general information, substantially all that was elicited from DREYFUS on his examination were answers amounting to an express 30
admission that the Canadian Company had made nothing under the patent at any time and had granted no license until May, 1935, and an inferential admission that the same was true of the United States and British Companies. The first step taken to exploit the patent was thus about ten years after the invention is alleged to have been made and followed upon the commercial success of the process used by the Plaintiff. Even then the only step taken appears to have been confined to licensing the use of a process for the manufacture of collars similar to those made by the Plaintiff.

Note: See the examination for discovery of DREYFUS, pp. 12-23 ; 41/40. 40

8. The Plaintiff contended that, taken by itself, the disclosure contained nothing more than a suggestion that if you wanted a waterproof or gas-proof fabric sheet a convenient way to make it would be to associate with one or more pieces of ordinary fabric another or others consisting of artificial cellulose yarns, which had the property of becoming plastic when heated (i.e., were "thermoplastic"), and, by applying heat and pressure, to cause these yarns

to flow so as to fill the interstices of the fabric layers and to cause these to adhere together and constitute a single composite waterproof sheet.

9. The Plaintiff submitted that this was not invention, having regard to the fact that the making of waterproof composite fabrics cemented together with cellulose derivatives was well known and that even if it were invention the claims covered a much more extensive field. It was moreover contended that the claims included what was old and that if their apparent scope was restricted to the idea disclosed, the Plaintiff's process did not fall within them.

10. The grounds of attack upon the claims as drawn were (1) that none of them were limited to the use of woven cellulose yarns but extended to the use of a cellulose derivative in any form, (2) that many of them extended to the use of cellulose derivatives which were not thermoplastic and (3) that, interpreted as the Defendant suggested that they should be, they included processes and composite sheets described in earlier patents.

11. The Plaintiff also contended that the patent was invalid because the specification proposed and claimed the use of cellulose acetate and other possibly thermoplastic yarns in a way which was not practicable and would not attain the intended result. It pointed out that the disclosure recommended and the claims asserted a monopoly of a process of treating some of these yarns, either with or without a plasticizer, at temperatures and under pressures within specified ranges and contended that at these temperatures and pressures the yarns in question would not flow sufficiently to cause fabrics to adhere without first being mixed with a plasticizer, and that it recommended a cold water soluble material for making a waterproof sheet.

12. The Plaintiff made use of a process for making collars which depended upon the presence in the lining of the collar of some cellulose acetate threads. These were partly dissolved by a volatile solvent applied through the outer fabric and the solvent was quickly driven off by heat while the collar was held under a slight pressure with the result that the outer and inner coverings of the collar were caused to adhere to the lining and produce a semi-stiff collar which was substantially as porous (or even more readily porous) than the three fabrics without treatment. This way of making collars had, it was said, caused a revolution in collar manufacture; at the date of the trial collars were being made in this way in the United States and Canada at the rate of about 200,000 dozen a month or over 28,000,000 collars a year.

Note: See the evidence of the Plaintiff's Witness LOEW, in chief, pp. 48/52, and in cross-examination, pp. 52/59, as to the process used and as to the production of collars.

See also as to the porosity of the finished collar, paras. 55-64, below.

13. This process was sought to be distinguished from that described in the patent by reason of the porosity of the resulting collar and by reason of the fact that the adhesion of the layers of the collar did not depend upon any thermoplastic property possessed by the yarns but upon the evaporation of the volatile solvent, whereas the patent specification was, in the Plaintiff's submission, directed only to making use of the thermoplastic quality of a cellulose derivative, whether natural to the derivative or induced by its mixture with a plasticiser of a non-volatile kind which it would retain when in the form of yarn.

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14. On all the points raised the learned trial Judge held against the Plaintiff, his conclusions on the several points being indicated by the following quotations :

As to the nature of the invention he says (301/41) :

“ It will be seen that the alleged invention is essentially a process for
“ the uniting of two or more textile fabrics so as to produce a composite
“ fabric.”

As to anticipation he says (294/35) :

“ Applying these principles to the prior publications cited in this case,
“ it seems to me they are all irrelevant. Not one of them, I think, describes 10
“ or gives directions to use the idea described and claimed in DREYFUS.”
(A discussion of only two of the prior patents cited follows).

As to invention he says (302/2) :

“ To suggest the uniting of three pieces of fabric in this way, I think,
“ was a novel step and called for the exercise of the inventive faculty, and,
“ I should also think, required research and experimental work ; and I do
“ not think it was obvious. The idea was, I think, quite novel and
“ patentable and an idea may be patentable.”

As to the construction of the specification with respect to impermeability
he was of opinion (298/40) that there was 20

“ nothing in the specification which would on any fair and just
“ construction indicate that the patentee intended to limit his
“ territory to relatively impermeable fabrics or to limit the uses to which
“ the invention might be applied.”

As to the plasticisers suggested he says (299/40) :

“ The specification covers any suitable solvent, volatile or non-volatile.”

As to the thermoplasticity of cellulose acetate for the purpose contemplated
by the specification he refers to an Exhibit (29) introduced by the Plaintiff
and says (300/30) :

“ I am inclined to think, though I do not rely on it, that this does 30
“ demonstrate that cellulose acetate is not only thermoplastic but that it
“ is thermoplastic within the temperatures and pressures mentioned in
“ the specification . . . The contention that cellulose acetate is not
“ thermoplastic, to say the least, has not been established.”

As to the claims he says (302/25) :

“ In this action I do not think it is necessary to discuss the claims
“ separately, or in the groups mentioned. It seems to me they are all valid
“ claims.”

As to infringement he says (302/47) :

“ It seems that the Plaintiff in the practical sense uses precisely the 40
“ process described in DREYFUS in making collars.”

PART II.

QUESTIONS RAISED BY THE APPEAL.

15. The Plaintiff submits that the Judgment of the learned trial Judge is
erroneous :

(a) In holding that the specification discloses any invention having regard

to the common knowledge of the behaviour of the materials used and having regard especially to the patentee's having found no occasion for resort to the alleged invention for ten years after it is said to have been made.

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- (b) In holding that the disclosure suggests anything more than
- (i) The production of a relatively impermeable material by
 - (ii) Taking advantage of the thermoplastic characteristics of certain cellulose derivatives.
- (c) In holding that the disclosure contains any proposal to use any softening agent not capable of incorporation in yarns as such.
- 10 (d) In holding that the specification was not misleading in suggesting the treatment of cellulose acetate and nitro-cellulose yarns without plasticizers at the temperatures and pressures defined, and in suggesting the use of methyl cellulose yarns to make waterproof sheets.
- (e) In holding any of the claims to be valid notwithstanding
- (i) That even the narrowest of them extend in terms to the use of a cellulose derivative which need never be in the form of yarns and consequently covers what was old, and that the wider claims are open to other objections, and
 - 20 (ii) That on the only construction of them which would support a finding of infringement, even the narrowest of them includes what was old.

Alternatively the Plaintiff submits that if the claims are capable of being supported as valid, they must be so only by being so interpreted as not to extend to the process used by the Plaintiff.

The Plaintiff also submits that evidence was improperly excluded by reason of the refusal of the Defendant's president and assignor, CAMILLE DREYFUS, to answer the questions addressed to him on his examination for discovery.

PART III.

30

REJECTION OF EVIDENCE.

16. In the Plaintiff's submission grave injustice was done to the Plaintiff by the refusal to permit it to try more fully to establish the allegations in its pleading and particulars of objection that no invention was in fact made by the alleged inventor and that the patent specification contained misleading statements, as it might have done by a full examination of DREYFUS. On these questions DREYFUS' evidence would obviously have been material, and the Plaintiff submits that it should have been permitted to obtain it.

Note : See para. 5 above and the note thereto.

40 17. On the question of invention or subject matter, it is to be observed that one of the grounds upon which the learned trial Judge supports the patent is that he thinks the suggestion it contains "required research and experimental work," this notwithstanding that the Plaintiff had sought to cross-examine the alleged inventor for the purpose of proving to the contrary and had been denied the opportunity to do so. It is also to be observed that notwithstanding objections on the part of the Plaintiff, counsel for the Defendant made certain statements

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with regard to the position of DREYFUS in the art which were unsupported by the evidence he subsequently led and appear nevertheless to have been accepted by the learned trial Judge, who says in his judgment that “DREYFUS was associated with the early development of cellulose acetate as a commercial product.”

Note : As to the learned trial Judge’s view that the proposal involved research, see p. 302/4, and as to DREYFUS’ position in the art, see the statement by counsel for the Defendant, pp. 6/24–7/30, the discussion of some war-type samples made by the Plaintiff’s Witness ESSELEN, pp. 79/31–81/31, (particularly the remarks of the learned trial Judge, pp. 80/28–81/1), and 10 the passage quoted from the judgment, p. 287/26–8.

PART IV.

VALIDITY OF THE PATENT.

The Disclosure and its Interpretation.

18. The disclosure is a long one and cannot usefully be summarized, but some of its important points are as follows :

(a) That the invention is invariably related to the use of yarns of a *thermoplastic* derivative of cellulose on which a “melting or softening effect [is] produced by heat and pressure” : 403/33, 404/20, 405/30, 406/27.

(b) That one of the results to be attained by heat combined with 20 pressure is that two or more layers of fabric are “united” : 403/31, 403/36, 404/6, 404/20, 404/47, 405/1, 405/39, 406/13.

(c) That a further result to be attained is to “close or reduce to minute dimensions the pores or interstices of the compound or combined fabric” : 403/31, 404/4, 406/13.

(d) That the result of the stopping up of the pores or interstices is to be the production of a “water-resisting or even gas-resisting” fabric : 404/7, 405/41, 406/15.

(e) That the “intimacy of union” and the “degree of impermeability” increase with an increase in the temperature or pressure used or the time 30 during which either is applied : 403/47, 404/14–19, 405/16–24, 406/14–17.

(f) That the cellulose derivatives especially suggested for use are cellulose acetate, ethyl cellulose, methyl cellulose, benzyl cellulose and nitrocellulose though it is said that other esters or ethers of cellulose or mixtures of them may be used : 403/19.

(g) That yarns of these materials are to be used “with or without employment, assistance or application of plasticizing or softening agents or solvents” : 403/29, 404/6, 406/26.

(h) That instances of a number of specific “plasticizing or softening agents or solvents” which may be used are given : 404/32–37. 40

(i) That the purpose of these agents is “to assist the melting of the yarns and the union of the fabrics,” and that in the special case of cellulose acetate the employment of such an agent is merely described as preferable : 404/20, 404/38, 405/14, 405/29, 405/39, 406/12.

(j) That it is said that the softening agent may either be incorporated

in the cellulose derivative yarns when these are made or may be applied to them by first dissolving them in volatile solvents: 404/26-31.

(k) That a range of temperatures and pressures to be used (especially with cellulose acetate) is specified, the temperature range being from 100-180°C. and the pressure range from 300-600 lbs. or more: 405/28.

(l) That the only uses expressly suggested for the resulting product are for waterproof garments and gas containers: 406/37-41.

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The Claims

19. There are 25 claims, of which one (Claim 25) covers a product, and the remaining 24 a process. The process claims fall into four groups of six each, the wording of each claim in each group being identical with that of the corresponding claim in each other, except that the material which is the subject of the processes described differs in each group, thus:—

In Group A (Claims 1-6) the material specified is a "thermoplastic derivative of cellulose."

In Group B (Claims 7-12) it is an "organic derivative of cellulose."

In Group C (Claims 13-18) it is a "cellulose ester," and

In Group D (Claims 19-24) it is specifically "cellulose acetate."

Different considerations apply to each of the different groups, and the validity and relevance of the claims in each require separate discussion.

Validity of Claims in Group A (Claims 1-6)

(Excessive and Anticipated).

20. The discussion of Claims 1-6 which follows proceeds on the assumption that the Defendant is right on three points which are all essential to its success and its contention upon which will be later contested. These points are (a) that the patent is properly to be interpreted as disclosing and extending to the production of a porous composite sheet as distinguished from one that is water-resisting if not waterproof or gasproof; (b) that cellulose acetate, nitrocellulose and methyl cellulose are adapted to secure the result described by the patent when used in the way therein specified; and (c) that the patent is infringed by the use of these and like materials, even when heat is not relied upon to cause them to flow, or in other words when their thermoplastic qualities are irrelevant to the process actually used.

21. In considering either the question of validity or that of infringement the discussion may be narrowed to only two of the six claims in Group A, viz. Claims 1 and 4. From these the other four are probably not patentably distinguishable, and in any event they do not apply to the Plaintiff's process. Two of them (Claims 2 and 5) differ from the others only in that the heat and pressure which all the claims call for is to be applied in a particular way, namely by rollers, which the Plaintiff does not use. Another (Claim 6) differs from the others only in specifying that the softening agent which others call for should be applied in a particular way, namely when dissolved in a volatile solvent, and the Plaintiff makes use of no plasticizer so dissolved. The fourth (Claim 3) is limited to a process which comprises the step of "increasing the ordinary thermoplasticity

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“ of a fabric containing a thermoplastic derivative of cellulose,” and this is either covered by the remaining claims about to be discussed or is inapplicable to the Plaintiff’s process.

22. These remaining claims are Claims 1 and 4, which are in the following terms :—

“ 1. A process for the manufacture of composite sheet material which comprises subjecting a plurality of associated fabrics, at least one of which contains a thermoplastic derivative of cellulose, to heat and pressure, thereby softening said derivative and uniting said fabrics.

“ 4. A process for the manufacture of composite sheet material which comprises treating a fabric containing a thermoplastic derivative of cellulose with a softening agent, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure.” 10

23. These claims are alike in (a) being directed to the production of a composite sheet material of which (b) the fabric layers (two or more) are united by heat and pressure and in which (c) there is at least one fabric layer *containing* a thermoplastic derivative of cellulose.

24. There are two differences, one probably unimportant but the other having significance. Claim 1 expressly requires the thermoplastic derivative of cellulose to be softened by heat, whereas Claim 4 does not : in view of the disclosure, this difference is probably immaterial. The other and more material difference is that Claim 4 requires that the thermoplastic derivative of cellulose should be combined with a softening agent, whereas Claim 1 asserts a monopoly of the use of cellulose derivative not combined with any softening agent, thus carrying into the claims the alternatives emphasized in the disclosure. 20

Note: See as to the interpretation of claims to give each claim a different meaning :

Parkinson vs. Simon, (1894), 11 R.P.C. 493, at pp. 502, 507, C.A.

Mergenthaler vs. Intertype, (1926) 43 R.P.C. 239, at pp. 285, 289

C.A. and

Samuel Parkes vs. Cocker, (1929) 46 R.P.C. 241, per TOMLIN, J., at p. 247. 30

Crabtree vs. Hoe, (1936) 2 All E.R., 1639.

See as to the effect of these differences on the question of infringement, paras. 65–74, below.

25. The first objection to the validity of these claims is that they omit any reference to what Counsel for the Defendants described as the “ new . . . and all important feature of the invention,” namely the form in which the thermoplastic derivative of cellulose to be acted upon is to be present in the layers of fabric to be united. All that the claims require is that one or more of these layers should *contain* a thermoplastic derivative of cellulose. As will later appear, a fabric may “ contain ” a thermoplastic derivative of cellulose in any of several forms. 40

Note: See the opening statement of Counsel for the Defendant that “ DR. DREYFUS taught the use of a thermoplastic yarn of a cellulose derivative woven into the fabric,” and that “ that was new and that is

“ the all-important feature of the invention ” (pp. 7/18) and the evidence of the Defendant’s witness LEVINSON, in chief, pp. 231/30–232/34.

See also the patents to VAN HEUSEN, GREEN, KENNEDY, OLIVER, WEIDIG, NACHMANN and C. DREYFUS (U.S. No. 1,634,613), referred to in paragraphs 27, 29, 41 below.

26. The disclosure refers to the thermoplastic derivative of cellulose being present only in the form of yarns woven, knitted or worked into one or more of the layers constituting the final composite product, and Counsel for the Defendant stated that the patent was limited to the use of a thermoplastic derivative in that form. No reference to this essential characteristic is, however, included in the patentee’s definition of the scope of his monopoly, and the Plaintiff submits that the claims cannot be narrowed by the introduction into them of a limitation which they do not contain.

Note : See the statement of Counsel for the Defendant, pp. 7/24, and the evidence of the Defendant’s witness LEVINSON in chief, pp. 231/30–232/34.

See as to the rule of law, *Ingersoll vs. Consolidated Pneumatic*, (1907), 25 R.P.C. 61 (H.L.) ;

Natural Colour vs. Bioschemes, (1915) 32 R.P.C. 256 (H.L.) ;

Mailman vs. Gillette, (1932) S.C.R. 724.

20 *Submarine Signal vs. Hughes*, (1932) 49 R.P.C. 149 (C.A.), and *British Hartford-Fairmont vs. Jackson*, (1932) 49 R.P.C. 495, at p. 550.

Crabtree vs. Hoe, (1935) 52 R.P.C. 367 (1936) All E.R. 1639 (C.A.).

It is to be observed that this all-important limitation of the alleged invention appears in the claims of the corresponding British patent upon the date of the application for which the Defendant relies to prove the date upon which the alleged invention was made : see British Patent No. 248,147 and the statement of the date of invention claimed at p. 6/1–15 of the Case. The limitation also appears in the claims of the corresponding U.S. Patent No. 1,903,960.

30 27. Unless the claims are thus narrowed by the introduction of a limitation to the use of the cellulose derivative in the form of yarns they are, in the Plaintiff’s submission, all clearly anticipated by the United States patent to VAN HEUSEN and the British patents to GREEN and DREYFUS. Thus :

VAN HEUSEN (U.S. No. 1,479,565) discloses the manufacture of a three-ply collar consisting of a lining and two outer plies. These are caused to combine into a single composite sheet by the application to the lining of a cellulose derivative in solution to act as a “ cementing agent,” whereupon the outer plies and the lining are “ treated . . . by heat and pressure
40 “ to cause the cemented material to be converted into its final form and “ thereby secure the separate layers of fabric together.”

See the patent, the discussion of it at pp. 88 ff., 127, 251 ff., and 272 of the evidence, and the Plaintiff’s sample of a collar made according to this process (Ex. 38).

See also the reasons for judgment, p. 295.

GREEN (Br. No. 9879 of 1889) refers to the use of cellulose and parti-

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cularly octo-nitrocellulose as forming “a good substitute for silk” and suggests as one alternative its being used as a coating for ordinary yarns and as another either its direct extrusion on to an ordinary fabric through capillary tubes in the form of threads or ribbons or its being wound in the form of threads on bobbins, these threads being subsequently affixed to an ordinary fabric “by pressure with or without heat . . . in order to insure the more perfect union of the filament or ribbon to the fabric.” The resulting products are described as “compound fabrics” capable of use for “articles of dress . . . and numerous other articles . . . to which silk and mixtures of silk . . . are now applied” including 10
“collars, cuffs, hats or bonnets.”

See this patent, and the discussion of it at pp. 98, 131, 255, 268 and 280 of the evidence.

H. DREYFUS (Br. No. 173,021) refers to previous proposals for the use in the production of glass substitutes of cellulose esters in the form, among others, of a “web” combined with a “metallic or textile fabric” and proposes the analogous use of cellulose ethers, suggesting as one alternative that an ordinary “fabric may be imbedded by heat and pressure “into a solidified film, sheet or *web* of the ether or ether composition or “between two such films, sheets or *webs*.” 20

See the patent, the general discussion of it at pp. 100, 131 ff., 190, 211 ff., 259 of the evidence, the opinions of witnesses as to the significance of the word “web” at pp. 132/1-17, 259/39, 267/43-268/4, the Plaintiff’s sample made according to the patent (Ex. 41) and the Defendant’s contrasting samples (Ex. Z11a-Z11f).

See also the use of the word “web” by the Defendant’s witness PLATT, in discussing the NACHMANN patent, p. 195/16-24.

28. The VAN HEUSEN patent thus discloses the making of a composite sheet by combining two or more fabrics one of which “contains” a cellulose derivative and which are caused to adhere together under heat and pressure. 30
It consequently constitutes a complete anticipation of the claims unless these are to be modified by incorporating a limitation which they do not contain and this, in the Plaintiff’s submission, cannot be done. In the Plaintiff’s submission, moreover, the patents to GREEN and DREYFUS constitute anticipations in any event. In GREEN the extruded nitrocellulose becomes a fabric which, under heat and pressure, is combined with a fabric composed of ordinary yarns: in DREYFUS the word “web” used to indicate an alternative to a “film” or “sheet” must be interpreted as connoting a fabric composed of a cellulose derivative and this fabric is combined with one composed of ordinary yarns by heat and pressure. 40

Note: See as to the interpretation of the claims, paras. 64-73 below.

29. Unless modified the claims would, in the Plaintiff’s submission, also from a practical point of view be anticipated by the United States patents to KENNEDY, OLIVER and WEIDIG, the British patents to BERARD and MILLAR, and the Swiss patent to NACHMANN. Thus:

10 KENNEDY (U.S. No. 590,842) discloses the production of either a water-
proof fabric or a waterproof rope by including in the fabric when woven,
or in the rope when twisted, strands of cellulose acetate yarn which are
thereupon dissolved by a volatile solvent so that the material of them
flows into and between the surrounding ordinary yarns and makes the fabric
or rope waterproof. The process proposed by KENNEDY is applied only to
a single layer of fabric and is thus distinguishable (though, in the Plaintiff's
submission, not patentably distinguishable) from the patented process as
applied to produce a composite sheet. The Plaintiff submits, however,
that that distinction does not apply to KENNEDY's rope, which is in effect
a composite fabric, and that accordingly KENNEDY anticipates DREYFUS'
process of making such a fabric waterproof by causing a cellulose derivative
to flow into the pores of ordinary fabrics, unless the patent is limited to
reliance upon the thermoplastic quality of the yarns and their being melted
by heat.

See the patent, the discussion thereof at pp. 84, 124, 242,
275 and 280 of the evidence, and the Plaintiff's sample prepared
according to the KENNEDY disclosure (Ex. 35) referred to at pp. 84
and 146.

20 See also the reasons for Judgment, p. 294.

OLIVER (U.S. No. 607,454) discloses the production of a composite
fabric belting made up of several layers of ordinary fabric impregnated
with a solution of nitrocellulose and united by pressure so as to produce
a composite waterproof fabric.

See the patent, the discussion thereof at pp. 85, 125, 135, 244
and 277 of the evidence, and the Defendant's sample said to have
been made according to this patent (Ex. Z8, referred to at p. 189).

30 WEIDIG (U.S. No. 696,193) discloses a surgical dressing made of
ordinary fabrics which a nitrocellulose solution serves as a cement to unite.

See the patent and the discussion of it at pp. 86, 126 and 247 of
the evidence.

BERARD (Br. No. 607/1856) suggests the application to an ordinary
fabric of collodion, a nitrocellulose composition, "as a means of uniting
"two fabrics together for the purpose of rendering them waterproof."

See the patent, the discussion of it at pp. 92, 130 and 255 of
the evidence, and the Plaintiff's samples made according to it,
Ex. 39, 40.

40 MILLAR (Br. No. 17549/1898) proposes the production of "fabrics or
"tissues from threads or filaments formed of materials while in a liquid
"or plastic condition," the materials specified including nitrocellulose.
The method of production is the movement over a belt of an apparatus
by which the material used is extruded in the form of threads which are
criss-crossed so as to form a fabric, warp and weft threads being reproduced
if desired, though other patterns are also suggested. As a further
application it is proposed to use as a permanent foundation for the

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extruded threads “ a light open fabric of cotton or other material woven “ by ordinary methods ” in which case there would be two fabrics, one of ordinary material and the other of a cellulose derivative constituting together a composite fabric.

See the patent in question and the discussion of the patent, pp. 10, 131 ff., 257 and 271 of the evidence.

NACHMANN (Swiss No. 77238) proposes the manufacture of waterproof composite shoe soles from fabrics made of ordinary yarns, each impregnated with a “ leather cement ” made of alcohol in which a 20% celluloid is dissolved. the pieces of fabric being superimposed, pressed together and 10 dried.

See the translation of this patent, the discussion of it at pp. 192 ff. and 261 of the evidence and the Defendant’s samples said to have been prepared according to it, Exhibits Z13a-Z13d.

30. Each of these patents in this last list describes a process of making a composite sheet made up of ordinary fabrics, one or more of which contain a cellulose derivative which either acts as a cement or closes the pores or does both. The disclosure of each is silent as to the application of heat though in none is its application excluded, and it is as obvious that by the application of heat the evaporation of the volatile solvent in which the cellulose derivative 20 used is dissolved would be hastened as that by pressure the intimacy of union of the fabric layers would be increased. To apply heat would clearly not avoid infringement of any of them if the directions given were followed in other respects.

31. In these circumstances what the Plaintiff submits is that the Defendant is on the horns of a dilemma. Either these patents constitute anticipations because heat is not essential to the Defendant’s process or, if heat is essential because the process depends on the thermoplastic character of the cellulose derivative, then the claims extend beyond the invention and are void. They can be saved only by interpreting them as being so limited that the Plaintiff’s 30 process does not come within their scope.

Note : See as to infringement, paras. 65–74 below.

Validity of Claims in Group B (Claims 7–12) and Group C (Claims 13–18).

(Excessive, Unnecessary and Anticipated).

32. The claims in these two groups are identical with those in Group A except for a difference in the material to be used. In the claims in Group B this is defined as an “ organic derivative of cellulose ” and in those in Group C as a “ cellulose ester.” As in the case of Group A, the discussion can be narrowed to the first and the fourth of the claims in each group, corresponding to Claims 1 and 4 of Group A. They are, in the Plaintiff’s submission, open to the same 40 objections as those claims and to the further objection that they extend beyond the inventive idea.

33. The expression “ organic derivative of cellulose ” includes any derivative of cellulose combined with an organic acid or an alcohol ; the expression

“cellulose ester” includes any derivative of cellulose combined with an acid, whether organic or inorganic. There are hundreds of members of each of these overlapping classes, but few of them are commercial, and only a few have been produced even in the laboratory. The Plaintiff’s expert witness gave evidence that while some are thermoplastic, the behaviour of most is a pure matter of conjecture. There was no contradiction of his evidence.

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See the evidence of the Plaintiff’s witness ESSELEN in chief, pp. 69/14–71/27, and in cross-examination, pp. 111/26–112/22, in re-examination, pp. 133/26–134/37, and in re-cross-examination, pp. 135/17–136/11.

10 34. There is not a word in the disclosure to indicate an intention on the part of the applicant for the patent to make use of any derivative of cellulose which is not thermoplastic. The disclosure emphasizes again and again the dependence of the method proposed upon the thermoplastic character of the material. Not only does the adjective “thermoplastic” constantly recur, but, although neither heat nor pressure is separately referred to and their reciprocal effects are discussed, it is clearly indicated that it is primarily by heat that the cellulose derivative yarns are to be made to flow and primarily by pressure that the layers of the composite fabric are to be united.

20 35. The use of a thermoplastic derivative of cellulose is fully covered by the claims in Group A (Claims 1–6). Insofar, therefore, as the claims in Groups B and C define a monopoly wider than those in Group A, as they must be regarded as doing, they are, in the Plaintiff’s submission, void as comprehending what was not involved in the inventive idea.

See the recent decision of the House of Lords in *Mullard Radio Corporation v. Philco*, (1936) 2 All E.R. 920, affirming the judgments below, 51 R.P.C. 33, 52 R.P.C. 261.

Validity of Claims in Group D (Claims 19–24)
(Unnecessary, Excessive and Anticipated)

30 36. These claims repeat the varying definitions of processes contained in the preceding groups with the difference that the material to which they refer is specifically cellulose acetate. They are, in the Plaintiff’s submission, open to the same objections as the preceding groups of claims, and the first of them (Claim 19) is open to the additional objection that, comparing it with the fourth (Claim 22), it asserts a monopoly of the use of cellulose acetate without any plasticizer, although when so used in accordance with the directions which the patent gives, cellulose acetate will not produce the intended result. This point is more fully discussed in paras. 50–53 below.

Validity of the Product Claim (Claim 25)
(Excessive and Anticipated)

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37. The only product claim in the patent (Claim 25) is in the following form :
“25. A composite sheet material comprising a plurality of fabrics, at least one of which contains a thermoplastic derivative of cellulose, which fabrics have been united into a single sheet by the application of heat and pressure.”

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38. This claim recurs to and covers only the material referred to in the first group of process claims (Group A), namely a "thermoplastic derivative of cellulose." It is in the Plaintiff's submission open to objections of the same character as the claims in Group A in that it includes the product described in a number of the prior patents already referred to.

39. Having regard to the use of the word "web" in the patent to H. DREYFUS (para. 27) that patent describes a process resulting in a product identical with the product described in this claim. Apart from the interpolation of a limitation as to the use of cellulose derivative yarns, the patent to VAN HEUSEN, and even with such a limitation, the patent to GREEN (para. 27), describe products falling directly within the terms of the claim when read as the Defendant contends that it should be, namely as not requiring that the flowing of the cellulose derivative should depend upon its thermoplasticity. In order to sustain an allegation of infringement against the Plaintiff the Defendant must establish that the concluding words of Claim 25 should be read as if they were "with the "application of heat and pressure," not, as they are, "by the application" &c. Once the Defendant succeeds in doing so, these two patents constitute complete anticipations since, although they suggest the application of heat and pressure, it is not heat but a volatile solvent which causes the flowing of the cellulose derivative in the processes they describe. The only difference in relevancy between the three patents mentioned and the others referred to in paragraph 29 is that the latter omit any express reference to the unessential but unobjectionable heat. 10 20

Invention.

40. Even apart from anticipation the Plaintiff submits that the idea which the patent discloses cannot be regarded as having been an inventive one, no matter how the claims might be expressed consistently with the nature of the idea disclosed and no matter what may be held to be the characteristics of an inventive idea.

41. In this connection reference may be made to four further patents relied upon by the Plaintiff as follows : 30

(a) CROWELL (U.S. 665,996) which discloses the manufacture of a composite fabric rendered waterproof by the use of size and made up of layers caused to adhere by the use of a glue composition.

Note : See this patent, the discussion of it at pp. 85, 125, 189 and 215 of the evidence, and the Defendant's samples alleged to be made according to it (Exs. Z9A and Z9B).

(b) KEMPSHALL (U.S. 768,129) which discloses, for the manufacture of golf balls and other articles, a material which consists of ordinary fabrics combined into a single sheet by placing between them sheets of "celluloid "or like substance" and subjecting the several layers together to "a relatively high degree of pressure and heat simultaneously applied." 40

Note : See this patent, the discussion of it at pp. 87, 127, 190, 248, 273 and 280 of the evidence and the Defendant's samples said to have been made according to it (Exs. Z10A, Z10B and Z10C).

(c) SEGALL (U.S. 1,322,631) which discloses a composite sheet material similar to that suggested by KEMPSHALL as adapted to the manufacture particularly of buttons, collars, cuffs and the like, the combination of fabrics and celluloid sheets being brought about as in KEMPSHALL by "a high degree of heat" and "high pressure."

Note: See this patent and the discussion thereof at pp. 87 and 127 of the evidence.

10 (d) LE FAGUAYS (Swiss 53,333) which discloses various ways of making surgical and orthopaedic appliances by combining one or more ordinary fabrics with one or more sheets of celluloid which have been dipped in a volatile solvent, the layers of the resulting composite sheet being made to adhere by pressure applied while the solvent evaporates.

Note: See this patent and the translation thereof the discussion of it at pp. 101, 191, 260 and 267 of the evidence, the Plaintiff's samples made according to it (Exs. 42 and 43), and the Defendant's contrasting samples (Ex. Z12a-Z12c).

20 (e) C. DREYFUS (U.S. 1,634,613) which discloses the coating of ordinary yarns with cellulose acetate in solution so that a fabric in which these cellulose-acetate-containing yarns were woven should present a given appearance.

Note: See the patent and the discussion of it at pp. 91, 98 and 210 of the evidence. (It is to be noted that this patent, although applied for in 1921, was not issued until 1927).

30 42. Having regard to the disclosures in these patents and in those previously referred to it is clear that it was old (a) to make waterproof composite fabrics of which the layers were caused to adhere by glue (CROWELL), (b) to use celluloid (nitrocellulose with a plasticizer) as a cement to unite the layers of such a fabric, union being obtained by heat and pressure (KEMPSHALL, SEGALL and LE FAGUAYS), (c) to apply to ordinary fabrics a solution of a cellulose derivative in a volatile solvent and to unite the fabrics (now *containing* a cellulose derivative) into a composite sheet (i) without reference to either heat or pressure (BERARD, KENNEDY, WEIDIG); (ii) by pressure only (OLIVER, MILLAR, NACHMANN), or (iii) by both heat and pressure (VAN HEUSEN, H. DREYFUS), (d) to coat ordinary threads with nitrocellulose or cellulose acetate in solution in a volatile solvent (GREEN, C. DREYFUS), (e) to make yarns of cellulose derivatives (*Appended Note*), and (f) to constitute a compound fabric by imposing a cellulose derivative fabric upon an ordinary fabric base without heat or pressure (MILLAR) and with heat and pressure (GREEN, H. DREYFUS).

40 Note: See as to the early manufacture of cellulose derivative yarns, KENNEDY (U.S. 590,842, 1897), and the evidence of the Plaintiff's witness ESSELEN in chief, pp. 77/25; 104/9-41, in the first of which passages the witness confirms the accuracy of the exposition of the processes of manufacturing cellulose derivative yarns contained in the judgment of CLAUSON, J., in *British Celanese vs. Courtauld's* (1933) 50 R.P.C. 63, at pp. 91-94.

43. Even apart from anticipation, it was, in the Plaintiff's submission,

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obvious in view of this state of the art that if one desired to make a composite waterproof sheet material and to use a cellulose derivative as a cement for its component fabric layers, one way of including the cellulose derivative in it would be to use cellulose derivative yarns to constitute one or more of the layers. So far as the patent suggests, there was nothing to be gained by resort to this particular course; the disclosure makes no distinction between those resulting products which cannot be distinguished from the products obtainable by resort to one of the earlier processes and other resulting products (if any) which might be distinguished from the latter.

Note: See the sample of material prepared by the Plaintiff according to the disclosure of the patent in question and admitted by the Defendant's witness to be a proper though, as he contended, an extreme example (Ex. 20), and compare this with the products made according to the processes disclosed by BERARD and LE FAGUAYS (Exs. 40 and 42).

The character of Ex. 20 is described by the Plaintiff's witness ESSELEN, in chief, at pp. 73, 74, and in cross-examination at p. 117, and is discussed by the Defendant's witnesses PLATT, in re-examination, pp. 223, 224, and LEVINSON, in chief, at p. 237. It is compared with Exs. 40 and 42 by the Plaintiff's witness ESSELEN, in chief, at pp. 93 and 102.

44. If the question of invention or subject matter is not to be determined by reference to the obviousness of the idea but by reference to its value, the case for the Plaintiff is even stronger since it appears that the idea in question remained unresorted to commercially for some ten years after its formulation, when it was resurrected upon a subsequent proposal being made by a stranger and used to deprive him of the result of his efforts.

Note: Cf. *Crosley v. C.G.E.* (1936) S.C.R.—

Misleading Statements in the Disclosure
(Cellulose Acetate, Nitrocellulose, Methyl Cellulose)

45. As indicated in paragraph 20, one of the assumptions upon which the general discussion has so far proceeded was that cellulose acetate, nitrocellulose and methyl cellulose can be effectively used for the purpose and in the way indicated in the patent. The following paragraphs are concerned with the soundness of that assumption.

46. The disclosure expressly includes cellulose acetate and nitrocellulose among the thermoplastic derivatives of cellulose which may be used to unite the layers of the composite sheet and close their pores. It states in terms that these, among other materials, may be used either with or without plasticizers to attain the result desired and applies this statement particularly to cellulose acetate, the use of which both with and without the admixture of a plasticizer is expressly claimed (Claims 19 and 22).

Note: See the disclosure, particularly at pp. 403/20, 403/28, 404/20, 404/38, 405/14, 405/25.

47. Moreover, the disclosure states that the uniting of the constituent fabrics and the closing of their pores is to be brought about by the application of heat and pressure within specified ranges, namely "at temperatures between

“ 100° and 180° C. under pressures of from 300 to 600 lbs. or more per square inch.”

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Note : See the disclosure, p. 405/29.

48. In the Plaintiff's submission, the result specified cannot, by observing the directions given, be obtained with cellulose acetate without a plasticizer and, owing to its danger, cannot practically be so by the use of nitrocellulose alone.

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49. Evidence was given on behalf of the Plaintiff that nitrocellulose without the admixture of a plasticizer such as camphor (with which it constitutes celluloid) is not thermoplastic, and that moreover it would be risky to expose it for any length of time to a temperature of over 135° C., since it would be likely to decompose very rapidly or, in other words, to explode. This was fully admitted by the Defendant's witness who said that the point at which nitrocellulose became thermoplastic was so near its explosive point that it would be dangerous to attempt to rely upon its thermoplasticity even to shape it. He does not suggest that at any temperature it could be safely made to flow so as to unite layers of fabric or close their pores.

Note : See the evidence of the Plaintiff's witness ESSELEN in chief, pp. 71/28-72/22, 79/24, and in cross-examination, pp. 113/4-115/3.

See also the evidence of the Defendant's witness LEVINSON, p. 228/15.

50. With regard to cellulose acetate, the Plaintiff's evidence was that it became thermoplastic only at a temperature substantially above the upper limit of the temperature range specified in the patent, namely, between about 200° and 240° C. One of the Plaintiff's fact witnesses was cross-examined on the point and said he had tried to get adhesion with an all cellulose acetate fabric and also with the partly cellulose acetate fabric used as the lining material of the Plaintiff's collars. With neither had he got practically any adhesion even at temperatures up to 190° C. and with pressures high enough to distort the cloth. This evidence was confirmed by that of the Plaintiff's expert witness, who produced two samples (Exhibits 29, 30) resulting from attempts he had made to unite two ordinary fabrics with one composed wholly of cellulose acetate without plasticizer by applying substantially the maximum temperatures and pressures suggested in the disclosure. Notwithstanding attempts to cause the cellulose acetate yarns to flow under temperatures from 179° C. downwards applied at a pressure of 600 lbs. he did not succeed in getting any useful adhesion, although the sample submitted to the higher temperature suffered from scorching.

Note : See the evidence of Plaintiff's witnesses LOEW, in cross-examination, p. 56/38-57/10, and ESSELEN in chief, pp. 72/4-22 and 76/9-44, and in cross-examination, pp. 112/40-115/5.

See also Exhibits 29 and 30 and the discussion of these and of Exhibit 31 (being samples of the fabrics before treatment) by the Plaintiff's witness ESSELEN at pp. 76 and 113.

51. Of these samples only Exhibit 29 was referred to by any witness for the Defendant, and the only remark made upon it was that its gloss or "shine" was due to the thermoplastic character of the cellulose acetate. It was not suggested that any more satisfactory results in the way of union of the fabrics

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or flowing of the cellulose acetate could have been produced at the temperatures and pressures which the disclosure specifies.

Note : See the evidence of the Defendant's witness PLATT, p. 164/18.

This Exhibit 29 is that referred to in the judgment as supporting the conclusion that cellulose acetate alone is thermoplastic and that conclusion is apparently based upon the gloss or shine of the exhibit (300/30). This in the Plaintiff's submission indicates a misunderstanding since the point in issue relates to the use of cellulose acetate alone as a filler and adhesive, not to its capacity to take a polish.

52. On the contrary, the Defendant's answer on this point was substantially confined to an argument that the production of a gloss or shine on a cellulose acetate fabric indicated its thermoplasticity. In support of this answer, the Defendant's witnesses referred to moiré fabrics and to the embossing of patterns on a cellulose acetate fabric. Not only did they not suggest that such a fabric could be united with an ordinary fabric by following the directions of the patent specification, but they in effect corroborated the Plaintiff's evidence that it could not by producing a series of samples of composite fabrics of which one layer was composed of cellulose acetate alone and had been caused to adhere to the others by subjecting them to a temperature of 210°C. and pressures of 300 and 600 lbs. These samples were made of heavily coloured fabrics, the scorching of which would be more difficult to observe than that of white fabrics, which the Defendant's witnesses had used for all the experimental samples exposed to temperatures within the range specified by the patent. Some even of these coloured samples varied in apparent shade and no samples of them in their untreated state were produced for comparison. 10

Note : See as to moiré and embossed fabrics the evidence of the Defendant's witness PLATT in chief, pp. 162/39-164/17, and in cross-examination, pp. 210/14-211/23, 222/16-223/14; and as to the 210°C. samples see the evidence of the same witness in chief, pp. 171/13-173/23, referring to Exs. T 1-3 and U 1-3. 30

See also the evidence in rebuttal of the Plaintiff's witnesses ESSELEN in chief, p. 283/1, STEWART in chief and in cross-examination, p. 285/26.

53. In the Plaintiff's submission, the evidence is conclusive that the directions given in the patent specification for the use of cellulose acetate or nitro-cellulose yarns without plasticizers are incapable when followed of producing the result therein said to ensue from their use according to those directions and that the patent is in consequence invalid.

See *Simpson v. Holiday*, (1867) L.R. 1. H.L. 315; *Vidal v. Levinstein*, (1912) 29 R.P.C. 245 (C.A.). The result would be the same even if the specification were regarded as merely ambiguous instead of misleading on the points discussed : see the cases referred to in the notes to paragraphs 26 and 57. 40

54. With regard to the use of methyl cellulose the Plaintiff's expert witness said that it would be impracticable to use it for a waterproof material because it was soluble in cold water, *i.e.*, water at ordinary temperatures, although it

became less soluble as the temperature of the water was raised and ceased to be soluble when the water was raised to 30° or 40° C. (86°-104° F.). He based his statement upon experiments he had himself made. The Defendant's expert witness agreed that there were forms of methyl cellulose which were soluble in cold water but suggested that there were others which were not, although the only foundation for this suggestion was a recollection of his having seen references to such forms "in literature." He went on to say that the methyl cellulose to which the Plaintiff's witness had referred was a product that had recently been put on the market as a size for textile fabrics and had been deliberately made water soluble. This statement is accepted by the learned trial Judge in his judgment, although there is not a word to support it in the evidence of the Plaintiff's witness. It is difficult moreover to conjecture upon what in other respects the learned trial Judge bases the conclusions upon which the judgment on this point proceeds.

Note: See the evidence of the Plaintiff's witness ESSELEN in-chief, pp. 71/7, 83/17, and in cross-examination, pp. 112/23-113/3.

See also the evidence of the Defendant's witness LEVINSON in chief, p. 229/7.

See also the reasons for judgment, p. 300/39.

20 *Ambiguity of Specification or Excessive Claims (Impermeability)*

55. Another assumption upon which the discussion of the validity of the claims has proceeded was that the patent is not confined to the production of a relatively impermeable fabric but extends to a porous one. The question of the soundness of this assumption may be regarded either as one relating to the ambiguity of the specification or as being whether or not the claims assert a monopoly of processes and products not embodying the inventive idea.

56. The disclosure cannot, in the Plaintiff's submission, be read as containing any suggestion for the production of a fabric that is not at least water-resisting, if not waterproof or gasproof. The only passages which have been referred to as going beyond this are those referring to degrees of impermeability and those appearing in the second and concluding paragraphs in the latter of which it is stated that the patented product may be "employed more particularly for applications where resistance to penetration by water or gas is desired [e.g., waterproof garments and gas containers], but materials made according to the invention may be employed for other technical or industrial applications." In the Plaintiff's submission this passage does not bear the meaning attributed to it by the learned trial Judge.

Note: See the concluding paragraph of the disclosure, p. 406/36, the corresponding passage at its commencement (p. 403/11) quoted in para. 2 above and the reference to both in the judgment of the learned trial Judge, p. 297/15.

See also as to the distinction between water-resisting, waterproof and gasproof fabrics the evidence of the Defendant's witness PLATT, pp. 167/14-168/14.

57. The Plaintiff contends that the passages referred to do not suggest that

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a readily permeable fabric may be produced by the process disclosed, but that the waterproof or gasproof material resulting from the application of the proposed process may be used for purposes in relation to which its waterproof or gasproof qualities are without importance. The Plaintiff suggests that any other reading is inconsistent with the recurrent previous passages in which the disclosure again and again emphasizes the *impermeability* of the resulting sheet material. If the passage in question is to be read as the learned trial Judge holds, the specification as a whole, including both disclosure and claims, is in the Plaintiff's submission, unnecessarily ambiguous and the patent therefore void.

Note: See the cases referred to in the notes to paragraphs 26 and 10
French's v. Electrolytic, (1930) S.C.R. 462, at p. 470; *Crabtree v. Hoe*, (1936)
All E.R. 1639 (C.A.).

58. It is to be observed that in the corresponding United States patent issued only in 1933 on an application filed in 1925 the claims are restricted to sheet materials having an "increased impermeability." Moreover the drawings attached to that patent show the cellulose acetate of the yarns as having flowed and completely closed the pores of the ordinary fabrics composing the sheet as in the case of the Defendant's sample (Ex. Z11f) made with a benzyl cellulose sheet and cheesecloth according to the disclosure in the prior British patent to H. DREYFUS, No. 173021, which relates to the manufacture of substitutes for 20
glass. The sample appears to be, and, in view of the disclosure of the patent according to which it was made, may be assumed to be fully waterproof.

Note: See the corresponding U.S. patent 1,903,960 and the discussion of the figures it contains by the Defendant's witness PLATT in cross-examination, pp. 213/43-215/12.

Compare the condition of the Plaintiff's material after being processed as ascertained from cross-sections of it and described by the Plaintiff's witness LOEW in cross-examination, pp. 143/44-145/11.

59. The importance of the point as to impermeability lies in the fact that the Plaintiff's process does not substantially decrease the permeability of the 30
fabrics of which the collar is composed; in some aspects it may even increase it. Permeability is essential in the case of a collar, as well from the point of view of the comfort of the wearer as in order that it may be readily cleansed. A collar made according to the Plaintiff's process is so permeable that it does not interfere with the normal evaporation from the wearer's body and when dirty can be readily cleansed in the laundry. Upon this characteristic combined with its stiffness its popularity no doubt depends.

Note: See the evidence of the Plaintiff's witness LOEW in chief, pp. 51/12, 137/17-138/15, and in cross-examination, pp. 57/26, 140/1.

60. This permeability is due chiefly to the character of one of the fabrics 40
which the Plaintiff uses. There are three of these fabrics, two being ordinary fabrics forming the outside and inside layers of the collar. The third is the lining and is a fabric in which all the weft threads and two out of three of the warp threads are of cotton, the remaining one in three of the warp threads being of cellulose acetate. These latter are partly dissolved by a volatile

(acetone-alcohol) solvent applied through one of the outer fabrics after the collar is partly finished. The solvent is immediately driven off by pressing the collar (at about 10-20 lbs. pressure) between heated platens one of which is covered with a textile material. The platens are kept at a temperature of about 125°C. The result of the rapid driving off of the volatile solvent is that the dissolved cellulose acetate does not spread; the knuckles only of the cellulose acetate yarns melt and form an adhesive which unites all three fabrics at a series of spaced spots, staggered on opposite sides of the lining material. The small extent to which the pores or interstices between the cotton yarns are affected and the extent to which the cellulose acetate yarns disappear can be inferred from the micro-photographs and drawings, Exhibits 16, 18, 44 and A and the diagram Ex. 19.

Note : See the evidence of the Plaintiff's witness LOEW as to the process, in chief, pp. 49/6-51/38, and in cross-examination, pp. 55/4-57/22, and the discussion of these at pp. 64/29, 105/27-106/41 and 136/35 of the Case.

See also the description of the Plaintiff's product as ascertained from cross-sections which is given by the Plaintiff's witness LOEW in cross-examination, p. 143/44.

61. The Plaintiff's expert witness gave evidence of exact tests of the comparative permeability to water vapour of the unprocessed layers of which the Plaintiff's collars were made up and of the processed composite product. These showed that the processed product was substantially more permeable to water vapour than were the untreated fabrics from which they were made. Apart from certain other tests made by its witnesses (to be referred to), the Defendant sought to answer evidence of these tests only by an argument that some of the pores of the fabric must be to some extent filled up in order to secure adhesion and by vague criticisms of the applicability of the tests. In response to the latter criticisms the Plaintiff's witness showed how even water penetrated the treated composite fabrics more readily than the untreated layers, and suggested that the explanation of the greater permeability of the former was due to the close adherence of the fabrics to one another so as to eliminate any intervening space.

Note : See as to the nature and results of the tests Appendix I to this factum, the evidence of the Plaintiff's witnesses ESSELEN in chief, p. 66/3, and in cross-examination, p. 109/43, and LOEW in cross-examination p. 139/43 the statement Exhibit B, p. 435, and the samples, Exhibits C D1 and D2.

See also the evidence of the Plaintiff's witness LOEW in cross-examination, pp. 57/26-58/13, 141/27 and of the Defendant's witness LEVINSON, in chief, p. 233/35.

62. There were included among the very large number of tests which one of the Defendant's witnesses made and described two series which in effect showed that there was no real conflict of evidence between the parties on the point that the Plaintiff's process did not substantially affect the permeability of the product. The tests this witness made depended upon an instantaneous observation of a continuing experiment in a way those of the Plaintiff's witness

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did not and were rather more complicated than those of the Plaintiff's witness. Although they were not carried out with the same materials as the Plaintiff used, the cellulose acetate fabric (a trade marked product made by the Defendant) had the same arrangement of cellulose acetate threads as the Plaintiff's lining material. The result of these tests was to show that this material combined with two nainsook fabrics remained almost as permeable after having undergone a treatment somewhat similar in character to that used by the Plaintiff as it had been before being treated; it always remained in the "very permeable" class.

Note: As to the nature and results of the tests, see Appendix I.

63. Having regard to the high permeability of the Plaintiff's composite material the passages in the patent specification suggesting various ways of selecting and arranging the layers which are to constitute composite sheets therein proposed acquire a special significance. There is no passage which proposes that one or more ordinary fabrics should be associated with a fabric comprising only *some* cellulose derivative yarns as the Plaintiff does. The only proposals made are (a) to associate ordinary fabrics with *one or more* fabrics wholly composed of such yarns, (b) to associate a "mixed" fabric with one containing only cellulose derivative yarns and (c) to associate *two or more* "mixed" fabrics together. The adoption of this last alternative is expressly stated to be attended "with less advantage," no doubt owing to the reduced impermeability which would be thus attained. 10

Note: See the disclosure of the patent at pp. 403/36-406/18.

64. In the Plaintiff's submission, there is nothing in the evidence to justify the finding of the learned trial Judge on the question of permeability quoted above in paragraph 15 and nothing in the disclosure of the patent suggesting the manufacture of an article having a permeability of the order of that of the composite fabric manufactured by the Plaintiff's process. The Plaintiff therefore contends that if the specification is not ambiguous, the claims assert a monopoly extending beyond the inventive idea and are void on that ground. If they can be supported at all, it submits that they can be so only by attributing to them a meaning too narrow to include the process the Plaintiff uses. 30

PART V.

INFRINGEMENT.

Thermoplasticity and "Softening Agent."

65. There remain to be discussed two further questions which have to do with the issue of infringement. The more fundamental of these is whether the claims are to be interpreted as extending to a process in which the cellulose derivative is not made to flow and act as a cement by the application of heat, *i.e.*, one in which no use is made of any thermoplastic quality it may possess. The other is ancillary to the first and relates to the meaning to be attached to the expression "softening agent" used in the claims. 40

66. Referring back to the claims quoted and discussed in paragraphs 20 and 22 it will be observed that Claim 1 expressly states that the composite sheet is to be made by "subjecting" the component layers "to heat and "pressure, thereby softening the [cellulose] derivative and uniting said fabrics."

The words of Claim 4 require the process to comprise the step of "uniting the fabrics by subjecting them to heat and pressure." The critical question is what these expressions mean and whether, assuming the claims to be valid, they cover the Plaintiff's process. In the Plaintiff's submission Claim 1 clearly does not and Claim 4 should not be construed to do so.

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67. In the Plaintiff's process the softening of the cellulose acetate used is not brought about by heat but by the application to it of a volatile mixture by which it is partly dissolved. This mixture is said by the Defendant's witnesses to act in the cold as a rather more effective solvent of cellulose acetate than is
10 pure acetone, which is the solvent used in the manufacture of cellulose acetate yarns by the usual method of the extrusion of fine threads of a liquid solution of cellulose acetate in acetone, the latter being then evaporated and recovered.

Note: As to the Plaintiff's solvent and its effect, see the evidence of the Plaintiff's witness LOEW, in chief, pp. 49/39-50/6, 136/24, and in cross-examination, p. 55/20.

As to the efficacy of the acetone-alcohol solvent, see the evidence of the Defendant's witnesses PLATT, in chief, p. 177/10, and LEVINSON, in chief, p. 230/21.

As to the use of acetone in the manufacture of cellulose acetate threads,
20 see the evidence of the Plaintiff's witness ESSELEN, in chief, p. 77/11 the exposition of the processes by CLAUSON, J., in *British Celanese v. Courtaulds*, (1933) 50 R.P.C. 63 at pp. 91-94, and the evidence of the Defendant's witness LEVINSON in cross-examination, p. 263/41.

68. The volatile solvent is quickly driven off the partly dissolved cellulose acetate yarns by submitting the collar to a pressure of about 10-20 lbs. at a temperature of about 125°C. No evidence was given to suggest that cellulose acetate yarns such as the Plaintiff uses can be made to flow by being heated to this temperature. On the contrary the Plaintiff submits that it was fully established that they will not by the evidence already discussed (paras. 44-46).
30 It further submits that it was conclusively proved that no heat whatever is necessary to cause the layers of the Plaintiff's collars to unite and that their union occurs even if the collars are allowed to dry at room temperature without either heat or pressure. The purpose of the use of the hot press in the Plaintiff's process is only to drive off the solvent quickly and to secure a smooth result; not only is the pressure used of the order of no more than 3-7% of the lowest pressure recommended in the patent, but there is no such relation as the patent postulates between increasing heat, pressure or time and the increased flowing of the cellulose derivative.

Note: See the evidence of the Plaintiff's witnesses LOEW, in chief, p. 50/25, and in cross-examination, pp. 57/26, 59/1-59/28, and in re-examination, p. 59/20; ST. HILAIRE, in cross-examination, p. 95/5; and ESSELEN, in chief, pp. 74/14-75/32-78/21, and in cross-examination, pp. 118/13-119/27, and the statement Ex. 28, p. 434.

See also the evidence of the Defendant's witness LEVINSON, in chief, p. 238/21.

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69. The Plaintiff accordingly submits that, since in the process it uses the cellulose acetate is not softened by heat, but is in fact hardened, Claim 1 has no application to that process, having regard to its express terms. The same reasoning applies to Claim 19, which specifies cellulose acetate as the material to be softened, but is otherwise identical with Claim 1.

70. There remain Claim 4 and its counterpart Claim 22. Heat and pressure are used in the Plaintiff's process and affect the time, although not the fact, of the union of the component layers of its collars. The Plaintiff's process accordingly falls within these claims, assuming them to be given effect according to their terms when constructed as if they stood alone without reference to the disclosure. The Plaintiff submits, however, that when the specification as a whole is considered and these claims interpreted, as they must be, as part of it, they must be construed as limited, in the same way as Claims 1 and 19, to a process in which the thermoplastic quality of the cellulose derivative is relied upon, or in other words, that they cover only a process in which the derivative is made to flow and close the pores of the constituent fabrics by the application of heat. The Plaintiff moreover submits that this view of their scope is strongly reinforced by the considerations relating to the meaning of the expression "softening agent" about to be discussed. 10

Note: See the points in the disclosure which are referred to in Clauses 20 (a), (b), (c), (i) and (j), of paragraph 18 above.

71. The expression "softening agent" which appears in Claim 4 (and also in Claim 22) is to be related back to the expression "plasticizing or softening agent or solvent" which occurs several times in the disclosure. Specific examples are therein given of the materials it is intended to describe by the expression and these are all capable of use in the ways suggested for the use of any material within the general class, namely, by being incorporated in the cellulose derivative yarns when manufactured, or by being applied to them subsequent to their manufacture after being dissolved in a "volatile solvent."

Note: As to the specific materials proposed to be used as softening agents and the modes of use suggested, see the disclosure of the patent, p. 404/22. 30

72. The Plaintiff submits that in the disclosure the class of materials defined by the expression "plasticizing or softening agents or solvents" are clearly contrasted with the class described as "volatile solvents" which have the property of dissolving them. It would be obviously ridiculous to dissolve volatile solvents in volatile solvents and in the Plaintiff's submission the evidence clearly establishes that volatile solvents could not be incorporated in cellulose derivative yarns when manufactured and more particularly that acetone could not be incorporated in a cellulose acetate yarn, since it is the solvent used in the manufacture of such yarn. 40

Note: See the evidence of the Plaintiff's witness, ESSELEN, in chief, pp. 77/1-77/35, 79/1, and in cross-examination, p. 121/18

See also the evidence of the Defendant's witness LEVINSON, in chief, p. 229/26, and in cross-examination, pp. 262/31-264/33.

See also the evidence of the Plaintiff's witness, ESSELEN, in reply, p. 281/21.

73. The Plaintiff accordingly contends that the expression "softening agent" in the claims in question must be interpreted as meaning softening agents capable of being incorporated in cellulose derivative yarns when made or being applied to such yarns in solution in a volatile solvent. This interpretation is the only one which is consistent either with the directions for their use or with the emphasis in the disclosure on the importance of the thermoplasticity of the cellulose derivative yarns to produce their effect as a cement. Softening agents of this kind would increase the thermoplasticity of the cellulose derivatives with which they were combined or, as the disclosure indicates, assist in the melting or softening effect of heat upon them. Volatile solvents would not; they soften, of course, since the process of dissolution must have a beginning, but that softening occurs quite independently of any increase in temperature. Indeed, as already pointed out, heat is applied in the Plaintiff's process for the purpose of arresting the softening, not of inducing it. It is moreover applied through a platen which is padded in order to permit the escape of the volatilised solvent whereas the patent indicates the use only of metal surfaces and these would not permit the attainment of the desired result, although they would be quite appropriate if a non-volatile softening agent were being used.

Note: See the evidence of the Plaintiff's witness LOEW in chief, p. 51/29, and in cross-examination, p. 57/36, and of the Defendant's witness LEVINSON in chief, p. 234/31.

74. In the Plaintiff's submission, the antithesis in the disclosure is a perfectly proper one which the Defendant now seeks to disregard in order to support an otherwise untenable claim that the Plaintiff's process is an infringement of the patent.

PART VI.

RECAPITULATION.

75. In summary the Plaintiff's submissions on this appeal are that the judgment of the learned trial Judge should be reversed and judgment given declaring either

(i) that the Defendant's patent 265,960 is void on the grounds:

(a) that the patent claims do not specify what is admittedly the "all important feature" of the alleged invention, namely, that the cellulose derivative used should be in the form of yarns woven or knitted into a fabric (paras. 25 ff.);

(b) that as they stand the claims are anticipated by the United States patent to VAN HEUSEN and the British patents to GREEN and H. DREYFUS (paras. 27-28);

(c) that if, in the process the patent covers, the cellulose derivative need not be made to flow by taking advantage of its thermoplastic quality, the claims are also anticipated by the United States patents to KENNEDY, OLIVER and WEIDIG, the British patents to BERARD and

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MILLAR, and the Swiss patents to LE FAGUAYS and NACHMANN (paras. 29-30);

(*d*) that if, on the other hand, it is essential that the cellulose derivative should be made to flow by heat and the claims extend beyond this, they assert a monopoly to more than the patentee invented (paras. 31-35);

(*e*) that claims 7-18 do so extend and are therefore invalid (paras. 32-35);

(*f*) that claims 19-24 do so extend or are unnecessary (para. 36);

(*g*) that the product claim (25) is anticipated (paras. 37-39); 10

(*h*) that the specification discloses no invention having regard to the state of the art (paras. 40-44);

(*i*) that the specification is misleading in respect of the directions given as to the use of cellulose acetate, nitrocellulose and methyl cellulose (paras. 45-54), and

(*j*) that either the specification is ambiguous on the point of the impermeability of the resulting composite sheet or the claims assert a monopoly of more than the relatively impermeable sheets to the production of which the invention is confined (paras. 55-64); or

(ii.) that the process used by the Plaintiff is not an infringement 20
of the patent on the grounds:

(*a*) that the claims extend only to a process in which a thermo-plastic cellulose derivative is made to flow by the application of heat and that this does not occur in the Plaintiff's process (paras. 67-70); and

(*b*) that the expression "softening agent" does not include volatile solvents and that in the Plaintiff's process only a volatile solvent is used (paras. 71-74).

O. M. BIGGAR,

RUSSELL S. SMART,

Of Counsel for the Plaintiff. 30

APPENDIX I.

PERMEABILITY TESTS.

Plaintiff's Tests (pp. 66/3, 109/43).

The Plaintiff's witness ESSELEN stretched the samples to be tested over the mouths of three containers about 5" in diameter similar to a sample produced at the trial and having in each 200 cc. (200 grams) of water. The samples were fastened to the containers by gaskets so that no evaporation of the water could take place except through the material. Each container was covered with the three layers of the Plaintiff's collar material, one sample being unprocessed and the other two processed. After two, four and six hours under identical conditions 40
the loss of water by evaporation was measured. In grams per sq. ft. of fabric it was as follows (Ex. B. p. 435):

SAMPLES.	HOURS INTERVAL.		
	2	4	6
Unprocessed sample (Ex. C. p. 111) ...	0	5.0	13.3
Processed sample A (Ex. D1, p. 111) ...	2.5	15.8	16.7
Processed sample B (Ex. D2, p. 111)83	12.5	16.7

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Defendant's Tests (p. 166/33).

The Defendant's tests were carried out with a glass tube across which the fabrics to be tested were stretched between washers. In the water permeability tests water was introduced into the tube at a constant rate and a reading in centimeters was taken of the depth of water over the fabric at the moment when a bead first showed on the fabric's outside surface. For air permeability tests the apparatus was reversed. The air in the reversed tube was put under a pressure of 10 cm. of water and a reading was taken of the length of time which elapsed before 40 cm. of the air in the tube were forced through the sample. The average results of three samples as given by the Defendant's witness using "Celanese" fabric No. 524 with two nainsook fabrics and a volatile solvent were as follows (p. 183/24):

EX. NO.	VOLATILE SOLVENT	PRESS			PERMEABILITY	
		TIME	LBS. STEAM	LBS. AIR	TO WATER (cm.)	TO AIR (secs.)
Z5 a	Acetone-alcohol 75-25%	15"	cold	20*	5	5
Z5 b	—	un-	pro-	cessed	3	4
Z5 c	Acetone-alcohol 75-25%	20"	50	35	8	5
Z5 d	"	"	35	45	8	6
Z5 e	"	"	"	90	9	7
30 Z6 a	Ethyl-alcohol 70-30%	"	75	50	7	5
Z6 b	"	"	50	35	4	5

* No adhesion: cellulose acetate washed out (184/1, 203/2, 207/4).

The Defendant's witness, PLATT, by whom the tests were made and described, gives the margin of error in these readings as "one up and one down." He

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says that the result of no test made with any particular sample varied more than this from the result of the test of either of the two like samples in the group of which the table gives the average (p. 219/10).

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If this is so, however, the figures given can be exact only in the improbable events that in each of the three associated tests the readings were identical (in which event no average was necessary) or that a different result was obtained for each sample in the group and each of two results varied from the mean by one centimeter or one second in opposite directions. It is in the circumstances unfortunate that the separate readings actually made were not available.

Assuming, however, that the table is accurate, a slightly decreased permeability to both water and air is shown in the case of all the processed samples as compared with the unprocessed. This may be due to the special conditions of the tests which differentiate them from those of the Plaintiff, but in any event the spreads are negligible as appears from the classification of materials submitted to like tests given by the Witness PLATT. 10

His classification in respect of water permeability was as follows: "Very permeable": up to 10 cm.; "Permeable": 17 to 50 cm.; "Less permeable": 50 cm. up to no bead for an hour under a load of 50 cm.; "Waterproof": no bead for more than one hour under a 50 cm. load (p. 167/14). The corresponding classification in respect of air permeability was: "Very permeable": up to 30 seconds; "Easily permeable": 30 seconds to 3 minutes; "Decreasing permeability": 3 minutes to 30 minutes; "Air resistant": 30 minutes to one hour; "Air-proof": one hour and up (p. 167/16). 20

All the samples tested by the Defendant thus fall within the "very permeable" class and none of them approaches any such "degree of impermeability" as the patent suggests. The Defendant appears to have been unable to obtain any degree of impermeability whatever by the use of a volatile solvent without a softening agent of the contrasted kind which the patent specifies.

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PART ONE STATEMENT OF CASE

This is an appeal from a judgment of the President of the Exchequer Court of Canada delivered on March 26th, 1936, following the trial at Ottawa in the previous January, of an action in which the Appellant sought to impeach two patents of invention Nos. 265,960 and 311,185, owned by the Respondent and prayed for a declaration that certain collars or shirts with attached collars, manufactured by the Appellant, do not constitute an infringement of the said patents, or either of them.

By its judgment the Court upheld the validity of Respondent's Patent No. 265,960, and declared it to have been infringed by the Appellant, and furthermore adjudged Patent No. 311,185 invalid, null and void. As the main contest related to the first patent and occupied the greater part of the time of the trial, 40

an apportionment of costs was ordered, three-quarters of same being recoverable by the Respondent against the Appellant, and one-quarter recoverable by the Appellant against the Respondent, to be set off. (pp. 287/3-8 to 304/20-26).

The present appeal has been taken only with respect to said Patent No. 265,960, declared by the Court to be valid and infringed.

The patent in issue deals with the manufacture of composite sheet material by a novel process. This process consists in the uniting of associated fabrics, at least one of which contains yarns of a thermoplastic derivative of cellulose woven into it, by the action of heat and pressure. The cellulose derivative softens and spreads under the action of heat and pressure, and proper adhesion of the fabrics results. In order to assist or increase the softening of the cellulose derivative, use may be made of a softening agent, solvent or plasticizer. Thus a composite sheet material is produced offering many advantages. The process does away with the necessity of using any adhesive substance applied to or coated on the material to be united.

The patent includes 25 claims, 24 of which are process claims and the last of which covers the product. (pp. 406/42 to 409/3.) The first six claims refer to "a thermoplastic derivative of cellulose," the next six ones to "an "organic derivative of cellulose," the following six to "a cellulose ester" and the next six to "cellulose acetate."

Patent No. 311,185, which is not now in issue, relates to a fabric containing a derivative of cellulose suitable for use as a stiffening material. It is referred to in the judgment (pp. 303/13 to 304/19), but not being in issue on the present appeal, it need not be considered further.

Respondent is the owner of the patent in issue (Patent No. 265,960) by assignment dated February 20th, 1926. Plaintiff's Exh. No. 3 (pp. 413/23 to 417/35), from Dr. Camille Dreyfus, to whom it was issued on November 16th, 1926. (p. 402/16.) The patent was applied for on December 18th, 1925, and under the International Convention it has the benefit of the date of application of the corresponding British Patent, namely, January 23rd, 1925. (Defendant's Exh. G.)

The inventor, Dr. Camille Dreyfus, a chemist by profession, is well known in the textile industry and, together with his brother, Dr. Henri Dreyfus, has been associated with the early developments of cellulose acetate as a commercial textile product. He is the President of the Company Respondent, also of Celanese Corporation of America, and a director of British Celanese Ltd. of England, of which his brother, Dr. Henri Dreyfus, is President, all of which corporations have close affiliations. The word "Celanese" itself is a trademark designating cellulose acetate textile fabrics produced by said companies.

The invention covered by the patent concerns the manufacture of a composite sheet material made by uniting under appropriate conditions of temperature and pressure. woven, knitted or other fabrics, at least one of which contains yarns of a thermoplastic cellulose derivative. Cellulose acetate is the derivative mainly used in practice, although the patent extends to other thermoplastic derivatives of cellulose. As above mentioned, under the action of heat and pressure and with or without the assistance or application of a softening agent,

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the cellulose derivative, owing to its thermoplasticity, softens and proper adhesion of the associated fabrics results.

A feature of the invention is the control of the degree of closing of the pores or interstices and degree of intimacy of union of the fabrics, resulting in the desired amount or limitation of permeability of the compound fabric and desired adhesion, depending on the degree and duration of heat and pressure applied, and on whether plasticizers, softeners or solvents are employed. Thus the material produced may be such as to be made water resisting, or even gas resisting, even to such an extent as to be waterproof or gas proof if desired, but it may also be made without closing or reducing to a marked extent the pores or interstices of the component fabrics, according to the requirements of the particular industry for which the material is to be used. 10

The novelty of the invention rests mainly in the use of a cellulose derivative in the form of yarns woven into a fabric, as a means of uniting fabrics under the action of heat and pressure, due to the thermoplastic nature of such cellulose derivative and either with or without the assistance or application of a plasticizer, softening agent, or solvent. No adhesive substance is added for the purpose of uniting, but use is made of the properties of thermoplastic yarns of a cellulose derivative woven into one of the associated fabrics.

The resulting advantage is evident, and particularly so in the collar industry 20 carried on by the Appellant, as the material may thereby be easily manipulated, cut and assembled without hindrance from a foreign adhesive matter.

Moreover, constant results in the amount of adhesion and in the degree of permeability desired will necessarily follow once the proper adjustments have been made in the quantity of cellulose derivative employed, the degree and duration of heat and pressure and the nature and amount of plasticizer, softening agent or solvent used, according to the nature of the materials employed and result desired.

The Respondent has granted licenses under its patent to manufacturers in Canada. License agreements were entered into with Tooke Bros. Limited 30 (Exh. J-1) (p. 435), John Forsyth Limited (Exh. J-2) (p. 438) and Cluett, Peabody & Co. of Canada Limited (Exh. J-3) (p. 441) whereby these firms were granted the right to use said letters patent "to make and sell collars, bosoms " and cuffs that are attached to or are parts of men's shirts or detached collars " made and sold only with shirts of identical material " subject to the payment to Respondent of certain royalties. In the United States, on the corresponding Patent No. 1,903,960 (Exh. No. 5) some 50 to 60 licenses have been granted upon which royalties are being collected. (Blancke, p. 155/19).

The Company Appellant, shirt dealers of Montreal, have been selling collars and shirts with attached collars, known as "Tex-Craft," which Respondent 40 claims constitute an infringement of its said patent. These collars, either attached to or detached from the shirts, are being manufactured since June 6th 1935 (St. Hilaire, p. 94/7) by the firm of L. St. Hilaire Ltée, of St. Romauld d'Etchemin, in the Province of Quebec, exclusively for Appellant and the latter is regarded as the manufacturer thereof by the Department of National Revenue for Canada. (Further Particulars of Objections, p. 4).

The evidence shows that these collars are made from three plies or layers

assembled together, the intermediate one of which contains yarns of cellulose acetate, namely, at every third warp thread. After assembly the collar is thoroughly dampened in what is described as a "wet press" with a solvent consisting of a mixture of acetone and methyl alcohol, which according to Appellant's own witnesses softens the cellulose acetate yarns. Immediately upon being withdrawn from the wet press it is transferred to another press described as a "hot press" and subjected to a temperature of about 250°F and to a pressure of about 10 to 20 pounds per square inch. Upon being withdrawn from the hot press, the collar is completed and ready to be sewed to the collar band. It is again pressed and ironed out before being delivered to the trade.

Respondent contends that the manufacturing of these collars constitutes an infringement of its said patent.

The learned trial Judge upheld the validity of the patent, declaring that there was subject matter of invention, that the instances of anticipation raised against its validity by way of prior patents (there being no evidence of prior user) did not apply, and that the objections raised against the disclosures of the specification and its sufficiency were unfounded. Furthermore, the patent was held to be infringed by the Appellant.

20

PART TWO

POINTS FOR ARGUMENT

The question for consideration is whether the learned President was right in holding that the Respondent's said patent No. 265,960 was valid, and that it had been infringed by the Appellant.

PART THREE

ARGUMENT

1—NATURE OF THE INVENTION

The nature of the invention is fairly set forth in the following paragraph of the specification of the patent, referred to at the trial as paragraph 3 (p. 403/13):—

30

"According to the invention, a fabric or sheet material is made by uniting under appropriate conditions of temperature and pressure, woven knitted or other fabrics composed of or containing filaments or fibres of thermoplastic cellulose derivative or derivatives with woven, knitted or other fabrics composed of or containing filaments or fibres of non-thermoplastic or relatively non-thermoplastic material."

40

"Filaments or fibres" above mentioned have been explained to mean the very fine elements that go to make up the yarns. In breaking up a yarn of cellulose acetate fabric, for example, one finds that it is composed of 20 to 50 individual filaments. (Levinson p. 225/38.) While the "filaments" occur as continuous lengths, the term "fibres" is applied to short lengths cut out of the continuous filaments. (Levinson p. 226/6.) The reference to "filaments" and "fibres" in the patent therefore necessarily implies a cellulose derivative in the form of

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yarns or threads woven into the fabric. A mere coating or application of a cellulose derivative in some form other than yarns would not contain "filaments" or fibres of such derivative.

As the fabric is said to be "composed of or containing" said filaments or fibres of thermoplastic cellulose derivative, such fabric may be made up entirely of yarns of such derivative, or it may be a "mixed" fabric made up partly of such cellulose derivative, and partly of non-thermoplastic material, such as cotton, silk and linen. The other fabric to which it is to be united may also be either wholly or partly made up of "non-thermoplastic material."

Two of such fabrics may be united together, or the respective fabrics may be disposed in any desired relative number in alternation with each other (p. 403/36.) The claims refer to "a plurality of associated fabrics" (p. 406/33.) The specification mentions, in particular, a fabric of thermoplastic yarns "disposed between two fabrics of cotton" (p. 403/40), such as carried out in the manufacture of Appellant's collars. 10

The proportion of thermoplastic cellulose derivative to be used in the fabrics and the combination of the plurality of fabrics are not the only conditions to be adjusted in the carrying out of the process. The degree of heat, its duration, the amount of pressure and the employment or not of a softening agent, are all interdependent and, according to conditions, will produce more or less softening of the thermoplastic cellulose derivative, and more or less closing of the pores or interstices, resulting in greater or less impermeability and adhesion. Thus a wide range of properties of the composite sheet material is obtainable under the invention, according to the requirements. Its application extends to cases where strictly gas proof properties are required by allowing the thermoplastic derivative to flow and film over the material, as well as to cases where good permeability is desired, by using a smaller quantity of cellulose derivative with heat and pressure adjusted accordingly, and to other cases covering all intermediate stages. 20

This wide range of application of the invention is one of its important features and is dealt with at some length in the patent. The following extracts from the specification relate particularly to this aspect of the invention :— 30

"The extent of the melting or softening effect degree of closing the pores or interstices, and intimacy of union of the fabrics and therefore the degree of impermeability of the compound fabric or material produced, can vary with the degrees and duration of heat and pressure employed, and with whether plasticizers, or softeners or solvents are employed, and with the number of fabrics united together, or other circumstances." (pp. 403/47 to 404/14).

* * * * *

"It is to be understood that the degrees and duration of heat and pressure are interdependent and that all or any of these conditions may be varied according to circumstances or requirements. For example, the less the heat, the greater or longer is the pressure required to produce a given effect or vice versa ; or again, the same conditions of heat and pressure may be applied for more or less time to produce the effect in a more or less pronounced degree. (p. 404/14). 40

“ As the melting or softening effect is increased or accentuated by the plasticising or softening agents or solvents, one can employ less heat and/or pressure for the production of a given effect when such agents or solvents are employed. (404/38.)

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10 “ and the associated fabrics are subjected to heat and pressure to unite the component fabrics together and give a material possessing a desired degree of resistance to penetration by water or gases, according to the degree and duration of temperature and pressure, the conditions of heat, pressure and time being interdependent. The less the heat, the greater or the longer is the pressure required to produce a given effect, or the same conditions of heat and pressure may be applied for more or less time to produce the effect in a greater or less degree.” (405/17.)

* * * * *

20 “ Or one may even, though with less advantage, employ only such mixed fabrics for making the compound material under the effect of heat and pressure, with or without application of plasticising or softening agents or solvents, the heat and pressure causing more or less melting or softening of the thermoplastic yarns, filaments or fibres and uniting the component fabrics together to form a compound material possessing greater or less degrees of resistance to penetration by water or even gases, according to the temperature, pressure and duration of pressure or other conditions.” (406/25.)

The opening paragraph of the specification refers to the wide range of application of the invention in the following terms:—

“ This invention concerns the manufacture of new fabrics or sheet materials having waterproof to gas-proof properties or capable of other applications.” (403/11.)

30 The expression “ capable of other applications ” clearly relates to all other uses to which the invention may be put to, apart from the production of sheet materials having waterproof to gas-proof properties.

Also the ending paragraph of the specification, immediately preceding the claims, refers to the particular applications “ where resistance to penetration by water or gases is desired,” but it is said that “ materials made according to the invention may be employed for any other technical or industrial applications.” (406/39.)

40 We will not deal at the present stage with the form in which the cellulose derivative referred to in the patent must be used, nor with the thermoplastic nature of cellulose acetate ; neither will we touch upon the question of “ plasticising or softening agents or solvents ” referred to, as all these points are dealt with further on in dealing with the specification. We wish, however, to set forth briefly the evidence adduced by the Respondent of the workability of the invention under varying conditions as to heat, pressure, softening agent, etc., as contemplated by the patent.

The Respondent produced as its witness at the trial Mr. Herbert Platt, a chemist by profession, connected with Celanese Corporation of America since

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1924, and previously employed by British Celanese Ltd. (then known as the British Cellulose & Chemical Mfg. Co.) who has an extensive knowledge and experience in this technical field. He carried out a number of tests under varying conditions under the patent, and has filed the various samples of material produced, all of which bear out the teachings of the patent. Detailed explanations of such tests, together with the conclusions to be derived from them, will be found in the evidence (pages 165 ff.) We believe, however, that a summary of them in tabulated form may prove useful and convenient and we are summarizing these tests in the order in which they were given at the trial.

10

(1) EXHIBITS N-1, N-2 and N-3.

OBJECT : Tests with *variations in time*. (Pressure and temperature constant).

PROCEDURE : Pluralities of fabrics were made as indicated below, uniting two layers of cotton fabric (nainsook) to one layer of all-Celanese fabric, by means of heat and pressure for "various, "durations of time."
The adhesion or binding together of the fabrics was noted and tests made as to water and air permeability.

PARTICULARS :

20

Inner Layer : No. 427 all-Celanese fabric (Light taffeta construction).
Softening Agent : 23% Mono-methyl Xylene Sulphonamide (applied from 100 parts Benzene- 20 parts Mono) Referred to as Mono-Oil.
Outer Layers : Two pieces cotton fabric (nainsook).
Press : Hydraulic.
Pressure : 300 pounds per square inch of sample.
Time : Varies.
Temperature : 150°C.

30

OBSERVATIONS :

<i>Exhibits</i>	<i>Time</i>	<i>Adhesion</i>	<i>Permeability</i>	
			<i>Water</i>	<i>Air</i>
N-1	½ min.	Fairly good	5 cm.	8 sec.
N-2	1 min.	Good	20 cm.	8 sec.
N-3	2 min.	Very good	40 cm.	3 min.

The above samples are semi-stiff.

CONCLUSION :

The results of the above tests indicate that, as the duration of time increases, the melting or softening effect and intimacy of union of the fabrics increase. The permeability tests to water and air indicate that the longer durations of time give more closing of the pores or interstices of the fabric and decrease the permeability.

Further particulars and comments on the above tests and a detailed description of the apparatuses and materials used will be found in Mr. Platt's evidence (p. 165) It should be pointed out, however, that in interpreting the results for water permeability, the higher the number of centimeters shown, the less is the permeability, and the higher the impermeability. In interpreting the figures as to permeability to air, the longer the time shown, the less permeability there is, and the more impermeability.

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(2) EXHIBITS O-1, O-2 and O-3.

10 OBJECT: Tests with *variations in pressure* (Time and temperature constant).

PROCEDURE: Pluralities of fabrics were made as indicated below, uniting two layers of cotton fabric (nainsook) to one layer of all-Celanese fabric, by means of heat and "various pressures." The adhesion or binding together of the fabrics was noted and tests were made as to water and air permeability.

PARTICULARS:

20 *Inner Layer*: No. 427 all-Celanese fabric (Light taffeta construction).
Softening Agent: 23% Mono-methyl Xylene Sulphonamide applied from 100 parts Benzene- 20 parts Mono) Referred to as Mono-Oil.
Outer Layer: Two pieces cotton fabric (nainsook).
Press: Hydraulic.
Pressure: Varies.
Time: 1 minute.
Temperature: 150°C.

OBSERVATIONS:

30 Exhibits	Pressure (Per sq. in. of sample)	Adhesion	Permeability	
			Water	Air
O-1	300 lbs.	Good	20 cm.	8 sec.
O-2	450 "	Good	25 cm.	40 sec.
O-3	600 "	Very Good	40 cm.	3 min.

The above samples are pluralities of fabrics which are semi-stiff.

CONCLUSION:

40 The results of the above tests indicate that the extent of melting or softening and intimacy of union varies with the pressure. The permeability tests to water and air indicate that higher pressures give more closing of the pores of interstices of the fabric and decrease the permeability.
Mr. Platt's evidence will be found at 169/6.

(3) EXHIBITS P-1, P-2 and P-3.

OBJECT: Tests with *variations in temperature*. (Time and pressure constant).

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PROCEDURE: Pluralities of fabrics were made as indicated below, uniting two layers of cotton fabric (nainsook) to one layer of all-Celanese fabric, by means of pressure and "various degrees of heat." The adhesion or binding together of the fabrics was noted and tests made as to permeability to water and to air.

PARTICULARS :

Inner Layer : No. 427 all-Celanese fabric (Light taffeta construction).
Softening Agent : 23% Mono-methyl Xylene Sulphonamide (applied from 100 parts Benzene-20 parts Mono) Referred to as Mono-Oil.
Outer Layers : Two pieces cotton fabric. (nainsook).
Press : Hydraulic.
Pressure : 300 pounds per square inch of sample.
Time : 1 minute.
Temperature : Varies.

OBSERVATIONS :

<i>Exhibits</i>	<i>Temperature</i>	<i>Adhesion</i>	<i>Permeability</i>		
			<i>Water</i>	<i>Air</i>	
P-1	100°C.	None to very slight	3 cm.	5 sec.	20
P-2	150°C.	Good	20 cm.	8 sec.	
P-3	180°C.	Very Good	1 min.	3 min.	

The pluralities of fabrics produced in samples P-2 and P-3 are semi-stiff.

CONCLUSION :

The results of the above tests indicate that, as the temperature increases, the melting or softening effect and intimacy of union of the fabrics increase. The permeability tests to water and air indicate that the higher temperatures give more closing of the pores or interstices of the fabric and decrease the permeability.

Mr. Platts's evidence will be found at p. 170.

(4)—EXHIBITS T-1, T-2, T-3 and U-1, U-2, and U-3.

OBJECT: Tests with *combined variations in pressure and in time.* (Temperature constant).

PROCEDURE: Pluralities of fabrics were made as indicated below, uniting two layers of cotton fabric (nainsook) to one layer of all-Celanese fabric, by means of heat and various degrees of pressure for various lengths of time, as indicated under "Observations."

The adhesion or binding together of the fabrics was noted 40 and tests were made as to water and air permeability.

PARTICULARS :

Inner Layer : No. 279 all-Celanese fabric....(Heavy satin)
Softening Agent : None.
Outer Layers : Two pieces of cotton nainsook fabric.
Press : Hydraulic.
Pressure : Varies.
Time : Varies.
Temperature : 210° C.

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OBSERVATIONS :

10	<i>Exhibits</i>	<i>Pressure</i> (Per sq. in. of sample)	<i>Time</i>	<i>Adhesion</i>	<i>Permeability</i>	
					<i>Water</i>	<i>Air</i>
Pressure constant	{ T-1 T-2 T-3	300 lbs.	15 sec.	Good	5 cm.	2 min.
		300 lbs.	1 min.	Good	5 min.	—
		300 lbs.	5 min.	Very good	1 hr.	24 min.
Pressure constant	{ U-1 U-2 U-3	600 lbs.	15 sec.	Good	5 min.	13 min.
		600 lbs.	1 min.	Good	48 min.	—
		600 lbs.	5 min.	Very good	1 hr.	36 min.

20 CONCLUSION :

From the above results, it is observed that the samples treated at 600 pounds pressure are less permeable than the samples treated at 300 pounds. The air and water permeability tests also indicate that the fabrics become less permeable with longer pressing. Increased time and increased pressure cause more softening and effect better union of the fabrics.

Mr. Platt's evidence will be found at p. 172.

(5) EXHIBITS V-1, V-2, V-3 and V-4.

OBJECT : Tests with *variations in quantity of softening agent on an all-Celanese (cellulose-acetate) fabric.* (Pressure, time and temperature constant.)

30 PROCEDURE : Pluralities of fabrics were made as indicated below, uniting two layers of cotton fabric (nainsook) to one layer of all-Celanese (cellulose acetate) fabric, by means of heat and pressure.

The adhesion or binding together of the fabrics was noted and tests were made as to water and air permeability.

PARTICULARS :

40 *Inner Layer* : No. 427 all-Celanese fabric (Light taffeta construction).
Softening Agent : Various quantities of Mono-methyl Xylene Sulphonamide (applied from 100 parts Benzene- 20 parts Mono) Referred to as Mono-Oil.
Outer Layers : Two pieces of cotton nainsook fabric.

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Press : Hydraulic.
Pressure : 300 pounds per square inch of fabric.
Time : 30 seconds.
Temperature : 150°C.

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OBSERVATIONS :

<i>Exhibits</i>	<i>Softening</i>		<i>Permeability.</i>		
	<i>Agent</i>	<i>Adhesion</i>	<i>Water</i>	<i>Air</i>	
V-1	14%	Very slight	2 cm.	5 sec.	
V-2	20%	Fairly good	3 cm.	6 sec.	
V-3	32%	Very good	30 cm.	1 min.	10
V-4	42%	Very good	50 cm.	3 min. 40 sec.	

The pluralities of fabrics produced as above were semi-stiff.

CONCLUSION :

The results of the above test indicate that, as the amount of softening agent used is increased, the melting or softening effect and intimacy of union of the fabrics increase. Permeability tests to water and air indicate that, as the amount of softening agent used increases, there is more closing of the pores or interstices of the fabric, and also a decrease in permeability.

Mr. Platt's evidence will be found at p. 174.

(6) EXHIBITS X-1, X-2, X-3 and X-4.

20

OBJECT : Tests with *variations in quantity of softening agent on a mixed fabric.* (Pressure, time and temperature constant.)

PROCEDURE : Pluralities of fabrics were made as indicated below, uniting two layers of cotton fabric (nainsook) to one layer of Celanese/cotton fabric, by means of heat and pressure. The adhesion or binding together of the fabrics was noted and tests were made as to water and air permeability.

PARTICULARS :

Inner Layer : No. 524 Celanese/cotton fabric (Similar to that used in the manufacture of Appellant's collars). 30

Softening Agent : Various quantities of Mono-methyl Xylene Sulphonamide (applied from 100 parts Benzene-20 parts Mono) Referred to as Mono-oil.

Outer Layers : Two pieces of cotton nainsook fabric.

Press : Hydraulic.

Pressure : 300 pounds per square inch of fabric.

Time : 30 seconds.

Temperature : 150° C.

40

OBSERVATIONS :

<i>Exhibits</i>	<i>Softening</i>		<i>Permeability</i>	
	<i>Agent</i>	<i>Adhesion</i>	<i>Water</i>	<i>Air</i>
X-1	13%	Very slight	2 cm.	5 sec.
X-2	20%	Slight	3 cm.	6 sec.
X-3	35%	Good	5 cm.	7 sec.
X-4	45%	Very good	5 cm.	7 sec.

CONCLUSION :

The results of the above tests indicate that, as the amount of softening agent used is increased, the melting or softening effect and intimacy of union of the Celanese/cotton fabric with the two outer layers of cotton fabric increases. It will be noted from both the water and the air permeability tests that, although the decrease in permeability is not large, there is a tendency to be less permeable where more softening agent is used, and the softening effect is greater.

Mr. Platt's evidence will be found at p. 175.

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10 (7) EXHIBITS Y-1, Y-2, Z-1a, Z-1b and Z-1c.

OBJECT : Tests with the use of *different softening agents* with an all-celanese (cellulose acetate) or celanese/cotton inner layer. (Pressure, time and temperature constant.)

PROCEDURE : Pluralities of fabrics were made as indicated below uniting two layers of cotton fabric (nainsook) to one layer of all-Celanese or Celanese/cotton fabric treated with varying softening agents, at constant temperature, time and pressure. The adhesion or binding together of the fabrics was noted. Trials were made as to water permeability.

20 PARTICULARS :

Inner Layer : No. 427 all-Celanese (Light taffeta construction) or No. 524 Celanese/Cotton.
Softening Agent : Varies.
Outer Layers : To pieces cotton fabric (nainsook).
Press : Hydraulic.
Pressure : 300 pounds per square inch of sample
Time : 30 seconds.
Temperature : 150° C.

OBSERVATIONS :

30

<i>Exhibits</i>	<i>Inner Layer</i>	<i>Softening Agent</i>	<i>Permeability</i>	
			<i>Adhesion</i>	<i>Water</i>
Y-1	No. 427 all-Celanese	33% Dimethyl Phthalate	Very good	10 min.
Y-2	No. 427 all-Celanese	33% Triacetin	Very good	20 min.
Z-1a	No. 524 Celanese/ Cotton	35% Mono-methyl Xylene Sulphonamide	Good	5 cm.
Z-1b	No. 524 Celanese/ Cotton	33% Dimethyl Phthalate	Good	12 cm.
Z-1c	No. 524 Celanese/ Cotton	30% Triacetin	Good	5 cm.

40

The above samples are semi-stiff.

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CONCLUSION :

The above tests indicate that, by the use of softening agents, the softening effect and union of the fabrics may be obtained at lower temperatures, pressures, and times, than if softening agents were not used. One factor, therefore, in the degree of softening and the intimacy of union is the softening agent used and its amount. The degree of lowering of the softening point, relative to pressure, temperature, and time, can be controlled by the softening agent and its amount, thus affecting the intimacy of union of the pluralities of fabrics and the permeability to water. Mr. Platt's evidence will be found at p. 176.

10

(8) EXHIBITS Z-2a, Z-2b, Z-2c, Z-2d, Z-2e and Z-2f.

OBJECT : Tests as to the use of *hot rollers to apply heat and pressure.*

PROCEDURE : Pluralities of fabrics were made as indicated below, uniting two layers of cotton fabric (nainsook) to one layer of all-Celanese fabric, with and without softening agents, by means of pressure and heat.

The adhesion or binding together of the fabrics was noted.

PARTICULARS :

Inner Layer : W-279 all-Celanese fabric (heavy satin).

Softening Agent : None or various.

Outer Layers : Two pieces cotton nainsook fabric.

Heated Rollers : Calender with two heated steel rollers.

Pressure : Normal used on calender.

Speed of Calender : Six yards per minute.

Temperature : Varies.

20

OBSERVATIONS :

<i>Exhibits</i>	<i>Softening Agents</i>	<i>Rolls</i>			
		<i>Temp. °C.</i>	<i>Pressure</i>	<i>Adhesion</i>	
Z-2a	None	260°C.	Full	Good	30
Z-2b	Mono-Methyl Xylene Sulpho- namide (100 Benzene-40 mono) Referred to as Mono- Oil	220°C.	Full	Good	
Z-2c	Dimethyl Phthalate (100 Ben- zene-40 DEP)	200°C.	Full	Good	
Z-2d	70 : 30 Ethyl Alcohol/Water	190°C.	Full	Good	
Z-2e	Acetone	190°C.	Full	Good	
Z-2f	Acetone	170°C.	Full	Good	

The above samples are semi-stiff.

CONCLUSION :

The above tests, using No. 279 heavy all-Celanese satin, indicate that heated rollers may be used to give the necessary heat and pressure to form a plurality of plies according to the patent, either with or without softening agents.

Mr. Platt's evidence will be found at p. 180 ff.

40

(9) EXHIBITS Z-4a, Z-4b, Z-4c, Z-4d and Z-4e.

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OBJECT : Tests for the making of air proof and waterproof fabrics with an Inner Layer pretreated with a softening agent.

PROCEDURE : Pluralities of fabrics were made as indicated below, uniting two layers of fabric to one layer of all-Celanese fabric, by means of heat and pressure.

The adhesion or binding together of the fabrics was noted and tests were made as to water and air permeability.

PARTICULARS :

- 10 *Inner Layer :* No. 280 all-Celanese fabric (heavy).
Softening Agent : Mono-methyl Xylene Sulphonamide (applied from 100 parts Benzene-20 or 30 parts Mono) Referred to as Mono-Oil.
Outer Layers : Cotton print cloth or silk.
Press : Hydraulic.
Pressure : 600 pounds pressure per square inch of fabric.
Time : Varies.
Temperature : Varies.

20 OBSERVATIONS :

Exhibits

	<i>Softening Agent</i> (% Mono-oil)	<i>Outside Layers</i>	<i>Temp.</i>	<i>Time</i>	<i>Adhesion</i>	<i>Permeability</i>	
						<i>Water</i>	<i>Air</i>
Z-4a	30%	Cotton	160° C.	1 min.	Very Good	1 hr. (Water-proof)	22 min. (very air resistant)
Z-4b	30%	Cotton	180° C.	1 min. (cool)	Very Good	Over 1 hr. (Water-proof)	1 hr. no loss (gasproof)
30 Z-4c	30%	Silk	180° C.	1 min. (cool)	Very Good	Over 1 hr. (Water-proof)	1 hr. no loss (gasproof)
Z-4d	20%	Cotton	200° C.	30 sec.	Very good	Over 1 hr. (Water-proof)	1 hr. (gasproof)
Z-4e	20%	Silk	200° C.	20 sec.	Very good	Over 1 hr. (Water-proof)	1 hr. 25 c.m. (quite resistant to air)
40							

CONCLUSION :

The results of the above tests indicate that waterproof and air-proof fabrics may be obtained using an inner layer of all-Celanese fabric pretreated with a softening agent and outside layers of cotton or silk fabric, and subjecting

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them to heat and pressure, so as to effect softening and the union of the fabrics and closing of the pores or interstices.

Mr. Platt's evidence will be found at p. 181 ff.

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(10)—EXHIBITS Z-5b-Z-5a, Z-5c, Z-5d, Z-5e, Z-6a and Z-6b.

OBJECT : Tests as to the use of varying softening agents, along with No 524 Celanese/cotton fabric similar to that used in the manufacture of Appellant's collars.

PROCEDURE : Pluralities of fabrics were made as indicated below, uniting two layers of cotton fabric (nainsook) to one layer of Celanese/cotton fabric with the use of varying softening agents by means of heat and pressure. 10
The adhesion or binding together of the fabrics was noted and tests were made as to water and air permeability.

PARTICULARS :

Inner Layer : No. 524 Celanese/cotton fabric (similar to that used in the manufacture of Appellant's collars).

Softening Agent : Varies.

Outer Layers : Cotton nainsook fabric.

Press : American. 20

Pressure : Varies.

Time : Varies.

Temperature : Varies.

OBSERVATIONS :

<i>Exhibits</i>	<i>Softening Agent</i>	<i>Temp.</i>	<i>Time</i>	<i>Pres- sure</i>	<i>Permeability</i>		
					<i>Adhesion</i>	<i>Water</i>	<i>Air</i>
Z-5b	None	None	None	None	None	3 cm.	4 sec.
Z-5a	75 : 25 Acetone/ CH ₃ OH Pad 12 sec. (similar to that used for Ap- pellant's collars)	Cold	15 sec.	20 lbs. air	Prac- tically none (after drying)	5 cm.	5 sec.
Z-5c	Ditto	50 lbs. steam	15 sec.	35 lbs. air	Good (compare with Exh. Z-5b)	8 cm.	5 sec.
Z-5d	Ditto	35 lbs. steam	20 sec.	45 lbs. air	Good (compare with Exh. Z-5b)	8 cm.	6 sec.
Z-5e	Ditto	35 lbs. steam	20 sec.	90 lbs. air	Good (compare with Exh. Z-5b)	9 cm.	7 sec.
Z-6a	70 : 30 C ₂ H ₅ OH/H ₂ O (Ethyl alcohol and water)	75 lbs.	20 sec.	50 lbs. air	Good	7 cm.	5 sec.
Z-6b	Ditto	50 lbs. steam	20 sec.	35 lbs. air	Good	4 cm.	5 sec.

20

30

40

NOTE: The softening agent used for Exhibits Z-5a, Z-5c, Z-5d and Z-5e is a mixture of acetone and methyl alcohol, similar to that used in the manufacture of Appellant's collars.

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10 The results of the above tests indicate that, by the use of softening agents, a union of the Celanese/cotton fabric with the cotton nainsook is obtained at lower temperatures and pressures than it would be without such use. 75 : 25 Acetone/methyl Alcohol is a solvent for cellulose acetate at ordinary temperatures, whereas 70 : 30 Ethyl Alcohol/Water is not a solvent at room temperature, but is a solvent, when warm. Two types of solvents are, therefore, illustrated. In comparing the treated samples with the Blank (Exh. Z-5b), it will be noted that the treated samples are relatively less permeable than the Blank. It is of interest to note that sample (Exh. Z-5a) has practically no adhesion; this sample was pressed cold and, therefore, came out of the press damp with solvent and was eventually dried up at room temperature without pressure.

Mr. Platt's evidence will be found at p. 183.

20 The above tests and exhibits produced illustrate the wide range of application of the invention and the varying results which may be secured under different conditions of operation. They also bear out the teachings of the patent as to the necessity of the application of heat and pressure on the thermoplastic cellulose derivative, with or without the assistance of a softening agent in order to secure proper adhesion of the associated fabrics. While some of the samples produced are highly resistant to water and air, and some are even gas-proof, others show a very good permeability to both water and to air, such as for example Exh. Z-1c, made with mixed celanese/cotton layer similar to that used in the manufacture of Appellant's collars. At the trial, a demonstration of permeability was given in connection with this exhibit as a drop of water was applied on the material by means of an eye dropper, and the liquid at once
30 went through (p. 178/24).

This process differs completely from previously known methods for uniting textile fabrics and is based on a completely novel idea as will appear from an examination of the prior art.

II — THE PRIOR ART.

Not a single instance of prior user has been cited by Appellant against the validity of the patent.

The only cases of anticipation alleged relate to prior patents. We will consider them in the order in which they appear in the Book of Exhibits.

KENNEDY *U.S. Patent* No. 590,842 of 1897.

40 This patent deals with a method for waterproofing cloth and ropes by spraying a solvent thereon. It does not relate to the uniting of associated fabrics. It has been cited against both patents originally involved in the case, but its pertinency to the patent now in issue is extremely remote.

The Kennedy Patent states that a woven fabric may have woven in it threads, fibres or strands of nitro-celulose or its equivalent, acetate of cellulose

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(line 50). In order to obtain waterproofness, the fabric is sprayed or otherwise treated with a suitable solvent (without stating its nature) which converts the nitro-cellulose into pyroxylin (although the two terms designate the same substance) and the patent states that the pyroxylin diffuses and impregnates the raw fibres, as a result of which the product is water-proof and remains uncoated and unglazed. It is difficult to conceive how that happens. However, the main objection to this patent is that it does not deal at all with the uniting of "a plurality of associated fabrics" for making a composite sheet material. There is of course no application of heat or pressure for the purpose of uniting, nor is there adhesion of two fabrics, and neither is there any control possible of the degree of permeability. Kennedy shows merely a treatment of some kind of a single layer of fabric and his only purpose is to produce waterproofness. 10

Reference may also be made at this stage to the Marsden German Patent of 1897 (Exh. F) which corresponds to the Kennedy U.S. Patent as admitted by Appellant's witness Dr. Esselen (p. 123/14). While in the Kennedy Patent there is no disclosure as to how to make threads of nitro-cellulose, in the Marsden Patent there is such a disclosure. The method therein described would be utterly inoperative. (Levinson p. 243/24).

OLIVER U.S. Patent No. 607,454, of 1898. 20

This patent relates to the making of belting or driving-bands, which go around pulleys, to drive machinery. Two layers of canvas or duck (shown on the drawings as "A") are impregnated with a solution of celluloid after which they are dried and then pressed together. There is no mention of the use of heat for this pressing operation. There is an enveloping strip (shown on the drawings as "B") which has also been impregnated with the celluloid solution and is placed around the assembly of the two fabrics, and that is pressed to get the final belting.

Any relation to the patent in issue is again very remote. Oliver deals with heavy belting material and not with sheet material such as might be used to make collars. "Canvas" is the material referred to in each of the claims and is specially distinguished by the inventor from lighter and finer textile fabrics (p. 1, line 81). While the Oliver patent mentions a cellulose derivative (celluloid solution) it is used in the form of an impregnation of the fabric and not in the form of yarns or threads. No heat is used in the uniting of the material; the only mention of heat relates to the drying of the impregnated fabric (p. 1, line 67). 30

A sample of the product covered by the Oliver patent has been filed as Exh. Z-8, having been made by Mr. Platt in accordance with the teachings of the patent (p. 189/24). It is clearly a product of a different type altogether from that contemplated under Respondent's patent. 40

CROWELL U.S. Patent No. 665,996, of 1901.

This patent appears to deserve very little consideration. Its object is to produce a compound stiffening fabric. A use for which it is especially designed is in the manufacture of tip and counter stiffeners for boots and shoes (p. 2, line 8) Exhibits Z-9a and Z-9b are samples prepared by Mr. Platt under the teachings of this patent. It is a stiff product, which may be excellent box-toe material

for making shoes (Platt p. 190/13), but which in no way resembles the flexible sheet material covered by Respondent's patent.

This stiffening material is made in two steps. Two layers of fabric are sized with a waterproof size, the composition of which is undisclosed. These two sheets are united together to form a two ply material. Thereupon two of these two assemblies are united by the aid of a glue composition. Therefore no use is made of yarns of any kind, for causing the uniting of fabrics. The materials for uniting, under the Crowell patent, are, in the first instance, a waterproof size, and in the second instance, a glue. No reference is made to the
 10 use of a cellulose derivative, nor to the use of heat for the purpose of uniting.

Moreover as glue is used under the patent, which is rendered even more absorbent to water by the addition of glucose to unite the two assemblies, such glue would dissolve if the assembly were subjected to the action of water (p. 245/19).

WEIDIG *U.S. Patent* No. 696,123, of 1902.

This patent relates to the preparation of a surgical dressing, and particularly of that type of dressing that is to be used as a substitute for plaster casts, splints and the like, to keep in place a broken bone. According to Weidig a cotton fabric, muslin, is treated with a nitrating acid mixture, it being stated
 20 that the treatment is such that only the exterior portion of the threads becomes nitrated, while the inner portion remains as a core of ordinary cellulose. The cotton fabric so treated, when to be used, is wrapped around the member of the body, and then a solvent for the nitro-cellulose is applied, and thus the nitrated cellulose becomes colloided, that is, becomes a solid mass, and the fibrous structure disappears.

The object of said patent, therefore, is quite different from that of Respondent's patent. The Weidig patent does not relate to the manufacture of "composite sheet material". No use is made of yarns of a cellulose derivative for the purpose of uniting, nor of heat or pressure. The nitro-cellulose (pyroxylin) is
 30 not part of the original fabric, but results from the application of a solvent after the cotton has been first nitrated with an acid mixture. The final product, is a solid mass of nitro-cellulose in which the fibres are destroyed.

This process bears no resemblance to Respondent's patent. Appellant's own expert witness has admitted that under this patent there is no uniting into a single sheet by the application of heat and pressure. (Esselen p. 86/22).

LEHNER *U.S. Patent* No. 713,999, of 1902.

This patent was cited only against Respondent's Patent No. 311,185 and need not be considered.

KEMPSHALL *U.S. Patent* No. 768,129 of 1904.

The Kempshall Patent relates to the making of sheet material that is to be used as coverings for golf-balls, or other articles. A fabric is first impregnated with a solution of celluloid and then it is placed between two sheets of celluloid and the assembly is united under heat and pressure. The product is a thick, tough and stiff material "that is particularly adapted for use in making the outer shells of golf balls and like articles requiring a high degree of toughness and stability when subjected to wear and to blows" (p. 2, line 26).
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This patent differs from the patent in issue in that the cellulose derivative is present, not in the form of yarns, or filaments, but in the form of heavy, continuous sheets of celluloid. Also, while in the Kempshall patent a solution of celluloid requires to be first impregnated in the fabric, no such impregnation takes place under Respondent's patent as the cellulose derivative is already present in the form of yarns woven into the fabric.

Celluloid sheets under this patent are not "fabrics" within the meaning of Respondent's patent and therefore there is no uniting of fabrics.

The product, of course, is bulky and hard and could hardly be stitched. No collars could be made with it. 10

Exh. Z-10c was filed by witness Platt as representative of the product under this patent. Exhibit Z-10a is a sample of the canvas and Exh. Z-10b a sample of the celluloid sheet used in making the product.

Exh. 37 was filed by Appellant's witness as made under this patent (p. 87/18), but Exh. Z-10c looks more like a golf ball material and is more representative. (p. 190/31 ; p. 248/44).

Appellant's counsel when examining Dr. Esselen compared Exh. No. 37 with Exhibit No. 20 made under Respondent's patent and suggested there was celluloid on the latter (p. 88/1). This may be an error in the transcript as it was subsequently clearly established that the shiny side on Exhibit 20 consisted 20 of cellulose acetate and not of celluloid (p. 249/10).

As between the Kempshall patent and the one in issue, both the objects and the methods of manufacture are clearly different.

SEGALL *U.S. Patent* No. 1,322,631, of 1919.

This patent deals with the uniting of textile fabrics with sheets of celluloid by the application of heat and pressure. A thick product results as appears from the drawings of the patent. Figures 4, 5, 6 and 7 show buttons.

The patent has a close connection with the preceding one to Kempshall but has no relevancy to Respondent's patent. There are no yarns of any cellulose derivative. There is no cellulose acetate or other organic derivative of cellulose 30 present. The patent in effect only covers the amalgamation of sheets of celluloid with a textile fabric. There is a reference to collars, cuffs and analogous articles, (p. 2, line 127) but these would be the old fashioned celluloid collars and cuffs. Soft or semi-stiff collars could not be produced under the patent.

The problem under that patent is quite different from that under Respondent's patent which deals with a composite material made of plies of fabrics in one of which are yarns of a cellulose derivative used for uniting the fabrics.

DRYEN *U.S. Patent* No. 1,377,761, of 1921.

This patent has been cited only against Respondent's patent No. 311,185, and, therefore, need not be considered. 40

VAN HEUSEN *U.S. Patent* No. 1,479,565, of 1924.

This patent covers primarily the use of a cement or binding agent to unite the plies of fabrics in the making of collars. Such cement or binding agent is used in the form of a coating and not in the form of yarns forming part of the intermediate layer.

In the form of the disclosure the plies of the fabric are coated on their inner surfaces with either a solution of nitro-cellulose or cellulose nitrate (which are

cellulose derivatives) or with a solution of cellulose in a cellulose solvent (which is not a cellulose derivative), such as cuprammonium solution. The surfaces so coated are brought together and united by suitable means. No use appears to be made of heat for the purpose of uniting plies where a cellulose derivative is resorted to, but only when use is made of a solution of cellulose (p. 1 line 103):—

“ In the case of a solution of a cellulose derivative in an organic solvent, the solvent may be partly evaporated before the layers of the fabric are secured together. In other cases, the pieces of fabric may be put together and pressed in a heated press to modify or change the binding material and convert it into its final form.”

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Van Heusen, therefore, resorts to a coating of nitro-cellulose for the purpose of uniting and does not resort to a cellulose derivative in the form of yarns, filaments or fibres. Neither does Van Heusen take advantage of the thermo-plasticity of the cellulose derivative for the purpose of uniting the fabrics under the action of heat and pressure. As a result, no range of permeability of the final product is at all possible under the Van Heusen patent. This has been acknowledged by Appellant's expert witness Dr. Esselen, who states that a continuous film is formed which makes the product waterproof. (Esselen p. 90/37).

20

The Appellant has filed as exhibit 38 a sample which is supposed to have been made in accordance with the teachings of the Van Heusen patent. The witness described this sample as having been made “from two fabric webs which have been united under heat and pressure after they have been coated on one side with a nitro-cellulose solution and part of the solvent has been allowed to dry” (p. 90/25). In view of the fact that a cellulose derivative was used namely, a nitro-cellulose solution, and that heat was applied for the uniting of the fabrics, the process departed from the teachings of the patent (Levinson p. 252/41.)

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No use has ever been made of this patent. The type of collars described in this patent is not the familiar Van Heusen collar well known in the market (Levinson p. 252/15.)

The learned trial judge has made in connection with the above patent the following pertinent remarks (p. 295/30):

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“Now there is no reference in Van Heusen to the use of a thermoplastic cellulose derivative in the form of yarns, woven into one of the two or more fabrics to be united, and which may be cut and sewn and handled like any other fabric, and this, I think on grounds of utility, would be much more desirable and convenient than dealing with pieces of fabrics that were coated with a cementing material. Van Heusen, in my opinion, is not an anticipation of Dreyfus.”

SCHLOSS *U.S. Patent* No. 1,614,528, of 1927.

This patent has been cited only against Respondent's Patent No. 311,185, and need not be considered.

DREYFUS *U.S. Patent* No. 1,634,613 of 1927.

This patent has been cited only against Respondent's Patent No. 311,185, and need not be considered.

NEIDICH *U.S. Patent* No. 1,651,404 of 1927.

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WOODMAN & DICKIE *U.S. Patent No. 1,716,255, of 1929.*

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This is a patent granted to T. C. Woodman and W. A. Dickie, assignors to Celanese Corporation of America, dealing with a process for increasing the impermeability of a single layer of sheet material. It does not relate to the uniting of textile fabrics and its object is not a composite sheet material made from a plurality of associated fabrics.

Apart from this lack of relevancy with respect to subject matter, we submit that the patent is not admissible in evidence on account of its date. The patent was issued on June 4th 1929 and applied for on December 8th 1925. The corresponding British Patent was applied for on January 10th 1925 and was accepted on April 8th 1926, when the provisional specification and complete specification were placed open to public inspection. It may be interesting to note that British Celanese Ltd. appear as co-applicants for this corresponding British Patent jointly with T. C. Woodman and W. A. Dickie. 10

The priority date of application to which respondent's patent is entitled, namely, January 23rd 1925, anticipates the date of issue of the Woodman and Dickie U.S. Patent (June 4th 1929), and the date of acceptance of the British Patent (April 8th 1926), when it became open to public inspection. The Woodman & Dickie U.S. patent cited against the validity of Respondent's patent cannot, therefore, be invoked as a prior publication. Neither can it be invoked as proving prior knowledge by T. C. Woodman and W. A. Dickie, as no proof whatever has been made that they had ever disclosed or used the invention in such manner that it had become available to the public at any time prior to January 23rd 1925, in accordance with the provisions of section 61, par. 1 (a) of the Patent Act 1935. The priority date of January 23rd 1925 of Respondent's patent has precedence over all these. 20

In fact Appellant's Counsel at the trial did not press the relevancy of said Woodman & Dickie U.S. patent with respect to its date, and the learned trial judge, we submit, has rightly rejected it by his judgment (p. 295/36). 30

BERARD—*British Patent No. 607, of 1856.*

This patent relates to the application of collodion (which is a solution of nitro cellulose) as a means for rendering waterproof fabrics and other substances. As an alternative the application of collodion in the form of a coating is used as a means for uniting two fabrics together. This collodion may be passed on to a sheet of glass and the film formed may then be united by pressure to cloth, or the film may be used to unite two fabrics together. In another form, instead of preforming the sheet material, the collodion is supplied to the fabric in the form of a coating. No heat is resorted to. 40

This patent differs from the one in issue in that there are no yarns or filaments of a cellulose derivative used for uniting, but rather sheets or coatings. The only reference to a derivative of cellulose is that of nitro cellulose (collodion) which is an inorganic derivative of cellulose. No reference is made to cellulose acetate or any other form of organic derivative of cellulose. The reference is

merely to a provisional specification which does not appear to have ever been followed by a complete specification.

GREEN—*British Patent* No. 9879, of 1889.

This patent is a tedious and long document quite hard to understand. It has for its object merely to impart to fabric threads and other articles a silk-like lustre. Octo-nitro-cellulose is used for this purpose in the form of a coating applied to the article.

The patent states that the invention is carried out as follows: (p. 3 line 4).

10 “In carrying out this invention I coat and treat other threads, “filaments, fabrics, paper, papier-maché, lace, fringe, trimmings, ribbons, “perforated and embossed fabrics and paper advertising and other cards, “buttons, flowers real or artificial, dress and other ornaments, fictile and “other articles or vessels as vases, scent and other bottles, jewelry and “other articles, materials or matters with octo-nitro-cellulose as above “described.”

Octo-nitro-cellulose referred to is a form of nitro-cellulose, although according to the description of the patent, after the coating is applied, this octo-nitro-cellulose is treated to disengage some of the nitric acid. (p. 2 line 45).

20 With reference to fabric, there is a description of applying a coating of the octo-nitro-cellulose to the whole surface of the fabric, or alternatively only to a portion of it. The solution of this octo-nitro-cellulose is forced through jets on to a fabric in a manner very analogous to the application of icing on a cake, that is squirting the material in a stream on to the surface. (p. 3 line 36).

This patent has no analogy with respondent's patent, as it relates to the application of octo-nitro-cellulose in the form of a coating, or in the form of a stream in thin form on the fabric. There is no yarn used for the purpose of uniting. In fact the invention is for coating articles and not for uniting or for making composite sheet material from a plurality of associated fabrics.

No use appears to have ever been made of the patent (p. 257/40.)

30 MILLAR—*British Patent*—No. 17,549, of 1898.

This patent covers the production of fabrics from liquid or plastic materials. The liquid material exudes from a nozzle in a fine thread-like stream and falls upon the surface of a web.

This process bears a close analogy to that disclosed in the Green patent. Essentially the patent describes making a sheet material by taking this extruded stream on to an oilcloth surface to which the extruded solution does not adhere, so that upon treatment it may be removed and be used as such. In another modification, instead of using a non-adherent surface of oilcloth, there is a fabric that is used, and the coating is directly applied on the fabric in this manner.

40 Here again we have just a coating of the cellulose nitrate in the form of streams of some kind on to a cotton fabric. There is no reference whatever to the use of heat.

The comparison previously made in connection with the Green patent with icing on a cake holds good for this patent also.

The coating thus produced is not a textile fabric as there is, of course, no intertwining of the component parts and it would be quite brittle in view of the

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fact that it is made of nitro-cellulose, without any plasticizer, and that the streams from which it is made are relatively thick. (Levinson p. 259/6).

The patent is quite distinguishable from Respondent's patent, as it does not relate to the uniting of fabrics, nor does it deal with the presence of yarns of a thermoplastic derivative of cellulose in one of the fabrics. The object and the mode of operation are completely different from those in the patent in issue.

HENRI DREYFUS—*British Patent* No. 173,021, of 1921.

This patent deals with reinforced sheet webs, plates or the like employed "as glass substitutes in glazing and for other purposes." (p. 88/27.) Such sheets are used in association with open meshed metallic or textile fabrics. 10

One alternative provides for the use of a solution of cellulose ethers, through which an open meshed fabric is passed, thus picking up the required quantity of cellulose ethers to close up the interstices, and the product is then dried. The other alternative covers the making of a sheet or film of cellulose ether which is united to a metallic, or textile open meshed fabric by heat and pressure. The patent states that the fabric is "embedded" in the films. Alternatively the fabric may be placed between two such films.

The relevancy to the patent in issue is extremely remote. It does not show the use of cellulose derivative in the form of yarns, but rather in the form of sheets or coatings. There is no uniting of associated textile fabrics to form 20 a composite sheet material. The purpose of the patent is the production of reinforced sheet webs or plates. In substance the patent provides for a sheet of cellulose ether reinforced by a metallic or textile fabric. There is no question of having the cellulose derivative present in the form of yarns woven in a fabric.

Exhibits Z-11a to Z-11f have been filed by Respondent and are representative of the product under this patent. (Platt p. 190/35; Levinson p. 259/42.)

Exhibit 41, which was filed by Appellant, is not representative of the product under such patent, as the fabric used in making it is a closely woven one, having no transparency, and does not meet the requirements of the patent 30 which calls for a glass substitute in which open meshed material is used. (Levinson p. 259/45.)

SPONHOLZ—*British Patent* No. 262,034, of 1926.

This patent has been cited only against Respondent's patent No. 311,185, and, therefore, need not be considered.

LeFAGUAYS—*Swiss Patent* No. 53,333, of 1910.

This patent relates to the making of surgical appliances in which fabrics of various natures, such as cloth, leather, felt, rubberized fabric, etc., are united with one or more sheets of celluloid. The uniting is done with the aid of a solvent for the celluloid. 40

The distinction with Respondent's patent is again evident, as it deals with the cellulose derivative in the form of sheets and not in the form of yarns, fibres or filaments. The resulting product is stiff and not flexible, as it has to be used as a splint for supporting or holding in place broken bones and such things. The product can hardly be called a textile fabric, but it is rather a plastic mass.

Exhibits Z-12a, Z-12b and Z-12c filed by Respondent are representative of this patent. (Platt, p. 192/6 ; Levinson p. 261/11.)

Appellant has also filed samples as Exhibits 42 and 43, which, however, are not representative, as the patent specifically calls for a rigid product referred to as "composite rigid sheet."

The process is entirely different from Respondent's patent in which a plurality of associated fabrics are united by reason of the thermoplastic nature of yarns of a cellulose derivative woven into one of the fabrics. The product is also of a different nature and serves a different purpose.

10 NACHMANN, *Swiss Patent No. 77,238*, of 1919.

This patent deals with a process for the manufacture of shoe soles from fabrics made water-tight by means of celluloid. It relates to the preparation of sole leather in which a plurality of fabrics are first individually impregnated with leather cement containing celluloid. After these fabrics have been partly dried, they are pressed together and then the drying is completed.

Here again we have no use of a derivative of cellulose in the form of yarns or filaments, the celluloid in this case being in the form of an impregnation. No heat is disclosed for the operation of uniting.

20 The resulting product would be quite stiff as it is intended to be used for shoe soles. It is described as having good resistance (strength) and being water-proof (p. 190/35). Exhibits Z-13a, Z-13b and Z-13c have been filed by Respondent as illustrating such product. (Platt p. 192/38).

The process and resulting product are obviously different from those covered by Respondent's patent.

Such is the whole of the prior art cited by Appellant against the validity of Respondent's patent. No prior use has been raised against the patent. Furthermore, however remote the above prior patents may be from the patent in issue, none of them has been proved to have ever been put to use.

30 A review of the prior art, in fact, brings out still more forcibly the novelty of Dr. Dreyfus' invention under the patent, as nowhere do we find disclosed or even suggested, the process of making composite sheet material by uniting, through the action of heat and pressure, associated fabrics in at least one of which are yarns of a cellulose derivative woven into it. In all the instances cited, where uniting is to take place, an extraneous substance has to be resorted to in order to produce adhesion, such as in the form of a coating, spraying or impregnation. In no case is there any control over the range of permeability or degree of adhesion. Also the many other benefits derived from the invention which makes it so suitable to the collar industry such as easy manipulation of the material, constant results obtainable and even simplicity of operation are
40 not to be found in the prior art.

The invention is of a different character from any of the previous ones in the field and is truly an ingenious one.

It need hardly be recalled that a prior publication raised as anticipating an invention must be read in the light of the art as it then stood without giving it the benefit of knowledge subsequently acquired in the art or of posterior patents or publications. Moreover the prior patent or publication in order to avail as

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an anticipation must contain in itself a complete disclosure such as would have enabled one skilled in the art, at the time of such publication, to have been fully seized with the invention.

A recent English case on the subject is that of the Rheostatic Co. Ltd. vs. Robert Maclaren & Co. Ltd. (1934) 52 R.P.C. 42 before the Court of Session in Scotland. Lord Pitman deals with the value of prior publications as anticipating a patent, and at page 58 approves of the earlier decision of the Privy Council in *re: Canadian General Electric Co. vs. Fada Radio Ltd.* in the following terms:—

“On the question of prior publication the law is summarised as follows 10
“in the case of the Canadian General Electric Co., which I have already
“quoted—when the question is solely one of prior publication it is not
“enough to prove that an apparatus described in an earlier specification
“could have been used to produce this or that result. It must also be
“shown that the specifications contain clear and unmistakable directions
“so to use it.

“It must be shown that the public has been so presented with the
“invention that it is out of the power of any subsequent person to claim
“the invention as his own.”

The Privy Council decision in *re Canadian General Electric Co. vs. Fada 20
Radio Ltd.*, which bears directly on the point of the value of such prior
publications is reported in L.R. (1930) Appeal Cases 97 and 47 R.P.C. 69.

In the case of *Pope Appliance Corporation vs. Spanish River Pulp* (Privy
Council, 1929) 46 R.P.C.23, it was held that anticipation is not established
by making a mosaic of prior publications. Approval was given of Lord
Moulton's following remarks in the case of *British Ore Concentration Syndicate
vs. Minerals Separation* (1909) 26 R.P.C.: “It cannot be too carefully kept
“in mind in patent law that, in order to render a document a prior publication
“of an invention, it must be shown that it publishes to the world the whole 30
“invention, i.e., all that is material to instruct the public how to put the
“invention in practice. It is not enough that there should be suggestions
“which, taken with suggestions derived from other and independent documents,
“may be shown to foreshadow the invention or important steps in it. Since
“the date of the vigorous protest of Lord Justice James against such a mosaic
“of prior publications, this has been a universally accepted and most salutary
“principle. It applies with exceptional force in cases where the alleged prior
“publications are the specifications of unsuccessful inventions which have
“accordingly never passed into public general knowledge but have rightly
“been forgotten.” (Viscount Dunedin p. 54.)

The distinction was also drawn in that case between anticipation by prior 40
description and by prior user. Viscount Dunedin remarked on that subject
(p. 56): “He” (the trial Judge) “arrived at the opinion that the invention
“was old by making a mosaic of other and prior descriptions. He also,
“in their Lordships' opinion, took quite an erroneous view as to an
“analogous user. Analogous user is what its name denotes, something which
“has to do with user. He has applied the doctrine not to things used, but to
“things described. But as to things only described, there must either be

“ anticipation or not. And anticipation must be judged by the canons already mentioned. Does the man attacking the problem find what he wants as a solution in the prior so-called anticipation? The distinction between anticipation by prior description and by prior user is well understood. The doctrine of analogous user only applies to cases as to things in actual use.”

The above remarks apply with exceptional force to the present case as no prior user has been alleged but only prior patents have been set up.

The same principles were applied in the recent case of *No-Fume Ltd. vs. Frank Pitchford & Co. Ltd.*—Court of Appeal (1935) 52 R.P.C. 231—(Lord
10 Hanworth M.R. pp. 241 and 242).

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III.—THE SPECIFICATION.

The patent has been attacked on the ground that it contains ambiguous and misleading statements. Let us take up the various objections raised in this connection.

(a) PERMEABILITY.

Appellant argues that the patent is obscure and ambiguous as to whether it is confined to the manufacture of impermeable or relatively impermeable fabrics or whether it applies also to permeable fabrics.

20 Let us observe first of all that the words “ permeability ” and “ im-
permeability ” are relative terms susceptible of various interpretations according to the particular use made of them. All fabrics, in a way, may be said to be more or less impermeable, that is, offering greater or smaller resistance to the passage of liquids and gases. Except at the extreme end of the range, where complete impermeability is reached all other stages are in a sense both permeable and impermeable depending on the particular use made of these words.

Dealing with the words “ waterproof ” and “ gas-proof,” Mr. Levinson made the following remarks (p. 233/28) :

30 “ They are relative terms and they mean that materials to which they
“ are applied are proof against water or gas under the conditions to which
“ they are to be put. For instance, take an overcoat, in order to serve the
“ purpose made for some uses, may merely be what they call shower-proof,
“ so that it will shed some water, but of course if it is subjected to water
“ sufficiently it will leak through. On the other hand, the rubberized rain-
“ coats with which we are familiar are made to stand up against the rather
“ severer conditions of water.”

40 Now, let us recall that the patent deals at considerable length with the degree
of closing of the pores or interstices of the fabrics and states that “ therefore the
“ degree of impermeability of the compound fabric or material produced, can
“ vary with the degrees and duration of heat and pressure employed, and with
“ whether plasticizers, or softeners or solvents are employed, and with the
“ number of fabrics united together, or other circumstances.” (p. 404/6).

Again it is stated that “ the associated fabrics are subjected to heat and pressure to unite the component fabrics together and give a material possessing

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a *desired degree of resistance to penetration* by water or gases, according to the degree and duration of temperature and pressure, the conditions of heat, pressure and time being interdependent." (p. 405/17).

Several other passages are practically to the same effect. (p. 404/14 ; p. 404/38. In fact, the wide range of the degree of permeability (or of impermeability) of the composite sheet material produced under the invention, according to the adjustment of conditions, is one of the many benefits derived from the process as stated above in dealing with the nature of the invention.

It is clear therefore, that the patent cannot be interpreted as applying only 10 to impermeable or relatively impermeable fabrics in the sense that they offer a considerable resistance to the passage of liquids and gases. The invention is capable of producing highly impermeable composite fabrics, as evidenced by the tests above referred to ; but it is also capable by proper adjustment of conditions of producing fabrics offering a very slight resistance to the passage of liquids and gases, and which in that sense are highly permeable, as evidenced also by said tests.

Exhibit No. 20 filed by Appellant as having been produced under the teachings of patent represents but one application of the invention.

Moreover the specification, when referring to the uses to which the 20 invention may be put, refers not only to waterproof to gasproof fabrics, but also declares the invention to be "capable of other applications." (p. 403/11.) The ending paragraph of the specification, after referring to the uses to which the product may be put where resistance to penetration by water or gases is desired, states that "materials made according to the invention may be "employed for any other technical or industrial applications." (p. 406/19.)

Nothing either in the claims limits the invention to impermeable or relatively impermeable fabrics. Claims one to twenty-four deal with the process without any qualification in this respect, and claim twenty-five, which alone covers the product, contains no restriction as to permeability or impermeability. 30

The learned trial judge has come to the conclusion that he could "find "nothing in the specification which would, on any fair or just construction, "indicate that the patentee intended to limit his territory to relatively "impermeable fabrics, or to limit the uses to which the invention might be "applied." (p. 298/40.) We submit that this finding is a proper one.

(b) FORM OF CELLULOSE DERIVATIVE.

The Appellant claims that there is also ambiguity with respect to the form in which the cellulose derivative is to be present in the fabric, that is whether it is to be used in the form of yarns woven into the fabric or whether it may be applied to the fabric in the form of a coating, spraying or otherwise. 40

The terms of the patent, we submit, are clear to any one skilled in the art and do not give room to any doubt on the point.

The specification expressly and repeatedly refers to the use of a fabric "made of yarns composed of filaments or fibres of a thermoplastic cellulose "derivative." (p. 403/19 ; p. 403/40 ; p. 403/44 ; p. 405/14 ; p. 406/18 ; p. 406/24.)

It also mentions a fabric "composed of or containing filaments or fibres of thermoplastic cellulose derivative." p. 403/15); (p. 404/29. It refers to the melting or softening "of the thermoplastic yarns, filaments or "fibres" (p. 406/29) and to the melting or softening effect "upon the filaments and "fibres of the thermoplastic cellulose derivative." (p. 403/34; p. 404/10.)

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Apart from the express reference to "yarns" of a cellulose derivative, as above, the terms "filaments or fibres" necessarily imply yarns, as such filaments or fibres are the constituent parts of yarns and could not be present in any other form. (Levinson p. 232/31.)

- 10 The specification, in fact, uses somewhat indifferently the terms "yarns," "filaments" and "fibres." (p. 406/29).

There is no suggestion whatever in the patent that the cellulose derivative may be present in any form other than yarns and by the very nature of the invention and its mode of operation as fully described in the specification, the teachings of the patent offer no ambiguity or doubt in this respect. (Levinson p. 231/30).

- 20 The claims must be read in the light of the disclosures of the specification and the reference therein to fabrics "at least one of which contains a thermoplastic derivative of cellulose," necessarily means in the form of yarns or threads woven into the fabric. Apart from the fact that the word "contains" would not be an apt term as applying to a coating, the learned trial judge properly stated in his judgment that "the claims have to be interpreted in the light of "the descriptive portion of the specification, the 'dictionary' it is sometimes "called." (p. 297/1). This proposition of law is well supported by numerous precedents.

Paterson Engineering Co. vs. Candy Filter Co. Court of Appeal (1933) 50 R.P.C. 1—

- 30 This judgment goes further than is needed for the purposes of our case, it being held that although the claims of this chemical patent were somewhat obscure, the patentee should be given the benefit of the patent, as the invention was sufficiently disclosed in the specification. (See Lord Hanworth M.R. p. 5 and Romer L.J. pp. 8 and 9).

Reference is also made on this point to the following decisions:—

R.C.A. Photophone Ltd. vs. Gaumont-British Picture Corporation.—High Court of Justice (1935) 52 R.P.C. 206—Bennett, J., at pp. 225-227.

No-Fume Ltd. vs. Frank Pitchford & Co. Ltd.—Court of Appeal (1935) 52 R.P.C. 231—at pages 237 to 240.

Hollandsche vs. The Rockware Glass Syndicate—High Court of Justice (1932) 49 R.P.C. 288—(Clauson J. p. 322).

- 40 *British United Shoe Machinery Co. vs. Ginson Shoe Machinery Co. Ltd.*—High Court of Justice—Ch. Div. (1928) 46 R.P.C. 137—(Tomlin J. at p. 159).

Lektophone Corporation vs. S. G. Brown Ltd.—High Court of Justice—Ch. Div. (1929) 46 R.P.C. 203 (Tomlin, J., p. 229). Confirmed by Court of Appeal 46 R.P.C. 439. (See Lord Hanworth M.R. 447 and Russell L.J. 449).

British Thomson-Houston Co. vs. Corona Lamp Works Limited (1922) 39 R.P.C. 49.

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(c) NATURE OF PLASTICIZER, SOFTENING AGENT OR SOLVENT.

Another point raised against the validity of the patent by reason of ambiguity is whether the patent is confined to the use of plasticizers and softening agents of high boiling point, or whether it also extends to softening agents of low boiling point and to volatile solvents, such as the acetone-alcohol mixture employed in the manufacture of Appellant's collars.

The specification uses repeatedly the expressions "plasticizing or softening agents or solvents" (p. 403/30; p. 404/6; p. 404/22; p. 404/32; p. 404/38; p. 405/15; p. 405/25; p. 405/39; p. 406/27) and also "plasticizers, or softeners or solvents" (p. 404/3). 10

There is no marked distinction between these substances, which are usually used as a group to designate any material that will act to soften the cellulose derivative. (Levinson p. 229/39.) Their function in carrying out the process under the patent, whether it be a plasticiser or a volatile solvent, is the same, namely to increase the softening effect of the cellulose derivative so that the temperature used in the process, or the time, or the pressure, may be decreased. All these substances may rightly be termed "softening agents" as used under the patent, as their purpose is to soften the cellulose derivative used as an adhesive.

It may be recalled that the employment of such softening agents is not 20 essential under the patent but is optional.

The patentee states: "Any plasticizing or softening agents or solvents, (preferably high-boiling or relatively high-boiling), of the cellulose derivatives may be employed." The word "any" clearly shows that the invention extends to the use of such plasticizer, softener or solvent, as may be found suitable, whether volatile or non-volatile. Moreover, the terms "preferably high-boiling or relatively high-boiling" necessarily imply that others may be used.

Persons skilled in the art would not be deceived by the teachings of the patent which clearly does not restrict the invention to the use of a particular 30 kind of softener. We submit that the learned trial judge properly concluded on this point as follows (p. 299/32):—

"I entertain no doubt whatever but that those to whom the specification was addressed would regard 'softening agents' and 'solvents,' as meaning substantially the same thing, in making a practical application of Dreyfus, and they would understand the behaviour or effect of softeners, or solvents, in interpreting the specification."

(d) THERMOPLASTICITY OF CELLULOSE ACETATE.

We now come to an objection based on a so-called misleading statement in the specification. Appellant contends that cellulose acetate which is specifically mentioned as a thermoplastic cellulose derivative which may be employed is not in fact thermoplastic. Let us consider briefly the evidence on this subject. 40

Appellant's expert witness Dr. Esselen testified as follows: (p. 72/5).

"A. From the practical point of view cellulose acetate is not thermoplastic. From the strictly scientific point of view it is possible to heat

“cellulose acetate to a point where it becomes thermoplastic, but that range is rather high, and as far as the purposes of the patent are concerned it is above what I consider to be a practical temperature.

“Q. Approximately at what temperature does cellulose acetate become thermoplastic?”

“A. At about 200°C.”

However the witness, further on, admits that one may mix plasticizers or softening agents with cellulose acetate so as to make it thermoplastic. (p. 72/23).

10 Merely on this admission there is very little left to Appellants' objection against the validity of the patent since the specification states that preferably plasticizing or softening agents or solvents may be resorted to. (p. 405/24).

As against Appellants evidence, however, Respondent has adduced proof on this point through two witnesses who have had wide experience in this field and who have testified to actual facts apart from expressing their opinion.

Mr. Platt explained that cellulose acetate softened with heat and as such was thermoplastic. (p. 162/41.) The Company with which he is associated uses this property for producing certain novelties or finishes on fabrics, such as in the manufacture of moiré fabric. (p. 162/44.) In order to obtain the
20 moiré effect the fabric must be passed through heated rollers at a temperature from 150° to 160°C. thereby softening the cellulose acetate and the figure obtained is permanent. (p. 163/14.) About half a million yards have actually been produced. (p. 163/25.) The thermoplasticity of the cellulose acetate is similarly made use of in making embossed fabrics by means of rolls heated to 160°C. (p. 163/28.)

When treating fabrics of cellulose acetate between a steel roll, heated at a temperature of 150° to 160°C. and a paper roll, a shine is obtained on the side of the fabric next to the heated metallic roll, due to the softening and partial coalescing of the surface yarns, while no such result occurs on the other
30 side where no heat is applied. (p. 164/8.) That is actually used in the manufacture of certain fabrics. (p. 164/14.) Plaintiff's own Exhibit No. 29 is an illustration of this phenomenon, which would not be secured if cellulose acetate were not thermoplastic. (p. 164/20.)

Mr. Levinson was equally emphatic on the subject and we take the liberty of quoting from his evidence (p. 227/36):—

Q. Since that enumeration includes cellulose acetate, would you particularly consider this material from the standpoint of thermoplasticity?

40 A. Cellulose acetate is definitely thermoplastic, and as a matter of fact celanese, which is made of cellulose acetate, has many properties, or uses rather, because of this thermoplastic character. Cellulose acetate fabric has been embossed, permanently embossed, by passing the fabric between male and female membered rollers to emboss a design, which rollers are heated, and in this way an embossed effect is obtained which is permanent, because the material has been actually molded during this embossing operation, because of its softening under the action of heat.

A most striking illustration of the thermoplasticity of cellulose acetate is found in the phenomenon of ironing the same. Almost every housewife

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who has tried to iron a fabric made of celanese yarns has been confronted with the difficulty that she must not let her iron get too hot, otherwise the cellulose acetate material will coalesce or melt and stick to the iron, and if the iron is hot enough and the time it is applied long enough a hole will be made in the fabric.

Q. If these elements are reduced what happens, the time and the heat ?

A. As the elements are reduced you will get a less marked effect, so that the material will just appear stuck together, and as the time and/or the temperature is further reduced you get less and less effect until you reach the point where it is safe to iron the fabric. 10

Q. As coalescing filaments you referred to a moment ago in connection with the thermoplasticity of cellulose acetate ?

A. When such coalescence is caused by the sole effect of heat that is absolute proof of thermoplasticity. And of course coalescence does take place in this ironing phenomenon about which I have just spoken.

The above evidence, we believe, convincingly establishes that cellulose acetate is thermoplastic even at temperatures of 150° to 160°C. and without the assistance of a softening agent, which under the patent may be resorted to.

We wish to add to the above the conclusion to be derived from Appellant's own Exhibit No. 29 as referred to in the judgment. This is a composite material made of an all-cellulose acetate fabric which was subjected to heat and pressure in union with a cotton fabric. No softening agent was used. The pressure was of 600 lbs. per square inch for 5 minutes at a temperature from 155° to 160°C. Appellant's counsel when filing this exhibit properly made the following remark (p. 76/25) : 20

“ Mr. BIGGAR : That is a cellulose acetate fabric. Perhaps I should “ make it clear that it is the shiny fabric that is the cellulose acetate “ fabric in Exhibit No. 29.”

In fact the cellulose acetate fabric has a mirror like appearance while the cotton fabric which was subjected to the same pressure and same heat is not glazy. The difference is due to the thermoplastic nature of cellulose acetate at a temperature of 155° to 160°C., without the use of any softening agent. (Platt, p. 164/18). 30

Appellant's contention with respect to the thermoplastic nature of cellulose acetate depends wholly on a question of fact as to which the learned trial judge had to appreciate the evidence. We submit that his finding that “ the contention that cellulose acetate is not thermoplastic, to say the least, has not “ been established ” (p. 300/36) should not be disturbed.

(e) THERMOPLASTICITY OF NITRO-CELLULOSE.

The specification is also said to be misleading on the ground, it is claimed, that nitro-cellulose, which is an inorganic derivative of cellulose, is not thermoplastic within the range of temperature at which it may be safely handled. 40

This derivative is referred to in the specification as follows (p. 406/33) :

“ Whilst fabrics made with yarns or fibres of nitro-cellulose filaments

“ or fibres may be employed in practising the invention this is less advantageous owing to the inflammability of nitro-cellulose.”

The point made by Appellant is that nitro-cellulose is not ordinarily tested in the laboratory at a temperature above 135° C. on account of the danger of decomposition and explosion and that it is not thermoplastic at this temperature. (Esselen p. 71/41) Appellant's evidence on the subject is somewhat indefinite and inconclusive.

Respondent's witness has testified that nitro-cellulose is thermoplastic (Levinson p. 228/19) but that the point at which it becomes thermoplastic is so near its explosive point that it would be dangerous to attempt to rely solely on its thermoplastic nature. (p. 228/20). This warning, however, is clearly given in the passage of the specification above quoted. Because of this inflammability of nitro-cellulose one would use plasticizing or softening agents or solvents as indicated in the patent in order to reduce the temperature at which the desired effect is to be obtained. (p. 228/35).

In view of the warning contained in the specification as to the danger of using nitro-cellulose, and the optional use of a softening agent under the patent, no one skilled in the art could be misled by said specification with respect to nitro-cellulose. As pointed out by the learned trial judge “ the patentee in
20 “ mentioning the danger of using fabrics made with yarns of nitro-cellulose has “ prudently met all legal requirements, otherwise the specification might have “ been attacked on the ground of insufficiency ; it also is indicative of good faith “ in describing the invention.” (*Gold Ore Treatment Co. vs. Golden Horseshoe Company* 36 R.P.C. 132).

(f) METHYL CELLULOSE.

Amongst the thermoplastic cellulose derivatives referred to in the patent are the following ones mentioned by way of example: “ cellulose acetate, ethyl—, “ methyl—, or benzyl cellulose, nitro-cellulose or other ester or ether of cellulose, “ or mixtures of such cellulose derivatives.” (p. 403/20). Appellant claims
30 that the reference to methyl-cellulose is misleading on the ground that it is not waterproof and therefore could not be used for one of the purposes of the patent, namely, to manufacture waterproof material.

Dr. Esselen testified that methyl-cellulose would be impractical for making waterproof fabric “ because it is ordinarily soluble in cold water.” (p. 71/7). He then stated that by cold water he meant water at room temperature. On cross-examination the witness stated that he had experimented with a material as a textile finish in his laboratory in Boston, although no report nor notes were produced. (p.112/37). They were “ more or less cursory experiments.” (p. 112/40.)

Respondent's witness Mr. Levinson, however, definitely testified that he
40 could not accept Dr. Esselen's broad statement and explained the many varieties of methyl-celluloses depending on the method of making them (p. 229/16). He stated that the methyl cellulose dealt with by Dr. Esselen was one that had been put on the market recently as a size for textile fabrics, and was deliberately water soluble because it is desirable that sizes should be readily removed from the fabrics by washing. (p. 229/27). This statement was not contradicted.

We submit that on the evidence, this objection which is not of great importance, cannot stand and was properly dismissed.

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(g) OTHER CELLULOSE ESTERS AND ETHERS.

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Another attack of a rather peculiar nature made against the specification rests on the ground that it refers to cellulose derivatives generally, including all cellulose esters and cellulose ethers, although many of them are only laboratory products and still many more, while known theoretically, have never yet been produced. The objection, therefore, does not rest on the fact that certain esters or ethers of cellulose are not suitable for the purpose, but rather that they are not known and that it is uncertain if they would react in the way contemplated under the patent.

Appellant's witness, Dr. Esselen, stated that there were several hundred cellulose esters theoretically possible. (p. 69/41). As laboratory products he says there are probably fifteen or twenty. (p. 70/12). Practically the same evidence was given concerning cellulose ethers. (p. 70/44).

The objection, therefore, is based, not upon an actual misleading statement proved to be such, but upon the possibility of an error should science in future years disclose that some esters or ethers of cellulose react differently from those known at present. We submit that such objection is ill-founded in law.

Respondent's witness Mr. Levinson testified in this connection as follows (p. 229/8) :

Q. That same paragraph mentions the words "or other ester or ether of cellulose." Have you any reason to believe that any other ester or ether known or that might become known in the future might not be thermoplastic, and might not work properly under the patent? 20

A. All the cellulose esters and cellulose ethers that have come to my attention have been thermoplastic, and therefore, the probabilities are that any others that may be discovered would be thermoplastic rather than non-thermoplastic.

The statement in the specification, therefore, has not been proved to be erroneous nor to be liable to mislead any one, and it is not of a nature to invalidate the patent. 30

If, however, when dealing with esters or ethers of cellulose a chemist considers himself confined to a limited number of practically known laboratory products, it would seem proper that the specification addressed, as it is, to those skilled in the art, should be taken as dealing with a similar practical range.

(h) SUFFICIENT DIRECTIONS.

Under the terms of the patent certain adjustments require to be made in the quality of the material used, in the quantity of cellulose derivative employed, in the degree of heat and amount of pressure applied and in the nature and quantity of softening agent which may be used, according to the desired result to be obtained. Are the directions sufficient or are such teachings too indefinite? 40

The very nature of the invention under which a wide range of results is obtainable does not permit of a detailed description of all possible conditions of application of the invention. The inventor has fully and fairly set forth in the specification the nature of the invention and the manner in which it may be applied, and has given figures and full details of particular instances of its

application. Such description enables any one skilled in the art to apply the invention and to adapt it to the particular requirements of the industry for which it is to be used. We submit that all requirements of the patent law have been thereby fulfilled.

In *No-Fume Ltd. vs. Frank Pitchford & Co. Ltd.*, Court of Appeal (1935) 52 R.P.C. 231, it was held that the monopoly may be defined by reference to the result and that the proportions need not be exactly laid down, if there is a field in which the proportions may vary and yet within which success may be ensured, and if the dimensions are sufficiently described as to be ascertained
10 by tests not involving the exercise of any inventive faculty.

See also remarks of Maugham L.J. at pp. 249 (in fine) and 250.

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IV.—SUBJECT MATTER.

Is there subject-matter of invention in the patent in issue? Did the disclosures of the patent require the exercise of the inventive faculty?

The reply seems obvious when one considers the benefits resulting from the invention and compares the teachings of the patent with the prior art. Prior to Dr. Dreyfus' invention the only known means of uniting fabrics was that of applying an adhesive substance to one of the fabrics in the form of a coating or by spraying or impregnating and thereafter using pressure. In all
20 such cases, an exterior agent was used which required to be added to or applied to the fabrics to be united, with the resulting inconvenience and difficulty of manipulation of the material.

By a stroke of the inventive genius, Dr. Dreyfus, a pioneer in the development of cellulose acetate as a textile product, conceived the idea of modifying the composition of the sheets themselves, and of using their constituent parts as a means of uniting fabrics under the action of heat and pressure, without the use of any foreign substance. The very yarns of at least one of the fabrics, in the nature of a thermoplastic cellulose derivative, would serve the purpose.

This teaching is so different from prior conceptions in the field and
30 revolutionary in its character, that its inventive nature is apparent.

Owing to the special character of the process, the benefits derived from it are peculiar to this method and do not obtain when other processes are resorted to. The control of the degree of permeability of the composite material and of the degree of adhesion may be adjusted according to requirements, in a way that is not possible when an extraneous adhesive substance is used. Easy manipulation of the fabrics without hinderance from glue or other adhesive matter which permits of their being assembled, cut and sewn freely, is also peculiar to Dr. Dreyfus' invention. Constant results without variation in the conditions
40 of union are obtainable to an extent that would not be possible under other methods. These exceptional benefits and advantages are a result of the ingenuity of the invention.

The patent is based on an entirely new idea and departs from all known methods in the field and in that sense it is a pioneer or master patent.

V. INFRINGEMENT.

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The process followed in the manufacture of Appellant's collars has been described by Louis St. Hilaire, President of L. St. Hilaire Ltée, which manufactures them, and also by another witness, Theodore Loew, an engineer in the employ of S. Liebovitz & Sons Inc., who attended to the installation of said process. Substantially, the process, as described by these witnesses, is as follows:—

Three plies of material are assembled together and sewed in the usual manner. The centre ply or intermediate layer contains yarns of cellulose acetate (every third warp thread), while the two outer plies are of the same material as that with which the shirt is made (Loew, p. 49/39). 10

The assembly is then sent to the "wet press" where it is thoroughly dampened with a solvent which consists of a mixture of 75% acetone and 25% methyl-alcohol (p. 55/20). This press consists of two metal platens which are padded and kept thoroughly wet with the solvent (pp. 49/46; 50/4). The mechanical pressure of this press is about 10 pounds per square inch. The treatment lasts about nine seconds according to witness Loew (p. 50/8) and from 8 to 15 seconds depending on the nature of the fabric used, according to witness St. Hilaire (p. 94/16). The effect of this wet press on the collar assembly is to soften the cellulose acetate. It is said that "it swells or jellifies" the cellulose acetate threads. (Loew, p. 50/11). 20

Immediately upon being withdrawn from the "wet press" the collar assembly is transferred to a "hot press" which has one metal face and one platen which is padded. This press is heated by steam at a pressure of about 15 to 20 pounds, which keeps the press at a temperature of about 250° F. The mechanical pressure applied in this press is of about 10 to 20 pounds per square inch. (p. 50/33). The collars remain in this hot press about twenty seconds. (pp. 51/9; 94/33.)

The collars are then ready to be attached to the collar band. (p. 51/10.) Before the collars are delivered to the trade, however, they undergo still another pressing operation for the purpose of ironing them out, which is the usual final laundry pressing operation carried out in the manufacture of ordinary collars. (pp. 95/31; 96/45.) 30

We claim that the above facts, based on the description of the process by Appellant's own witnesses are sufficient in themselves to establish infringement of Respondent's patent. In the terms of the claims of the patent the process has produced a "composite sheet material" by "subjecting a plurality of associated fabrics" namely the three plies, "at least one of which contains a thermoplastic derivative of cellulose," namely cellulose acetate (which is specifically mentioned in claims 19 to 24 incl.) "to heat and pressure" in the hot press, "thereby softening said derivative and uniting said fabrics." 40

Moreover, in carrying out the process and as contemplated under the patent and covered by many of its claims, L. St. Hilaire Ltée makes use of a softening agent or solvent, namely an acetone-alcohol mixture, in order to assist the softening of the cellulose acetate. It may be recalled that cellulose acetate is covered by the terms "thermoplastic derivative of cellulose,"

and "cellulose ester," all mentioned in the claims. Cellulose acetate is itself also specifically mentioned.

In order to deny infringement, Appellant has endeavoured to distinguish the said process for manufacturing collars, which we will call the St. Hilaire process, from that covered by the patent, which we will call the Dreyfus process.

It is claimed that in the St. Hilaire process the effect of heat is not to soften the cellulose acetate but to harden it up and to drive off whatever solvent may remain. (Esselen, p. 78/19.) Appellant's witnesses have stated that the collars would have proper adhesion if left to dry after going through the "wet press,"
 10 without the application of any heat and that the "hot press treatment" serves to drive off the solvent and to give to the collars a smooth finish. (Loew pp. 50/25 ; 50/43.) In other words, the purpose of the "hot press" would be practically that of an ordinary laundry press and the press has been described as such. (Loew, p. 50/30.)

This contention, although contrary to facts, would still not avoid infringement. The presence of cellulose acetate yarns woven into the centre fabric would still be what actually causes the adhesion, and the softening agent, heat and pressure, would still all have played a part in the uniting of the associated fabrics. The purpose or intent for which the heat and pressure are applied in
 20 the "hot press" does not avoid infringement, as long as the uniting of the fabrics, for the purpose of making a composite sheet material, is carried out as described in the patent.

In effect, however, the various operations of the St. Hilaire process work out exactly as described in the patent. Appellant's witnesses admit that under the effect of the solvent the cellulose acetate threads soften. (p. 50/7). It was said that the solvent "swells or jellifies" them. (p. 50/11). As the collars are immediately transferred while still wet from the "wet press" to the "hot press" where they are subjected to a heat of about 250°F, the thermoplasticity of the cellulose acetate is still further increased under the combined action of the
 30 solvent and of the heat. However, as the heat gradually evaporates the solvent, the cellulose acetate becomes less plastic and hardens as the combined effects of the solvent and heat disappears, and only heat remains.

The pressing operation, however, does not end with the evaporation of the solvent, but is continued a short time to insure proper adhesion under the action of heat and pressure. This is borne out by the figures given by Appellant's Witnesses, namely that the pressing operation, in the hot press, lasts 20 seconds and that it takes about 12 to 15 seconds for the solvent to evaporate. (Loew, p. 57/20).

The effect of the solvent and of heat upon the cellulose acetate in the St.
 40 Hilaire process is therefore just as described in the patent. Both act upon its thermoplasticity, and when their combined effect is gone by the disappearance of one of these two elements, the opposite result occurs, namely, less plasticity of the cellulose acetate. This is particularly the case where a very active solvent is used, such as the acetone-alcohol mixture applied in the St. Hilaire process one of the most active solvents known which quickly disappears under the effect of heat. (p. 230/25).

The "hot press" operation forming part of the St. Hilaire process, where

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heat and pressure are both applied, is an essential element for the manufacture of the collars, without which the process would be unsuccessful. Appellant's witnesses have claimed that proper adhesion would be secure if the process ended after the "wet press" treatment, without resort being had to the "hot press." (p. 50/25). Apart from the fact that the process, actually, does not end there, one may question why St. Hilaire Ltée makes use of a "hot press" as it would be much easier to simply dry the collars in ovens if the object were merely to evaporate the solvent. On the contrary, great care is taken that the collars should be transferred immediately from the "wet press" to the "hot press," while still wet, and before the solvent evaporates (p. 94/31). To ensure this result, three "hot presses" are in operation, while only one "wet press" is used at the same time (p. 94/22) so as to avoid any delay in the transfer from one to the other. (p. 95/1). 10

Neither can it be contended that the "hot press" serves to give a smooth finish to the collar and is nothing more than an ordinary laundry press, as there is a further and final pressing operation to iron out the collar after the process is completed. (St. Hilaire, pp. 95/31 ; 96/45).

Respondent's witness Mr. Levinson has explained quite clearly the effect of the "hot press" upon the cellulose acetate threads in the St. Hilaire process and has definitely shown that heat and pressure is what causes the adhesion. 20 (p. 238/42).

In a further attempt to disprove infringement Appellant claims that in the St. Hilaire process there is no closing of the pores or interstices of the fabrics as a result of the spreading of the cellulose acetate as described in the specification of the patent and that the composite material produced has greater permeability after the uniting of the fabrics than before it.

This contention, we submit, is in direct contradiction with the actual facts as established in the case. Appellant has produced in support of its contention certain samples (Exhibits 13, 14, 15, 17) and enlarged stereoscopic photographs (Exhibits 16, 18) tending to show the condition of the cellulose acetate threads after being subjected to the St. Hilaire process. These enlarged photographs represent the interior of the processed material after it had been broken apart. It is contended that the cellulose acetate threads, which are continuous threads before treatment, have become largely broken in short pieces after treatment and that the "knuckles" which are seen in the untreated fabric have to a large extent disappeared thereafter (Esselen p. 65/28). It is argued that this means greater porosity of the composite sheet material. In support of this theory Dr. Esselen testified as to tests carried out in his laboratory in order to determine the rate at which water vapour would pass through the assembly before and after treatment. (Esselen p. 67/26). As a result it is claimed that while 5 grammes of water (in the form of water vapour) have passed through a container across which had been set the unprocessed material, a larger quantity of water-vapour, namely 12.5 grammes in one instance and 15.8 grammes in another instance, have passed through the processed material in the same space of time, namely four hours. (p. 68/10). 30 40

No other test was testified upon by Appellant's witness as to permeability, apart from the above one relating to water vapour.

A copy of an enlarged photograph was also produced by witness Loew (Exh. No. 44) taken in 1934 for advertising purposes (p. 142/10) showing a piece of a processed collar which had gone through the regular commercial process and which had been broken open so as to separate the three plies. It is urged that this photograph shows the porosity of the lining (centre ply) and that between each pair of cotton threads the interstices have not been closed. (Loew p. 137/17.)

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It is difficult to follow Appellant in its contention as to increased permeability of the composite material after treatment, which appears so contrary to reason.
10 The exhibits produced in this connection are certainly not convincing.

The samples and photographs produced by Appellant all represent material which has been broken apart. All that appears in red on the samples and in black on the photographs is supposed to represent cellulose acetate and the rest to be cotton. As these sheets forming the composite material have been broken apart, the condition of the cellulose acetate as it stood in the composite material before breaking it open, has naturally been disturbed and it does not seem logical to argue on its condition in the finished product by what is found still adhering to the three plies after they have been broken apart. It is claimed that as the cellulose acetate has been softened by the solvent, the two outer plies of the
20 collar, when pressure is applied, are pressed on the lining material (centre ply) and that the "knuckles" of the cellulose acetate threads, which are soft, are forced into the fibres of the overlying cotton fabric. (Loew p. 50/16.) We fail to understand why the permeability of the finished product would be thereby increased.

Moreover this is but a theory in no way supported by the evidence and as to which we find no confirmation in the samples and photographs produced.

Appellant's witnesses had to admit that as a result of the pressure in the course of the process there was a squeezing effect upon the cellulose acetate which naturally spread, at least to some extent, into the pores and interstices of
30 the associated fabrics. Witness Loew testified as follows on this point (p. 58/20):—

Q. You have a softened cellulose acetate plastic which is being pressed between two fabrics, and I am asking you whether the cellulose acetate does not fill up at least part of the interstices and pores of all three fabrics which are being united?

A. No, it does not flow in that way.

Q. I am not speaking of flowing, but I am speaking of squeezing in or pressing into?

A. It is pressed into the outer plies of the cotton.

Q. You say it enters into the outer plies, you mean into the interstices
40 or pores of the outer plies?

A. It enters into the cotton threads.

Q. And not into the interstices or pores?

A. If the pores happen to be directly over one of those knuckles of the cellulose acetate, I suppose naturally it will go in.

Q. I suppose in all cases it will go into some of the interstices?

A. Yes, naturally.

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Q. And being squeezed in that way do you contend it would only squeeze in the one direction, that is up and down, into the adjoining fabrics and not sideways ?

A. There will be some sideways flow.

Q. Caused by the pressure ?

A. Yes.

Q. And the sideways flow to that extent would also assist to fill up the pores and interstices ?

A. Yes, slightly.

Again upon re-examination (p. 141/27) :—

Q. So that you admit that at least part of the cellulose acetate which has been softened would go into the pores and interstices of the fabric by reason of the softening of the acetate and the pressure exercised upon it ?

A. Yes.

Dr. Esselen also testified on the subject as follows (p. 109/5) :—

Q. You referred to the knuckles, and it seems pretty clear, does it not, from Exhibit 17 and from the photograph Exhibit 18 that what has happened to the knuckles is that they have been pulled into the inner surface of the outer layer of stuff ?

A. I would not say they have been pulled into it, they have been stuck to it.

Q. And what has remained, or the greater portion of what has remained, is not on the knuckles, but in the valleys between the threads ?

A. Yes.

Q. That is pretty clear, is it not, that there has been a spreading effect, both upward and downward and sideways, as a result of the treatment, the process ? That appears pretty well from the two photographs, 18 and A ?

A. Yes, I think that is a fair statement.

Q. And any spreading effect would naturally have a tendency to fill up the interstices ?

A. Yes.

In view of these admissions it seems contrary to reason that notwithstanding the closing, at least partially of the pores and interstices of the associated fabrics by the spreading effect of the softened cellulose acetate under the action of heat and pressure, the resulting product should have an increased permeability. The actual tests carried on by Respondent's expert witness Mr. Platt under varying conditions proves the contrary to be true.

Although Appellant's contention was that the collar was more permeable after undergoing the St. Hilaire process than before, the position taken by its own witness Mr. Loew does not support it, as on cross-examination the witness stated that he did not mean that the collar was more porous when coming out of the hot press than it was when introduced into it, but rather that the collar was more porous after going through the hot press than if allowed to dry after going into the "wet press" where the solvent is applied and without going into the "hot press." (Loew p. 58/42.) The "wet press" being part of the process, Appellant's contention as to increased permeability falls to the ground.

The process may be carried out under such conditions as will leave the composite material highly permeable both to water and to air, as shown by the many tests testified upon by Mr. Platt, and this is particularly true were only a relatively small amount of thermoplastic cellulose derivative is made use of, such as in the St. Hilaire process where only one warp thread out of three in the centre ply is cellulose acetate and all the rest is cotton or other non-thermoplastic material. However, the carrying out of the process necessarily brings about, at least to some slight extent, the closing of pores or interstices of the fabrics, as admitted by Appellant's own witnesses, and therefore, causes
 10 a reduced permeability, however small.

Amongst the tests testified upon by Mr. Platt we particularly point out No. 10 above referred to dealing with Exhibits Z-5b, Z-5a, Z-5c, Z-5d, Z-5e, Z-6a and Z-6b.

These tests were carried out along with No. 524 celanese/cotton fabric similar to the one used in the manufacture of Appellant's collars. In four of these tests, namely as to Exhibits Z-5a, Z-5c, Z-5d and Z-5e, an acetone-alcohol mixture was used as a solvent, similar to the one used for Appellant's collars. Exhibit Z-5b is the unprocessed sample of the same material which was tested merely as to permeability to water and to air. The tests prove that while the
 20 unprocessed sample (Exh. Z-5b) showed a permeability to water of 3 centimeters and a permeability to air of 4 seconds, sample Z-5c treated with said acetone-alcohol solvent, at a temperature of 50 lbs. steam for 15 seconds at a pressure of 25 lbs. air (mechanical pressure) showed a permeability to water of 8 centimeters and a permeability to air of 5 seconds. In other words, in the processed material the permeability to water was reduced in the proportion of 8 to 3 as compared with the unprocessed material and the permeability to air was reduced in the proportion of 5 to 4. For Exhibit Z-5d, with the same solvent, a temperature of 35 lbs. steam during 20 seconds and a pressure of 45 lbs. air, the reduction of permeability to water was in the proportion of 8 to 3 and to air in the
 30 proportion of 6 to 4. For Exhibit Z-5e with the same solvent, a temperature of 35 lbs. steam during 20 seconds and a pressure of 90 lbs. air, the reduction of permeability to water was in the proportion of 9 to 3 and to air of 7 to 3.

On the other hand, for Exhibit Z-5a tested with the same solvent and a pressure of 20 lbs. air for 15 seconds but without any application of heat, the permeability to water was shown to be of 5 centimeters and to air of 5 seconds. In the latter test, due to the absence of heat, the permeability is greater than in the other cases where both heat and pressure were applied, but however, such permeability is reduced as compared with the unprocessed sample.

The tests carried out by Dr. Esselen with regard to permeability
 40 to water vapour as between a processed and an unprocessed sample are inconclusive as to permeability to water and to air or gases. As pointed out by Mr. Levinson, the test has no bearing whatsoever on determining the permeability of the material to water, as water vapour is not a liquid. (p. 234/7). Also, a marked distinction must be made between permeability to water vapour and permeability to gas. Cellophane tissue, for example, which is a transparent wrapping tissue looks like a continuous sheet, and with respect to air it behaves that way. On the other hand, with respect to water

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vapour, there is a different phenomenon governing. There is applied to the surface of the cellophane material a very thin coating of material that includes wax. This does not increase the gas permeability of the product, but it does decrease the vapour permeability. (p. 233/35). The test carried out by Dr. Esselen is what is now called in the art "moisture proofness of cellophane material." (p. 233/41). It is inconclusive as to permeability to water and to air or gases.

It is significant that Dr. Esselen has not carried out, nor testified as to ordinary tests bearing directly on permeability to water and to air, such as carried out by Respondent's Witness. 10

The question of porosity of the St. Hilaire collars which Appellant makes a great deal about may serve a commercial purpose as an advertising point, but in effect has little, if anything, to do from the standpoint of comfort or cleanliness as the collar itself is attached to a collar band made of cotton and which alone comes in contact with the skin. (p. 143/4).

Moreover we believe the question of permeability of the processed material to be irrelevant to the issue of infringement, as the invention covers all degrees of permeability or impermeability of the composite material and the claims are not limited in this respect and contain no reference to permeability or impermeability. 20

With respect to Appellant's contention that in the St. Hilaire process, adhesion does not result from the application of heat and pressure but only from the use of the solvent, we may again point to Mr. Platt's tests and Exhibits above referred to. It will be seen that while the tests show "good" adhesion all through, where heat and pressure have been applied and acetone-alcohol solvent used, practically no adhesion has resulted when the application of heat was left out, although the same solvent was used and pressure applied. (Exhibit Z-5a.)

Also, Appellant's Witness produced as Exh. No. 17 a piece of processed material taken from a collar Exh. No. 13, one outer ply of which has on its inside 30 more cellulose acetate than the other. This outer ply having most cellulose acetate is the one that was next to the heated plate in the "hot press". (p. 120/15.) This again shows that heat has some effect upon the cellulose acetate in the "hot press" treatment, as it is more readily felt on the side where heat is greater, contrarily to Appellant's contention that such heat merely drives off the solvent.

An other proof of the effect of heat upon the cellulose acetate in the "hot press" treatment is found in Appellant's own Exh. No. 28 (p. 434). This is a statement showing the results of tests made by Dr. Esselen as to the effect of increased time and of temperature in the "hot press" on the adhesion of each of the two outer plies with the centre one. Three tests are shown as 40 to the effect of temperature. One was carried out simply at room temperature and showed the adhesion of the "front" ply, that is the one next to the metallic plate, to be 2.6 and the adhesion of the "back" ply to be 3. (p. 435.) In the two other tests the press was heated. In the one case, with a temperature of 259°F. the "front" ply next to the metallic heated plate showed an adhesion of 3.1 and the other ply an adhesion of 2.6, therefore considerably less. In the following case with a temperature of 307°F. the "front" ply next

to the metallic heated plate showed an adhesion of 3.2 and the other ply an adhesion of 2.25, therefore considerably less. The interesting result is that while, in the absence of heat the "front" ply had less adhesion than the "back" ply, the conditions became reversed when heat was applied. The ply next to the heated metallic plate then shows considerably more adhesion than the other ply which was not subjected to as much heat. The conclusion follows that heat does act upon the cellulose acetate during the "hot press" treatment and has its effect upon the adhesion of the associated fabrics.

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Another objection raised as against infringement is with respect to the type
10 of solvent used in the manufacture of Appellant's collars. It is claimed that the acetone-alcohol mixture used, being a volatile solvent, does not fall within the purview of the patent.

We have already dealt with the teachings of the patent with regard to the use of plasticizers, softening agents or solvents, and have showed that the invention covers the use of all of them including volatile as well as non-volatile softening agents or solvents.

The effect of the acetone-alcohol mixture used by L. St. Hilaire Lte. as admitted by Appellant's witnesses is to "soften" the cellulose acetate yarns. Whether it is called a "solvent" or "softening agent," its effect is that
20 provided for under the patent, which refers to the use of "plasticizing or "softening agents or solvents" and the purpose of which is to increase the melting or softening effect of heat upon the thermoplastic cellulose derivative. In the St. Hilaire process, as already shown, the solvent as well as heat and pressure are all employed for the purpose of softening the cellulose acetate threads, of rendering them adhesive, and of producing a proper uniting of the associated fabrics.

In the terms of the claims of the patent, the St. Hilaire process, with respect to the use of said solvent, is a process "which comprises increasing the ordinary
30 "thermoplasticity of a fabric containing cellulose acetate," (claim 21, p. 408) and a process "which comprises treating a fabric containing cellulose acetate "with a softening agent" (claim 22, p. 408).

In concluding on the subject of infringement we may recall that the St. Hilaire process enjoys all the benefits and advantages to be derived from the Dreyfus invention. It controls the degree of closing of the pores and interstices of the material (permeability) and the degree of intimacy of union of the associated fabrics (adhesion). Uniform and constant results are obtained and conditions of union do not vary once the proper adjustments have been made. No use is made of any exterior adhesive substance for the purpose of uniting, but
40 adhesion is due to the presence of yarns of cellulose acetate woven into one of the fabrics. The textile material is prepared, assembled, cut and sewn without any hinderance from the presence of any extraneous matter and thus it may be easily and conveniently manipulated.

The evidence reveals that the Dreyfus invention is particularly suitable to the collar industry since it enables the collar assembly to be prepared in the ordinary way and the uniting is carried on as a final process. As stated by Appellant's witness: "It is just as easy to manufacture as the ordinary starched
"collar. It requires no changes in the sewing operations, it only requires the

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“ additional pressing operation. The sewing and turning operations are the same
“ as with the ordinary collar which has been made in this way for generations.”
(Loew p. 51/15.)

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The “ additional pressing operation ” referred to is the application of heat
and pressure in conjunction with the use of a softening agent, which act upon
cellulose acetate threads expressly provided for this purpose in one of the fabrics.
We submit that this is the Dreyfus invention and that respondent’s patent is
thereby infringed.

On the whole we respectfully pray that the judgment appealed from be
confirmed in so far as it maintains the validity of Respondent’s Patent No. 10
265,960, and adjudges that patent to have been infringed by the Appellant, and
that the present appeal be dismissed, the whole with costs.

Montreal, September 25th, 1936.

Lajoie, Gélinas & Macnaughten,
Solicitors for Respondent.

Warwick F. Chipman,
H. Gérin-Lajoie,
of Counsel for Respondent.

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Formal
Judgment
19th March,
1937.

No. 26.
Formal Judgment.

20

IN THE SUPREME COURT OF CANADA.

Friday the 19th day of March, A.D. 1937.

PRESENT : THE RIGHT HONOURABLE SIR LYMAN P. DUFF,
G.C.M.G., P.C., C.J.C.
MR. JUSTICE RINFRET,
MR. JUSTICE CROCKET.
MR. JUSTICE DAVIS,
MR. JUSTICE KERWIN.

Between :

30

THE B. V. D. COMPANY LIMITED *Appellant.*
and
CANADIAN CELANESE LIMITED *Respondent.*

The Appeal of the above named Appellant from the Judgment of the
Exchequer Court of Canada, pronounced in the above cause on the 26th day of
March 1936, insofar as it maintains the validity of Patent No. 265,960 and
adjudges that patent to be infringed having come on to be heard before this
Court on the 5th 6th 9th and 10th days of November A.D. 1936, in the presence
of Counsel as well for the Appellant as the Respondent, whereupon and upon

hearing what was alleged by Counsel aforesaid, this Court was pleased to direct that the said appeal should stand over for Judgment, and the same coming on this day of judgment,

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THIS COURT DID ORDER AND ADJUDGE that the said Appeal should be and the same was allowed with costs to be paid by the said Respondent to the said Appellant, and that the said Judgment of the Exchequer Court of Canada should be and the same was varied by declaring the Respondent's Patent No. 265,960 in question in this Appeal to be invalid and by directing the Respondent to pay to the Appellant its costs of the action.

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10 Settled June 17/1937.

(Sgd.) J. F. SMELLIE,
Registrar.

No. 27.

Reasons for Judgment.

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Delivered 19th March, 1937.

DAVIS, J. (concurrent in by LYMAN, C.J.C., and RINFRET, CROCKET and KERWIN, J.J.)

20 A difficult question is raised in this patent case as to whether or not the process used by the Appellant in the manufacture of collars for men's shirts infringes the Dreyfus Canadian Patent No. 265,960 granted November 16th, 1926 on an application filed December 18th, 1925, and owned by the Respondent. The validity of the patent is directly put in issue.

30 The Appellant's process for making a collar of the same material as used in a soft shirt is stated as follows. Two plies of the particular shirt material, forming outside and inside layers of the collar, are taken and there is placed between them a ply of other woven material in which all the weft threads and two out of three of the warp threads are cotton, the remaining one in three of the warp threads being of cellulose acetate. These cellulose threads are partly dissolved by a volatile (acetone-alcohol) solvent applied through one of the outer fabrics after the collar is partly finished. The solvent is immediately driven off by pressing the collar (at about 10-20 lbs. pressure per square inch) between heated platens one of which is covered with a textile material. The platens are kept at a temperature of about 125°C. The result of the rapid driving off of the volatile solvent is that the dissolved cellulose acetate does not spread; the knuckles only of the cellulose acetate yarn melt and form an adhesive which unites all three plies at a series of spaced spots, staggered on opposite sides of the lining material. The result is a semi-stiff composite fabric. The appellant claims that the softening of the cellulose acetate is not brought about by heat 40 but by the application of the volatile solvent by which the cellulose acetate is partly dissolved and that the volatile solvent is quickly driven off the partly dissolved cellulose acetate yarns by submitting the collar to the pressure and at the temperature above mentioned. If all the cellulose were retained it would

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tend to fill up the pores in the material to such an extent that the collar might become waterproof. The obvious need in a collar is that it should remain porous so as to absorb perspiration and lend itself to being easily laundered. The Appellant's process proved a great commercial success; the manufacture of shirt collars according to the process extended, in the United States and Canada, to as many as twenty-eight millions in one year.

This process was put into use in Canada by the appellant about June, 1935. The Respondent then alleged that the process infringed the Dreyfus Canadian patent held by it and this action was commenced in the Exchequer Court. The patent does not appear to have been put into commercial use prior to the adoption 10 by the appellant of its process.

We turn now to an examination of the patent. It is recited to be an invention of "certain new and useful improvements relating to fabrics and "sheet materials and the manufacture thereof." The invention is stated to concern the manufacture of new fabrics or sheet materials having waterproof to gasproof properties or capable of other applications. According to the invention, a fabric or sheet material is made by uniting under appropriate conditions of temperature and pressure, woven, knitted or other fabrics, composed of or containing filaments of fibres of thermoplastic cellulose derivative or derivatives with woven, knitted or other fabric composed of or containing 20 filaments or fibres of non-thermoplastic or relatively non-thermoplastic material. Further, according to the invention woven, knitted or other fabric made of yarns composed of filaments or fibres of a thermoplastic cellulose derivative is associated with woven, knitted, or other fabric made wholly or partly of yarns composed of filaments or fibres of a non-thermoplastic or relatively non-thermoplastic material, and the associated fabrics are subjected to heat and pressure, with or without employment, assistance or application of plasticising or softening agents or solvents of the thermoplastic cellulose derivative or derivatives. In this way the fabrics are united and a composite sheet material is obtained in which the pores or interstices are 30 reduced to extremely minute dimensions, or closed completely, by the melting or softening effect produced by the heat and pressure upon the filaments and fibres of the thermoplastic cellulose derivative or derivatives and by the uniting of the fabrics under the heat and pressure.

The specification further states that

"The extent of the melting or softening effect, degree of closing the "pores or interstices, and intimacy of union of the fabrics, and therefore "the degree of impermeability of the compound fabric or material produced, "can vary with the degrees and duration of heat and pressure employed, "and with whether plasticisers, or softeners or solvents are employed, 40 "and with the number of fabrics united together, or other circumstances."

The manner in which the invention may be carried into effect is illustrated in the specification by the following more detailed description, "it being understood that this can be varied widely without departing from the invention."

"A woven or warp knitted fabric made of cellulose acetate yarn is "associated with woven or knitted fabric of silk, cotton, linen or other fibre, "preferably after being coated or treated with a plasticising or softening

“ agent or solvent on the face that is to contact with the latter fabric, and
 “ the associated fabrics are subjected to heat and pressure to unite the
 “ component fabrics together and give a material possessing a desired
 “ degree of resistance to penetration by water or gases, according to the
 “ degree and duration of temperatures and pressure, the conditions of heat,
 “ pressure and time being interdependent. The less the heat, the greater
 “ or the longer is the pressure required to produce a given effect, or the
 “ same conditions of heat and pressure may be applied for more or less time
 “ to produce the effect in a greater or less degree.”

10 The application of plasticising or softening agents or solvents of the cellulose acetate or other thermoplastic cellulose derivatives to assist the melting effect and the union of the component fabrics, as referred to in the specification, is stated to be—

“ especially of advantage where a high degree of impermeability to water is
 “ desired or for obtaining gasproof properties in the compound material.”

The process is said to produce:

“ a compound material having waterproof to gasproof properties according
 “ to the degree of dissolving or melting effect, etc., produced on the cellulose
 “ acetate by the condition of heat, pressure and time employed.”

20 The concluding words of the specification are:

“ The compound materials made according to the invention may be
 “ employed more particularly for applications where resistance to penetra-
 “ tion by water or gases is desired, for instance as waterproof materials for
 “ garments, coverings, etc., etc., or as materials for airships or other gas
 “ containers but materials made according to the invention may be
 “ employed for any other technical or industrial application.”

Although there are some 25 claims set up, Counsel for the Appellant mainly confined their arguments to claims 1 and 4. Claim 1 is as follows :

30 1. A process for the manufacture of composite sheet material which comprises subjecting a plurality of associated fabrics, at least one of which contains a thermoplastic derivative of cellulose, to heat and pressure, thereby softening said derivative and uniting said fabrics.

Claim 4 is as follows :

4. A process for the manufacture of composite sheet material which comprises treating a fabric containing a thermoplastic derivative of cellulose with a softening agent, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure.

40 The first impression one gathers from a reading of the patent is that what the inventor was really aiming at was the making of new fabrics or sheet materials having waterproof or even gasproof properties—the extent of the impermeability depending upon the amount of the cellulose acetate used and the appropriate application of heat and pressure. To obtain different degrees of impermeability according to the different requirements—a very slight waterproof condition or a complete waterproof condition or even such a condition of impermeability that gas could not penetrate—appears at first glance to be the purpose and object sought to be attained by the inventor. He described the intermediate material as “ composed of or containing ” filaments or fibres of thermoplastic

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cellulose derivative or derivatives. That, I take it, involves that the material, depending upon the degree of impermeability sought to be obtained will be almost entirely or only partially of cellulose. And the thermoplastic cellulose derivative, whether almost the entire or only a small part of the intermediate layer, is to be in yarns, filaments or fibres in the woven, knitted or other fabric used. It is not a coating or embedding process. The cellulose is not spread upon or embedded in the cloth. Those were old and well-known processes but they left a rigid material difficult to shape or cut. The invention of Dreyfus made an ordinary fabric or sheet material waterproof or gasproof without detracting from the appearance of the original material. 10

But the Appellant did not desire a waterproof, much less a gasproof material for its shirt collars. That was a condition that the Appellant says in fact had to be avoided if the collar were to be comfortable for personal wear and capable of being laundered in the ordinary course. What was desired by the Appellant was a collar, of the same material as the shirt itself, made semi-stiff and yet sufficiently porous to absorb perspiration and to be easily washed and ironed. The Appellant attained that result in the process it adopted and the process naturally became of great commercial value.

What is said against the Appellant is this. You made a composite fabric by the use of an intermediate material containing threads of cellulose acetate 20 and the application thereto of heat and pressure, and that is exactly the invention covered by the Dreyfus patent. Impermeability is not an absolute but a relative term and it is contended by the respondent that a condition of more or less impermeability is only an incidental result obtained under the patented process. The principal aim and the very substance of Dreyfus' invention was, it is argued, to make a composite textile material by taking a plurality of fabrics and uniting them by the use of a fabric composed of or containing yarns, filaments or fibres of a thermoplastic cellulose derivative and the application thereto of heat and pressure. That, it is submitted, was the real invention of Dreyfus and the invention that the Appellant substantially adopted. In that view, imper- 30 meability to water or even to gas becomes unimportant and attention is focussed on the contention that the very basis and substance of the invention of Dreyfus was the making of a composite textile material by the method set out in the patent. There is really no denial of the statement that before Dreyfus this method of uniting two or more materials into one composite fabric was unknown. Prior user is not even set up against the patent but prior art is relied upon. When the prior art is examined, it consists entirely in different methods of coating or embedding cellulose or other adhesives. In every case the cellulose is spread over, or squirted upon, or embedded in the material leaving a glassy and stiff surface. There is nothing in the prior art of a process for the manufacture of a 40 composite sheet material made by subjecting a plurality of associated fabrics, at least one of which contains a thermoplastic derivative of cellulose in the form of yarns, filaments or fibres, to heat and pressure, thereby softening the derivative and uniting the fabrics in a composite material. If that process was the real invention of Dreyfus, then there was nothing in the prior art that undermined it.

A formidable objection to the validity of the patent is advanced by Counsel for the Appellant upon the ground that the claims are not limited to the use

of woven cellulose yarns but extend to the use of a cellulose derivative in any form. Claims 1 and 4 above set out are taken for discussion on this point. It is to be observed that while Claim 1 asserts a monopoly of the use of a thermoplastic derivative of cellulose not combined with any softening agent, Claim 4 requires that the cellulose derivative should be combined with a softening agent, thus carrying into the claims the alternatives emphasized in the disclosure.

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The objection, then, to the validity of the claims is that they omit any reference to what Counsel for the Respondent at the trial described in the
10 opening statement as “the new . . . and all-important feature of the
“invention,” namely, the form in which the thermoplastic derivative of cellulose to be acted upon is to be present in the layers of fabric to be united.

“Dr. Dreyfus taught the use of thermoplastic yarns of a cellulose
“derivative woven into the fabric. That was new and that is the all-
“important feature of the invention. We are not concerned with the
“uniting of fabrics otherwise than by the presence of a cellulose derivative
“in the form of yarn woven into the fabric.” (p. 7, line 18.)

And in the carefully prepared Factum of the Respondent the following
statement is made as to the main feature of the patentee’s invention :—

20 “The novelty of the invention rests mainly in the use of a cellulose
“derivative in the form of yarns woven into a fabric, as a means of uniting
“fabrics under the action of heat and pressure, due to the thermoplastic
“nature of such cellulose derivative and either with or without the
“assistance or application of a plasticizer, softening agent, or solvent.
“No adhesive substance is added for the purpose of uniting, but use is
“made of the properties of thermoplastic yarns of a cellulose derivative
“woven into one of the associated fabrics.”

And again in the argument in the Respondent’s Factum as to the nature
of the invention, the following statement appears :—

30 “The reference to ‘filaments’ and ‘fibres’ in the patent therefore
“necessarily implies a cellulose derivative in the form of yarns or threads
“woven into the fabric. A mere coating or application of a cellulose
“derivative in some form other than yarns.”

Again, after discussing the Segall (United States) Patent, the following
statement is made :

“The problem under that patent is quite different from that under
“Respondent’s patent which deals with a composite material made of plies
“of fabric in one of which are yarns of a cellulose derivative used for uniting
“the fabrics.”

40 And in referring to the Van Heusen (U.S.) Patent, the Factum continues :

“This patent covers primarily the use of a cement or binding agent to
“unite the plies of fabrics in the making of collars. Such cement or binding
“agent is used in the form of a coating and not in the form of yarns forming
“part of the intermediate layer.” . . .

* * * * *

“Van Heusen, therefore, resorts to a coating of nitro-cellulose for the
“purpose of uniting and does not resort to a cellulose derivative in the form
“of yarns, filaments or fibres.”

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And again in discussing the Green Patent (British) the Factum continues :

“ This patent has no analogy with Respondent’s patent, as it relates
“ to the application of octo-nitro-cellulose in the form of a coating, or in
“ the form of a stream in thin form on the fabric. There is no yarn used
“ for the purpose of uniting.”

And in discussing the patent of Henry Dreyfus (British) the Factum states :—

“ The relevancy to the patent in issue is extremely remote. It does
“ not show the use of cellulose derivative in the form of yarns but rather
“ in the form of sheets or coatings.”

The learned trial Judge obviously regarded the use of the cellulose derivative 10
in the form of yarns, filaments or fibres as of the very essence of the invention,
for in discussing the Van Heusen patent in his reasons for Judgment he said :

“ Now there is no reference in Van Heusen to the use of a thermoplastic
“ cellulose derivative in the form of yarns, woven into one of the two or more
“ fabrics to be united and which may be cut and sewn and handled like any
“ other fabric, and this, I think on grounds of utility, would be much more
“ desirable and convenient than dealing with pieces of fabrics that were
“ coated with a cementing material. Van Heusen, in my opinion, is not an
“ anticipation of Dreyfus.”

The specification refers to the thermoplastic derivative of cellulose being 20
present only in the form of yarns, filaments or fibres woven, knitted or worked
into one or more of the layers constituting the final composite product, but no
mention of this essential characteristic being included in the patentee’s claims
Counsel for the Appellant submit that the claims cannot be narrowed by the
introduction into them by the Court of a limitation which they do not contain.

The claims in the British Patent, No. 248,147, contain the limitation in the
words :—

“ woven, knitted or other fabric composed of or containing filaments
“ or fibres of a thermoplastic cellulose derivative or derivatives.”

and a similar limitation also appears in the claims of the corresponding United 30
States Patent No. 1,903,960 in the words :—

“ a fabric containing yarns comprising a thermoplastic derivative of
“ cellulose.”

Both the British and the United States applications were made prior in date to
the application in Canada.

Unless the claims in the Canadian patent can properly be narrowed by the
introduction of a limitation to the use of the cellulose derivative in the form of
yarns, filaments or fibres, they are, we think, clearly anticipated by the United
States patent of Van Heusen and the British patents of Green and Henry Dreyfus.

Van Heusen (U.S. No. 1,479,565, application filed November 18, 1921, 40
patent granted January 1, 1924) discloses the manufacture of a three-ply collar
consisting of a lining and two outer plies. These are caused to combine into a
single composite sheet by the application to the lining of a cellulose derivative
in solution to act as a “ cementing agent,” whereupon the outer plies and the
lining are treated . . . “ by heat and pressure to cause the cementing material
“ to be converted into its final form and thereby secure the separate layers of
“ fabric together.” The specification recites that according to the invention two

or more pieces of fabric are taken and secured together by means of an intermediate cementing or binding medium that is waterproof or water insoluble and which does not affect in any objectionable way the outside appearance of the fabric but which nevertheless "combines the different layers of fabric together into a composite integral whole." The cementing agent for securing the different layers or plies of fabric together is described as capable of variation. Agents such as cellulosic binding materials can be used. For example, solutions of cellulose derivatives such as cellulose nitrate in suitable solvents, or solutions of cellulose in cellulose solvents can be used. The binding material can be applied in different ways. The separate pieces of fabric may thus, for example, be folded in folding machines and the separate pieces of the fabric, with their edges turned in, can then be coated with the adhesive material and treated to convert the layer of adhesive into a permanent bond. The fabric can similarly be coated before the edge is turned so that the turned-in edge will similarly be secured in place. After the fabric has been coated, and either before or after the collar has been built up therefrom, the coating can be modified to convert it into a form better adapted for securing the layers of fabric together. The specification continued:

20 "In the case of a solution of a cellulose derivative in an organic solvent, " the solvent may be partly evaporated before the layers of the fabric " are secured together. In other cases, the pieces of fabric may be put " together and pressed in a heated press to modify or change the binding " material and convert it into its final form."

The Van Heusen patent presents a real difficulty to the Respondent. Counsel for the Appellant argue that the Respondent is on the horns of a dilemma—if it asserts that its process is different from Van Heusen because Van Heusen did not adopt yarns, filaments or fibres of the cellulose derivative in the intermediate layer then the Respondent's claims are too broad in that the claims are not confined and limited to the use of the cellulose in yarns
30 filaments, or fibres woven, knitted or worked into the intermediate material; whereas on the other hand if the Respondent relies on the claims as they stand without reference to the use of the cellulose in the form of yarns, filaments or fibres, the process was anticipated by Van Heusen.

Green (British No. 9879 of 1889) refers to the use of cellulose and particularly octo-nitro-cellulose as forming "a good substitute for silk" and suggests as one alternative its being used as a coating for ordinary yarns and, as another, either its direct extrusion on to an ordinary fabric through capillary tubes in the form of threads or ribbons, or its being wound in the form of threads on bobbins, these threads being subsequently affixed to an ordinary
40 fabric "by pressure with or without heat . . . in order to insure the " more perfect union of the filament or ribbon to the fabric." "The resulting " products are described as 'compound fabrics' capable of use for 'articles " of dress . . . and numerous other articles . . . to which silk " and mixtures of silk . . . are now applied' including 'collars, cuffs, " 'hats or bonnets.'"

Green's patent has for its object to impart to fabric threads and other articles a silk-like lustre. Octo-nitro-cellulose is used for this purpose in the

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form of a coating applied to the article. The solution of this octo-nitro-cellulose is forced through jets, i.e., squirted, on the surface of the fabric. There is no yarn used for the purpose of uniting.

Henry Dreyfus (British No. 173,021, 1921) refers to previous proposals for the use in the production of glass substitutes of cellulose esters in the form, among others, of a "web" combined with a "metallic or textile fabric" and proposed the analogous use of cellulose ethers, suggesting as one alternative that an ordinary fabric "may be embedded by heat and pressure into a solidified "film, sheet or web of the ether or ether composition or between two such films, "sheets or webs." This patent does not show the use of cellulose derivatives in the form of yarns, but in the form of sheets or coatings. 10

There is no necessity for us to examine closely other British and United States patents referred to during the argument. Van Heusen clearly disclosed the process of taking the separate pieces of fabric and securing them together "into what is in effect an integral composite fabric" by the use of an intermediate binding layer containing solutions of cellulose derivatives. It constitutes a complete anticipation of the claims of the Respondent unless those claims can be modified by incorporating the limitation (which modification the Appellant's Counsel contend cannot be made) that the thermoplastic derivative of cellulose be in the form of yarns, filaments or fibres woven into the intermediate fabric. 20

It may be stated as a general rule that the ambit of the invention must be circumscribed by definite claims. It is question of law, then, whether or not the claims in this case read in the light of the specification may be limited. If they cannot, the claims remain so broad as to be invalid because of the prior art. If limited, they have not been anticipated. It is difficult to understand why the inventor in defining his claims in his British application should have expressly mentioned "woven, knitted or other fabric composed of or containing filaments "or fibres of a thermoplastic cellulose derivative or derivatives," and in defining his claims in the United States application should have expressly mentioned "a fabric containing yarns comprising a thermoplastic derivative of cellulose" and should have entirely omitted such words in his subsequent application in Canada. Why do the claims omit what Counsel for the Respondent contended at the trial was the "new . . . and all-important feature of the invention," namely, the use of thermoplastic yarns of cellulose derivative woven into the fabric? We cannot say. Throughout the somewhat long specification there is a continuous reference to the use of the thermoplastic derivative of cellulose in the form of yarns, filaments or fibres and it is plainly the very essence of the disclosure in the specification. Why, then, was it left out of the claims? It may have been a slip of the draftsman or it may have been a deliberate omission 40 in an effort to secure a wider field of protection than the disclosure warranted.

The Patent Act 1923 (13-14 Geo. V, chap. 23) in force at the time of the application and grant of the patent expressly required by subsec. (1) of sec. 14 thereof that the specification

"shall end with a claim or claims stating distinctly the things or combinations which the applicant regards as new and in which he claims "an exclusive property and privilege."

Subsec. (2) of sec. 35 of The Patent Act 1935 (25-26 Geo. V, chap. 32) is substantially in the same language.

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Lord Gottenham, L.C., in *Kay v. Marshall* (1836) 1 Myl. & C., 373, said :

“ The claim is not intended to aid the description, but to ascertain the
“ extent of what is claimed as new.”

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and Lord Chelmsford in *Harrison v. The Anderston Foundry Co.* (1876) 1 A.C., 574, said :

“ The office of a claim is to define and limit with precision what it is
“ which is claimed to have been invented and therefore patented.”

As Lord Cairns put it in the *Anderston* case,

10 “ Everything which is not claimed is disclaimed.”

Terrell on Patents (8th ed., 1934) at p. 134 states the rule that

“ if the words of the claim are plain and unambiguous, it will not be
“ possible to expend or limit their scope by reference to the body of the
“ specification.”

In *Ingersoll Sergeant Brill Company v. Consolidated Pneumatic Tool Company Ltd.*, 25 R.P.C. (1908) p. 61, at p. 83 in the House of Lords the Lord Chancellor, Lord Loreburn, said :

20 “ Obviously, the rest of the Specification may be considered in order
“ to assist in comprehending and construing a Claim, but the Claim must
“ state, either by express words or by plain reference, what is the invention
“ for which protection is demanded. The idea of allowing a patentee to use
“ perfectly general language in the Claim, and subsequently to restrict, or
“ expand, or qualify what is therein expressed by borrowing this or that
“ gloss from other parts of the Specification, is wholly inadmissible. I should
“ have thought it was also a wholly original pretension.”

Later, in *Natural Colour Kinematograph Co. Ltd. v. Bioschemes Ltd.* 32 R.P.C. (1915) p. 256, at p. 266, Lord Loreburn practically repeated what he had said in the *Ingersoll* case :

30 “ Some of those who draft Specifications and Claims are apt to treat
“ this industry as a trial of skill, in which the object is to make the Claim
“ very wide upon one interpretation of it, in order to prevent as many
“ people as possible from competing with the Patentee’s business, and then
“ to rely upon carefully prepared sentences in the Specification which, it is
“ hoped, will be just enough to limit the Claim within safe dimensions
“ if it is attacked in Court. This leads to litigation as to the construction of
“ Specifications, which could generally be avoided if at the outset a sincere
“ attempt were made to state exactly what was meant in plain language.
“ The fear of a costly law suit is apt to deter any but wealthy competitors
“ from contesting a patent. This is all wrong. It is an abuse which a Court
40 “ can prevent, whether a charge of ambiguity is or is not raised on the
“ pleadings, because it affects the public by practically enlarging the
“ monopoly, and does so by a kind of pressure which is very objectionable.
“ It is the duty of a patentee to state clearly and distinctly either in direct
“ words or by clear and distinct reference, the nature and limits of what he
“ claims. If he uses language which, when fairly read, is avoidably obscure

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“ or ambiguous, the patent is invalid, whether the defect be due to design,
“ or to carelessness or to want of skill.”

In *Erickson's Patent case*, 40 R.P.C. (1923) p. 477, it was held that the Patentee had failed so to limit his first claim as to confine it to that which was the novelty (if any) of the invention, and that accordingly the claim was so wide as to render the Patent invalid. Pollock, M.R., said at p. 486 :

“ We cannot construe the specification as necessarily leading to the
“ conclusion that the feature of novelty is claimed. Claim I certainly,
“ fairly construed, appears to admit of any claim in relation to a perforated
“ cylinder being included in it, and on the ground, therefore, that the matter 10
“ of novelty, which is the sole matter and pith of the invention, is not
“ indicated, and also on the ground that the Claim is so wide that it would
“ include any claim in relation to a perforated cylinder, it appears to me
“ that the Claim is bad.”

In *British Hartford-Fairmont Syndicate, Ltd. v. Jackson Bros. (Knottingley) Ltd.* 49 R.P.C. (1932) p. 495, at p. 556, Lord Justice Romer said :—

“ What justification there can be for altering the language of the Claim
“ in this or in some similar manner I am at a loss to conceive. One may,
“ and one ought to, refer to the body of the Specification for the purpose of
“ ascertaining the meaning of words and phrases used in the Claims or for 20
“ the purpose of resolving difficulties of construction occasioned by the
“ Claims when read by themselves. But where the construction of a
“ Claim when read by itself is plain, it is not in my opinion legitimate to
“ diminish the ambit of the monopoly claimed merely because in the body
“ of the Specification the Patentee has described his invention in more
“ restricted terms than in the Claim itself. The difference may well have
“ been intentional, and created with the object—to use the words of Lord
“ Loreburn in the *Natural Colour Kinematograph case*—of holding in
“ reserve a variety of constructions for use if the patent should be called in
“ question, and in the meantime to frighten off those who might be disposed 30
“ to challenge the patent.”

In the judgment of P. O. Lawrence, L.J., there occur (at pp. 550 and 551) passages of almost similar effect. That case went to the House of Lords and the appeal was dismissed, 51 R.P.C. (1934) 254. Lord Tomlin, whose judgment was concurred in by Lord Buckmaster and Lord Warrington, said in part, at p. 260 :—

“ The object of Letters Patent is to secure to the Patentee during the
“ continuance of the grant the absolute monopoly of the manner of manu-
“ facture which the Patent is designed to protect. It removes the inven-
“ tion from the open field of competition. It follows that it is essential 40
“ that the protected matter should be accurately defined in order that those
“ familiar with the industry to which the invention relates should have
“ clear warning of what is forbidden to them.”

In *R.C.A. Photophone, Ltd. v. Gaumont-British Picture Corporation, Ltd.*, and *British Acoustic Films, Ltd.*, 53 R.P.C. (1936), p. 167, Lord Justice Romer at p. 195 said :

“ In the days before it was obligatory on a patentee to set out his

10 “ claims in his specification, it was often possible to find in it the statement
 “ of some principle that the patentee claimed to have discovered and a
 “ description of some method of putting the principle into practice. In
 “ such cases the invention might well be regarded as being an invention of
 “ all such methods ; but now that claims are obligatory it is, in my judgment,
 “ essential that the patentee should claim all such methods in unambiguous
 “ terms, making it quite clear what the principle is. As was said by Lord
 “ Shaw in *Ridd Milking Machine Company v. Simplex Milking Machine*
 “ *Company*, reported in 33 Reports of Patent Cases 309, at p. 317 : ‘ If any
 “ ‘ claim for a principle is made it must undoubtedly appear in the claim
 “ ‘ as that claim is stated, and must not be left to an inference resting on a
 “ ‘ general review of the specification or a general search among the language
 “ ‘ employed therein for the meritorious element of principle or idea.’
 “ It is the duty of a patentee by his claim to make quite clear what is the
 “ ambit of his monopoly in order that workers in the art may be left in
 “ no doubt as to the territory that is forbidden them during the life of the
 “ patent. If he fails to do this, his patent becomes a public nuisance.
 “ It is equally incumbent upon him to describe at least one way, and the
 20 “ best way known to him, of carrying his invention into effect, in order that,
 “ when his monopoly comes to an end, the workers in the art may turn the
 “ invention to account. This is the consideration he pays for his monopoly.”

And in the *Mullard Radio Valve Co. Ltd. v. Philco Radio and Television Corporation of Great Britain, Ltd., and Others*, 53 R.P.C. (1936), p. 323 in the House of Lords, Lord MacMillan said at p. 345 :

30 “ A patentee may make a most meritorious discovery and may give an
 “ entirely adequate description of his inventive idea and of the manner of
 “ putting it into practice, but when he comes to formulate the claim to his
 “ invention he may claim a monopoly wider in extent than is warranted
 “ by what he has invented. The Patentee has told us quite definitely that
 40 “ his invention deals with the case of a final amplifier which comprises a
 “ screening grid between the control grid and the anode and that he has
 “ invented means by which, in such a case, the screening grid current is
 “ prevented entirely or partially from increasing at the expense of the anode
 “ current when the anode potential falls. The problem which he set out to
 “ solve and the disadvantages which he professes to overcome relate solely
 “ to discharge tubes with a screening grid between the control grid and the
 “ anode. His discovery was that, if in a discharge tube with a screening
 “ grid between the control grid and the anode he inserted between the
 “ screening grid and the anode an additional ‘ suppressor ’ grid, he
 40 “ achieved the advantageous results which he describes. That is the
 “ ambit of his invention and for that he is entitled to protection. But
 “ Claim 2 makes no reference to screening grids or control grids at all.
 “ It simply speaks of three or more electrodes irrespective of their function
 “ as screening grids or control grids or suppressor grids or of their arrange-
 “ ment relatively to each other.”

And at p. 346:

“ A patentee is granted his monopoly in order to protect the invention

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—continued.

“ which in his specification he has communicated to the public. He is not
“ entitled to claim a monopoly more extensive than is necessary to protect
“ that which he has himself said is his invention. In the present case I
“ think that in Claim 2 the patentee has claimed more than his inventive
“ idea entitles him to protect.”

And at p. 347:

“ If an inventor claims an article as his invention but the article will
“ only achieve his avowed object in a particular juxtaposition and his
“ inventive idea consists in the discovery that in that particular juxtaposi- 10
“ tion it will give new and useful results, I do not think that he is entitled
“ to claim the article at large apart from the juxtaposition which is essential
“ to the achievement of those results.”

And further, on p. 347 :—

“ It is undoubtedly the case that a claim may be too wide, in the
“ sense that it claims protection for that for which the patentee is not
“ entitled to protection, or that it gives him a wider protection than his
“ discovery entitles him to receive. In the present instance the patentee
“ has claimed a monopoly of all valves with a certain feature of construction
“ although the merit of his invention does not lie in that feature but in
“ the utilisation in a particular and limited way of a valve containing 20
“ that feature of construction. In so doing he has in my opinion over-
“ reached himself and his claim is wider than the law will support.”

And Lord Roche, at p. 351 :—

“ It is true that an inventor need not state in a claim the reasons
“ that have led him to his invention or the stage or stages by which he has
“ arrived at it. But the essential characteristics of his actual invention
“ he must state.”

In the Canadian patent involved in this appeal before us the inventor did not state in his claims the essential characteristic of his actual invention though it does appear in the claims in his British and United States patents. No 30 explanation is offered. We are invited to read through the lengthy specification and import into the wide and general language of the claims that which is said to be the real inventive step disclosed. But the claims are unequivocal and complete upon their face. It is not necessary to resort to the context and as a matter of construction the claims do not import the context. In no proper sense can it be said that though the essential feature of the invention is not mentioned in the claims the process defined in the claims necessarily possesses that essential feature. The Court cannot limit the claims by simply saying that the inventor must have meant that which he has described. The claims in fact go far beyond the invention. Upon that ground the patent is invalid. 40

The appeal should be allowed with costs and the judgment appealed from should be varied by declaring the Respondent's Patent No. 259,960 to be invalid and by directing the Respondent to pay to the Appellant its costs of the action.

No. 28.

Disclaimer of certain claims of Patent No. 265,960.

In the
Supreme
Court.

IN THE CANADIAN PATENT OFFICE.

No. 28.
Disclaimer
31st March,
1937

DISCLAIMER

THE PATENT ACT, 1935.

WHEREAS, the undersigned Canadian Celanese Limited, a body politic and corporate, having its head office and principal place of business in the City of Montreal, in the Province of Quebec, Canada, is the owner of Canadian Letters Patent No. 265,960 granted on the 16th day of November, 1926, for an invention
10 entitled FABRICS AND SHEET MATERIALS AND THE MANUFACTURE THEREOF.

AND WHEREAS, through mistake, accident or inadvertence, and without any wilful intent to defraud or mislead the public, the specification has been made too broad, asserting a claim to more than that of which Camille Dreyfus was the inventor.

NOW THEREFORE, the undersigned disclaims from the scope of claims 1 to 6, inclusive, and 25 the use of a fabric or fabrics containing a thermoplastic derivative of cellulose except where such thermoplastic derivative of cellulose is in the form of yarns, filaments or fibres.

20 It further disclaims from the scope of claims 7 to 12, inclusive, the use of a fabric or fabrics containing an organic derivative of cellulose except where such organic derivative of cellulose is in the form of yarns, filaments or fibres.

It further disclaims from the scope of claims 13 to 18, inclusive, the use of a fabric or fabrics containing a cellulose ester except where such cellulose ester is in the form of yarns, filaments or fibres.

It further disclaims from the scope of claims 19 to 24, inclusive, the use of a fabric or fabrics containing cellulose acetate except where such cellulose acetate is in the form of yarns, filaments or fibres.

30 IN WITNESS WHEREOF, the undersigned has set its hand and affixed its seal this 31st day of March, 1937.

CANADIAN CELANESE LIMITED

By: W. McC. CAMERON

Vice-President

In the presence of:—

[S] LEE CADIEN

Secty.

[S] CHARLES W. LEVINSON.

No. 29.

In the
Supreme
Court.

Respondent's Petition for Re-hearing.

DOMINION OF CANADA.

No. 29.
Res-
pondent's
Petition for
re-hearing.
8th April,
1937.

IN THE SUPREME COURT OF CANADA.

Between

THE B. V. D. COMPANY LIMITED *Appellant.*
and
CANADIAN CELANESE LIMITED *Respondent.*

RESPONDENT'S PETITION FOR RE-HEARING.

TO THE HONOURABLE SUPREME COURT OF CANADA,

10

The petition of CANADIAN CELANESE LIMITED, the Respondent herein,

RESPECTFULLY SHEWETH:—

1°.—WHEREAS judgment was delivered by this Honourable Court on the 19th day of March 1937, allowing the present appeal with costs and declaring the Respondent's patent No. 265,960 in question in this appeal invalid;

2°.—WHEREAS the said judgment has not yet been settled;

3°.—WHEREAS as appears from the Reasons for Judgment in the present case (delivered by His Lordship Mr. Justice Davis) Respondent's patent was declared invalid, because the claims thereof were too wide in that the use of the derivative of cellulose referred to in said claims was not restricted to the use of same in the form of yarns, filaments or fibres, although the invention was so restricted and properly described in the body of the specification of the said patent;

4°.—WHEREAS the said Reasons for Judgment furthermore point out that the inventor's corresponding patents in Great Britain and in the United States of America, and the claims thereof, are restricted to the use of a derivative of cellulose in the form of yarns, filaments or fibres.

5°.—WHEREAS since the said judgment was pronounced, there was filed and recorded in the Patent Office, on behalf of the Respondent, on or about the 3rd day of April, 1937, under the provisions of Section 50 of the Patent Act, a Disclaimer curing the alleged defect and restricting the scope of each of the claims of the said patent by disclaiming the use of a fabric or fabrics containing such derivative of cellulose, except where such derivative is in the form of yarns, filaments or fibres, as more fully appears from a copy of the said Disclaimer hereunto annexed;

6°.—WHEREAS the filing of the said Disclaimer, since the delivery of the judgment, makes it necessary to provide for it in the formal judgment of the

Court and new conditions have thereby arisen which render desirable the re-hearing of the present appeal under Rule 61 of the Supreme Court of Canada ;

7°.—WHEREAS the filing of a Disclaimer following a judgment of the Court declaring a patent invalid is common practice in other Countries, including Great Britain and the United States of America, and such course is also consistent with the provisions of the Patent Act 1935 ;

10 WHEREFORE your Petitioner humbly prays that it may please this Honourable Court, in view of the filing of the Respondent of the said Disclaimer, to order the re-hearing of the present appeal, in order to meet the new conditions that have arisen since the delivery of the judgment and to provide in the formal judgment of the Court for the filing already made of the said Disclaimer, the whole upon such terms and conditions as to this Honourable Court may seem just.

Montreal, April 8th, 1937.

(Sgd.) LAJOIE GELINAS & MACNAUGHTEN.
Solicitors for the Respondent.

In the
Supreme
Court.

No. 29.
Res-
pondent's
Petition for
re-hearing.
8th April,
1937—
continued.

No. 30.

Affidavit of Henri Gerin-Lajoie in support of Petition for re-hearing.

20 I, HENRI GERIN-LAJOIE, Advocate and King's Counsel, residing in the City of Outremont, in the District of Montreal, Province of Quebec, being duly sworn, do depose and say :—

1°.—I am Counsel for the Respondent herein and one of its Solicitors ;

2°.—Since the delivery of the judgment in the present case by this Honourable Court, there was filed and recorded in the Patent Office on behalf of the Respondent, on or about April 3rd, 1937, a Disclaimer restricting the scope of each of the claims of Respondent's patent No. 265,960, copy of which is annexed to the present petition ;

3°.—All the facts alleged in the foregoing petition are true to the best of my knowledge and belief ;

30

SWORN TO BEFORE ME AT MONTREAL
this 8th day of April, Nineteen hundred and
Thirty-seven.

(Sgd.) ROCH A. BERGERON,
*Commissioner of the Superior Court for the
District of Montreal.*

AND I HAVE SIGNED :

(Sgd.) H. GERIN-LAJOIE.

—NOTICE—

No. 30.
Affidavit
in support
of Petition
for re-
hearing.
8th April,
1937.

In the
Supreme
Court.

No. 31.**Notice of presentation of Petition for re-hearing.**

No. 31.
Notice of
Presenta-
tion of
Petition for
re-hearing,
8th April,
1937.

To Messrs. SMART & BIGGAR,
Attorneys for the Appellant.

Sirs:—

TAKE NOTICE of the foregoing petition and of the affidavit in support thereof, and that the said petition will be presented for adjudication thereon before the Honourable Supreme Court of Canada at the opening of its next term, in the City of Ottawa, on the 27th day of April instant (1937), at ten o'clock in the forenoon, or so soon thereafter as Counsel may be heard; and do you govern yourselves accordingly.

Montreal, April 8th, 1937.

(Sgd.) LAJOIE GELINAS & MACNAUGHTEN,
Solicitors for the Respondent.

No. 32.

No. 32.
Formal
Judgment
dismissing
Petition.
1st June,
1937.

Formal Judgment dismissing Petition.

IN THE SUPREME COURT OF CANADA.

Tuesday, the 1st day of June, 1937.

PRESENT—THE RIGHT HONOURABLE THE CHIEF JUSTICE OF CANADA.
THE HONOURABLE MR. JUSTICE RINFRET. 20
THE HONOURABLE MR. JUSTICE DAVIS.
THE HONOURABLE MR. JUSTICE KERWIN.
THE HONOURABLE MR. JUSTICE HUDSON.

Between :

THE B. V. D. COMPANY LIMITED (Plaintiff) Appellant

and

CANADIAN CELANESE LIMITED... .. (Defendant) Respondent.

The motion of the above-named Respondent for an order of this Court for a re-hearing of the appeal herein by reason of the filing of a disclaimer in the Patent Office of the Dominion of Canada in connection with Patent No. 265,960 30 in question in this appeal and for an order providing in the formal Judgment of the Court for the filing of the said disclaimer, having come on to be heard before this Court on the 27th day of April, 1937, in the presence of Counsel as well for the Appellant as for the Respondent, and this Court on the said motion

having made an order granting to the Respondent leave to apply for an order varying the Judgment of this Court pronounced on the 19th day of March, 1937, by directing a reference back to the Exchequer Court to determine whether or not effect can and ought to be given to the disclaimer above mentioned filed by the Respondent and whether relief ought to be granted under subsection 2 or section 53 of the Patent Act in the action instituted by the Appellant, such leave having been given on the condition that the leave itself should not affect the status of the Judgment herein delivered on the 19th of March, 1937, which was to stand and have its full effect unless and until varied as prayed for by the Respondent, and the Court having stated that it would not assume that the specification modified by giving effect to the disclaimer would disclose and claim a patentable invention, and that it would not hear argument on that question, and the said application of the Respondent for leave to apply for an order varying the judgment of this Court having come on to be heard before this Court on the 3rd day of May, 1937, in the presence of Counsel as well for the Appellant as for the Respondent, whereupon and upon hearing what was alleged by Counsel aforesaid, this Court was pleased to direct that the said application should stand over for judgment, and the same coming on this day for judgment :

10
20
THIS COURT DID ORDER AND ADJUDGE that the said application should be and the same was dismissed with costs, which are hereby fixed at the sum of THREE HUNDRED DOLLARS to be paid by the said Respondent to the said Appellant.

Settled July 2nd 1937.

(Sgd.) J. F. SMELLIE,
Registrar.

No. 33.

Reasons for Judgment.

MOTION.

30

Before :

THE CHIEF JUSTICE and RINFRET, DAVIS, KERWIN and HUDSON JJ.
DUFF, J. (RINFRET, DAVIS, KERWIN and HUDSON JJ. concurring) :

The Exchequer Court, on the 26th day of March, 1936, delivered judgment declaring that the Defendant's patent "is valid and infringed by the Plaintiff" and dismissing the action of the Appellants under section 60 praying for a declaration that the patent was void or that, in the alternative, it was not infringed by the manufacture of certain shirt collars by the Plaintiffs.

40
The Plaintiffs appealed and this Court delivered judgment on the 19th day of March, 1937, allowing the appeal and declaring the patent of the Respondents void. The judgment proceeded upon the grounds that the claims in the patent were too broad and embraced within their scope more than the alleged invention disclosed in the specification and, further, that the claims, properly construed, had been anticipated by certain United States and British patents.

In the
Supreme
Court.

No. 32.
Formal
Judgment
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Petition.
1st June,
1937—
continued.

No. 33.
Reasons for
Judgment.
1st June,
1937—

In the
Supreme
Court.

No. 33.
Reasons for
Judgment.
1st June,
1937—
continued.

On the 31st of March, 1937, the Respondents filed a disclaimer in the Patent Office in the following terms :—

WHEREAS, the undersigned Canadian Celanese Limited, a body politic and corporate, having its head office and principal place of business in the City of Montreal, in the Province of Quebec, Canada, is the owner of Canadian Letters Patent No. 265,960 granted on the 16th day of November, 1926, for an invention entitled FABRICS AND SHEET MATERIALS AND THE MANUFACTURE THEREOF.

AND WHEREAS, through mistake, accident or inadvertence, and without any wilful intent to defraud or mislead the public, the specification has been made too broad, asserting a claim to more than that of which Camille Dreyfus was the inventor. 10

NOW THEREFORE, the undersigned disclaims from the scope of claims 1 to 6, inclusive, and 25 the use of a fabric or fabrics containing a thermoplastic derivative of cellulose except where such thermoplastic derivative of cellulose is in the form of yarns, filaments or fibres.

It further disclaims from the scope of claims 7 to 12, inclusive, the use of a fabric or fabrics containing an organic derivative of cellulose except where such organic derivative of cellulose is in the form of yarns, filaments or fibres.

It further disclaims from the scope of Claims 13 to 18, inclusive, the use of a fabric or fabrics containing a cellulose ester except where such cellulose ester is in the form of yarns, filaments or fibres. 20

It further disclaims from the scope of claims 19 to 24, inclusive, the use of a fabric or fabrics containing cellulose acetate except where such cellulose acetate is in the form of yarns, filaments or fibres :

and on the 27th of April, they moved for an order directing a re-hearing of the appeal in which, as already mentioned, this Court has pronounced judgment

in order to meet the new conditions that have arisen since the delivery of the judgment and to provide in the formal judgment of the Court for the filing already made of the said Disclaimer, the whole upon such terms and conditions as to this Honourable Court may seem just. 30

On the hearing of this application, leave was given to the Respondents to move that in lieu of a re-hearing of the Appeal, the judgment of this Court, which had not been formally drawn up or entered, should be varied by directing a reference back to the Exchequer Court to determine whether effect ought to be given to the disclaimer, and whether relief ought to be given to the Respondents under subsection 2 of section 53.

We have fully considered the application of the Respondents and have come to the conclusion that neither a re-hearing of the Appeal nor a reference back to the Exchequer Court can properly be directed. 40

The grounds upon which the Appellants appealed from the judgment of the Exchequer Court are summarized in their Factum thus :

(1) that the Defendant's Patent 265,960 is void on the grounds :

(a) that the patent claims do not specify what is admittedly the "all important feature" of the alleged invention, namely that the cellulose derivative used should be in the form of yarns woven or knitted into a fabric ;

(b) that as they stand the claims are anticipated by the United States patent to Van Heusen and the British patents to Green and H. Dreyfus ;

(c) that if, in the process the patent covers, the cellulose derivative need not be made to flow by taking advantage of its thermoplastic quality, the claims are also anticipated by the United States patents to Kennedy, Oliver and Weidig, the British patents to Berard and Millar, and the Swiss patents to Le Faguays and Nachmann ;

10 (d) that if, on the other hand, it is essential that the cellulose derivative should be made to flow by heat and the claims extend beyond this, they assert a monopoly to more than the patentee invented ;

(e) that claims 7-18 do so extend and are therefore invalid ;

(f) that claims 19-24 either do so extend or are unnecessary ;

(g) that the product claim (25) is anticipated ;

(h) that the specification discloses no invention having regard to the state of the art;

(i) that the specification is misleading in respect of the directions given as to the use of cellulose acetate, nitrocellulose and methyl cellulose;

20 (j) that either the specification is ambiguous on the point of the impermeability of the resulting composite sheet or the claims assert a monopoly of more than the relatively impermeable sheets to the production of which the invention is confined; or

(2) that the process used by the Plaintiff is not an infringement of the patent on the grounds;

(a) that the claims extend only to a process in which a thermoplastic cellulose derivative is made to flow by the application of heat and that this does not occur in the Plaintiff's process;

30 (b) that the expression "softening agent" does not include volatile solvents and that in the Plaintiff's process only a volatile solvent is used.

This Court, in disposing of the appeal, did not find it necessary to consider the issue of infringement, or any of the grounds upon which the Appellants attacked the validity of the patent other than those indicated in paragraphs 1 (a) and 1 (b). Upon these grounds, and these grounds alone, we allowed the appeal and held the patent void.

It is necessary to set out the relevant statutory provisions. They are sections 50, 53 and 60, which are textually in these words;

40 50—(1) Whenever, by any mistake, accident or inadvertence, and without any wilful intent to defraud or mislead the public a patentee has

(a) made his specification too broad, claiming more than that of which he or the person through whom he claims was the first inventor; or

(b) in the specification, claimed that he or the persons through whom he claims was the first inventor of any material or substantial part of the invention patented of which he was not the first inventor, and to which he had no lawful right;

he may, on payment of the fee hereinafter provided, make disclaimer of

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such parts as he does not claim to hold by virtue of the patent or the assignment thereof.

(2) Such disclaimer shall be in writing, and in duplicate, and shall be attested by one or more witnesses. One copy thereof shall be filed and recorded in the office of the Commissioner. The other shall be attached to the patent and made a part thereof by reference. The disclaimer shall thereafter be deemed to be part of the original specification.

(3) No disclaimer shall affect any action pending at the time when it is made, except as to unreasonable neglect or delay in making it.

(4) In case of the death of the original patentee or of his having assigned the patent a like right to disclaim shall vest in his legal representatives, any of whom may exercise it. 10

(5) The patent shall, after disclaimer as in this section provided, be deemed to be valid for such material and substantial part of the invention, definitely distinguished from other parts thereof claimed without right, as is not disclaimed and is truly the invention of the disclaimant, and the disclaimant shall be entitled to maintain an action or suit in respect of such part accordingly.

53.—(1) A patent shall be void if any material allegation in the petition or declaration of the applicant in respect of such patent is untrue, or if the specifications and drawings contain more or less than is necessary for obtaining the end for which they purport to be made, and such omission or addition is wilfully made for the purpose of misleading. 20

(2) If it appears to the Court that such omission or addition was an involuntary error, and if it is proved that the patentee is entitled to the remainder of his patent *pro tanto*, the Court shall render a judgment in accordance with the facts, and shall determine as to costs, and the patent shall be held valid for that part of the invention described to which the patentee is so found to be entitled.

(3) Two office copies of such judgment shall be furnished to the Patent Office by the patentee. One of them shall be registered and remain of record in the office and the other shall be attached to the patent and made a part of it by a reference thereto. 30

60.—(1) A patent or any claim in a patent may be declared invalid or void by the Exchequer Court of Canada at the instance of the Attorney General of Canada or at the instance of any interested person.

(2) If any person has reasonable cause to believe that any process used or proposed to be used or any article made, used or sold or proposed to be made, used or sold by him might be alleged by any patentee to constitute an infringement of an exclusive property or privilege granted thereby, he may bring an action in the Exchequer Court of Canada against the patentee for a declaration that such process or article does not or would not constitute an infringement of such exclusive property or privilege. 40

(3) Except the Attorney General of Canada or the Attorney General of a province of Canada, the Plaintiff in any action under this section shall before proceeding therein, give security for the costs of the patentee in such sum as the Court may direct, but a Defendant in any action for the infringe-

ment of a patent shall be entitled to obtain a declaration under this section without being required to furnish any security.

Before proceeding further, it is convenient to point out that the Respondents from the outset took the position that their invention in its essence consisted in the "use of thermoplastic yarns of a cellulose derivative woven into the fabric. That was the new and all-important feature of the invention. We are not concerned with the uniting of fabrics otherwise than in the presence of a cellulose derivative in the form of yarn woven into the fabric"; this was stated by counsel at the beginning of the trial on being invited by the trial Judge to outline the nature of his case. In answer to a question put by the

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You are limiting to yarns are you ?

Mr. LAJOIE : I am not limiting, but the patent limits it very definitely, there can be no doubt about it.

This Court, in allowing the appeal, held that, on the true construction of the claims, the monopoly claimed was not limited by reference to this feature of the alleged invention disclosed ; and that the claims on their true construction were anticipated by the United States and British patents of Van Heusen, Green and H. Dreyfus ; and that, consequently, the patent was invalid.

The Respondents urge that the effect of the disclaimer is to correct this fault in the claims and that they should have an opportunity, either on a rehearing, or on a reference back to the Exchequer Court, to show that the claim of excessive monopoly was due to "mistake, accident or inadvertence and without any wilful intent to defraud or mislead the public" within the meaning of section 50, or to "involuntary error" within the meaning of section 53 ; and to establish the validity of the patent as amended by the disclaimer.

We shall not enter upon an examination of the precise meaning of subsection 1 of section 53 and we postpone for the present any reference to section 50 (3) ; we shall assume that, in an action under section 60, if a claim to relief under section 53 (2) were advanced at the proper stage by a prayer, for example, in the statement of defence for a declaration in the sense of that subsection, or where a disclaimer has been filed, in the sense of section 50 (5) it would be competent to the Court to grant such relief.

Assuming, then, that in the action out of which this appeal arises (in which the Respondents by their statement of defence ask for a declaration that their patent, as it stood before the filing of the disclaimer, was a valid patent) it would have been competent to make a declaration in the sense of section 53 (2) or in the sense of section 50 (5) ; it is, of course, quite indisputable that no such declaration could be made in this action, first, until all the grounds of invalidity advanced by the Appellants had been considered and rejected ; or, second, without disposing of the issues relating to infringement had been disposed of.

It is important at this point to notice that relief of such character involves, where, a disclaimer having been filed, a declaration is prayed under section 50 (5) : a declaration in the terms of that subsection that the

patent . . . is valid for such material and substantial part of the invention, definitely distinguished from other parts thereof claimed without right, as is not disclaimed and is truly the invention of the disclaimant, and

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the disclaimant shall be entitled to maintain an action or suit in respect of such part accordingly.

Where a declaration is prayed under section 53 (2), there are two essential conditions of this relief: first, an adjudication that "the addition" which would otherwise render the patent void under section 53 (1) was not "wilfully made for the purpose of misleading"; and, second, an adjudication that such addition was "an involuntary error" and "that the patentee is entitled to the remainder of his patent *pro tanto*." The Court, having adjudicated in this sense, may pronounce "the patent valid for that part of the invention to which the patentee is so found to be entitled."

10

Now, as will appear from what has already been said, this Court did not find it necessary to pronounce upon the questions whether the specification did disclose any invention for which the patentee, under claims properly framed, would be entitled to protection. Counsel for the Respondents did on this application refer to some expressions in the reasons for judgment which, he suggested, pointed to an intention to pronounce a decision upon that issue; but this Court did not intend to pass on the question, and did not in fact decide it.

On the appeal, the Appellants contended that they were entitled to judgment, not only on the ground on which they ultimately succeeded, but on all the other grounds designated above, including the ground numbered 1 (h) that the specification discloses no patentable invention. It is their right to have these grounds of appeal considered and adjudicated upon before any judgment is pronounced establishing the validity of the Respondents' patent qualified in the sense of the disclaimer. It is their right, moreover, to have such adjudication by this Court.

20

Further, if this Court, we repeat, should hold a view adverse to them on these grounds of appeal, it is their right to have this Court decide upon their contention that, assuming the patent to be valid, they do not by their manufacture infringe it.

It is plain, therefore, that we could not give the direction the Respondents ask for (without disregarding the legal rights of the Appellants) unless we are prepared to re-hear the appeal and enter upon a full examination of all the grounds of appeal advanced by the Appellants (except those upon which our judgment in the appeal is based), including the issue of subject matter, as well as the determination of the issue raised by the allegation now for the first time submitted by the Respondents, namely, that the excessive scope of the claims is due to "inadvertence" or "involuntary error."

30

The issues raised by the contentions upon which we have not passed and upon which it is now proposed that we shall adjudicate are substantial issues. We do not comment upon them further except to say this: Some of these contentions attack the claims as too broad in respects other than that in which we have held them to be excessive; and, as regards excessive scope in these respects, it would be necessary also, if excessive scope in the pertinent sense were found to exist, that the Respondents establish the existence of the preliminary condition of relief under sections 50 and 53 that such excess was due to "inadvertence" or "involuntary error."

40

It may be observed that, as regards excessive scope of the claims due to the absence of reference in them to the essence of the invention (the presence of

cellulose derivative in the form of yarns, filaments or fibres woven into a fabric) the evidence now in the record presents facts casting upon the Respondents a burden of explanation by no means trivial. The limiting words, for example, which the Respondents have sought to introduce by their disclaimer are, in effect, found in the English patent and the United States patent, and there is no suggestion of a reason why they were omitted from the Canadian patent, nor is there anything pointing to a satisfactory explanation of the terms of the Licences granted by the Respondents.

Our attention has, moreover, been called to the successful efforts of the
 10 Respondents in resisting discovery in relation to matters which *prima facie* might appear to be not without bearing upon this issue, as well as upon the issues of misrepresentation, anticipation and subject matter (the learned Judge assumed that experiment had been necessary, notwithstanding his order sustaining a refusal to answer questions concerning the Respondents' investigations on the examination for discovery). If we had been disposed to allow a re-hearing, it might have been necessary to exact, as a condition, that complete discovery should be made.

The Respondents urge that a refusal of their application will, in effect, deprive them of relief which the legislature intended patentees in their
 20 situation to have.

We are far from convinced that, in view of their conduct, the Respondents have not disintitiled themselves to such relief. They had notice from the particulars of objection that their patent was attacked on the ground that claims were excessive, and, moreover, on the ground that the claims, on their proper interpretation, had been anticipated by Van Heusen, Green and Dreyfus. They succeeded at the trial on this issue of anticipation because the trial Judge held that the essence of their invention consisted in the presence in one of the component fabrics of cellulose derivative in the form of yarns, filaments or fibres, and that, in view of this, the patents mentioned in which this was not
 30 an element of the invention did not constitute anticipation. The amendment to which they now seek to give effect, if made by disclaimer filed before the Statement of Defence, could not have prejudiced their just rights because it could only result in bringing the claims into conformity with what they were insisting was the true character of their invention. Assuming their *bona fides* they must have desired that the monopoly claimed should not extend beyond that to which they were entitled. If the Respondents, instead of asking *simpliciter* by their Statement of Defence for a declaration that the patent was valid, had asked for a declaration under section 53 (2) in the event of the Court holding the claims to be too broad, the issue of *bona fides* would have been
 40 raised and the litigation would have proceeded with full knowledge of all parties that the Respondents intended to pray for relief under that section; the same result might possibly have been reached by filing a disclaimer and praying, in the Statement of Defence, a declaration in the sense of section 50 (5).

On the appeal to this Court, the Respondents' Counsel contented himself with answering the attack on the claims thus;

In my submission, we are absolutely entitled to go back to the body of the specification to find out the meaning of those claims. My friend referred

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to the recent judgment of the House of Lords in the case of *Mullard Radio Corporation v. Philco* (1936) (2 All E.R. 920). In that case Lord MacMillan repeats what has been said over and over again, that, while each claim must be read independently, you look at the body of the specification to find out the meaning of each claim. Your Lordships have held time and again, in the Schweyer case, in the Board of Electric case, that the patentee is entitled to have his claims construed in the light of the dictionary he supplies in the body of the specification. In my submission, there cannot be the slightest question but that he is talking about cellulose derivative or cellulose acetate in the form of yarns. There can be no question about it. 10

At the stage at which this argument was made, this Court had power to amend the pleadings and, if necessary to hear fresh evidence in order to dispose of the issues which the Respondents now desire to litigate. Had the Respondents then taken the position they now take (which, as already observed, could not have prejudiced their just right) all the issues raised by the appeal could have been examined and disposed of as well as those which the Respondents now for the first time ask us to consider and determine on a re-hearing of the appeal.

The Respondents, nevertheless, insisted on maintaining the judgment of the trial Judge, declaring these claims, as framed, to be valid claims. Now, having lost on that issue of validity and judgment having been pronounced against them, 20 the Respondents seek a re-hearing in order to take up a new position never before even suggested by them, with all the attendant delay and inconvenience already indicated.

We think that by their conduct they have definitely elected against taking the position which they are now endeavouring to take ; and, however that may be, we are satisfied that, on grounds both of justice and convenience, the application should fail.

We do not think it necessary to express an opinion upon the construction and effect of the third subsection of section 50. We decide nothing, moreover, as to the relation between the procedure authorised by section 60 and that con- 30 templated by section 53. We have assumed (for the purposes of this judgment only) that a defendant in an action under section 60 can, by a proper and timely proceeding, obtain relief under subsection 2 of section 53 and, if there is a valid disclaimer, that the Court can in such an action take cognizance of that disclaimer ; but we decide none of these points.

The application is dismissed with costs.

No. 34.

In the
Privy
Council.

Order in Council granting Special Leave to Appeal.

L.S.

AT THE COURT AT BUCKINGHAM PALACE
The 24th day of February, 1938No. 34.
Order in
Council
granting
Special
leave to
Appeal,
dated
24th Feb-
ruary,
1938—

Present

THE KING'S MOST EXCELLENT MAJESTY

THE LORD PRESIDENT

SIR PHILIP SASSOON

EARL OF LUCAN

SIR JOHN ANDERSON

10 LORD SOUTHBOROUGH

MR. HUDSON

MR. SECRETARY ELLIOT

SIR CHARLES CLAUSON

WHEREAS there was this day read at the Board a Report from the Judicial Committee of the Privy Council dated the 3rd day of February 1938 in the words following, viz:—

“ WHEREAS by virtue of His late Majesty King Edward the Seventh's
 “ Order in Council of the 18th day of October 1909 there was referred unto
 “ this Committee a humble Petition of Canadian Celanese Limited in the
 “ matter of an Appeal from the Supreme Court of Canada between the
 “ Petitioners Appellants and the B. V. D. Company Limited Respondents
 20 “ setting forth (amongst other matters) that an Action was begun by the
 “ Respondents against the Petitioners in the Exchequer Court of Canada for
 “ a declaration (under Section 60 of the Canadian Patent Act 1935) that
 “ two patents of invention owned by the Appellants, bearing Nos. 265,960
 “ and 311,185, were not infringed by certain collars or shirts with attached
 “ collars sold by the Respondents and that the said patents were invalid and
 “ void: that by its Judgment delivered on the 26th March 1936 the Ex-
 “ chequer Court dismissed the Action with respect to patent No. 265,960
 “ declaring this patent to be valid and infringed by the Respondents and
 “ declared patent No. 311,185 invalid and void: that the Judgment was
 30 “ appealed from by the Respondents before the Supreme Court as to that
 “ part only which related to patent No. 265,960: that this patent is therefore
 “ the only one now in issue: that by its Judgment delivered on the 19th
 “ March 1937 the Supreme Court allowed the Appeal and declared the
 “ Appellants' patent No. 265,960 invalid on the ground that the claims
 “ were too broad and embraced more than the alleged invention disclosed
 “ in the body of the specification and further that the claims when thus
 “ construed were anticipated by some prior patents: that before the Judg-
 “ ment was drawn and entered the Appellants on the 3rd April 1937 filed a
 “ disclaimer under the provisions of Section 50 of the Canadian Patent Act
 40 “ restricting in terms the scope of the claims and expressly excluding
 “ therefrom that which the Supreme Court had held to be too wide: that
 “ thereupon the Appellants in order to avoid the invalidating of the patent
 “ presented an application to the Court on the 27th April 1937 alleging the
 “ filing of their disclaimer and praying for a re-hearing so that the Court

In the
Privy
Council.

No. 34.
Order in
Council
granting
Special
leave to
Appeal,
dated
24th Feb-
ruary,
1938—
continued.

“ might provide in its formal Judgment for the disclaimer already filed:
“ that by Judgment delivered on the 1st June 1937 the Appellants’ applica-
“ tion was dismissed: that in the Appellants’ submission the Judgments
“ of the Supreme Court on the merits of the Action itself as well as on the
“ Appellants’ application following the filing of their disclaimer are wrong
“ in law: that they raise very important questions of patent law as to
“ the proper construction of the claims in a patent specification and as
“ to a patentee’s right to file a disclaimer in the course of litigation
“ or following a decision of the Court affecting the validity of a patent: that
“ the patent in question is one of very considerable value and the processes 10
“ claimed therein are widely used in Canada and also in the United States of
“ America and in Great Britain: and reciting the history of the patent and
“ the process to which it relates and of the litigation between the parties
“ down to the Judgments of the Supreme Court; And humbly praying
“ Your Majesty in Council to order that the Appellants shall have special
“ leave to appeal from the Judgment of the Supreme Court of Canada
“ delivered on the 19th March 1937 on the merits of the case and from the
“ Judgment of the said Court delivered on the 1st June 1937 or for such
“ further or other Order as to Your Majesty in Council may appear just:

“ THE LORDS OF THE COMMITTEE in obedience to His late Majesty’s 20
“ said Order in Council have taken the humble Petition into consideration
“ and having heard Counsel in support thereof and in opposition thereto
“ Their Lordships do this day agree humbly to report to Your Majesty
“ as their opinion that leave ought to be granted to the Petitioners to enter
“ and prosecute their Appeal against the Judgments of the Supreme Court
“ of Canada dated the 19th day of March 1937 and the 1st day of June 1937
“ upon depositing in the Registry of the Privy Council the sum of £400
“ as security for costs:

“ And Their Lordships do further report to Your Majesty that the
“ authenticated copy under seal of the Record produced by the Petitioners 30
“ upon the hearing of the Petition ought to be accepted (subject to any
“ objection that may be taken thereto by the Respondents) as the Record
“ proper to be laid before Your Majesty on the hearing of the Appeal.”

HIS MAJESTY having taken the said Report into consideration was
pleased by and with the advice of His Privy Council to approve thereof and
to order as it is hereby ordered that the same be punctually observed obeyed
and carried into execution.

Whereof the Governor-General or Officer administering the Government
of the Dominion of Canada for the time being and all other persons whom it
may concern are to take notice and govern themselves accordingly. 40

M. P. A. HANKEY.

EXHIBITS.

Exhibits.

No. 1.

No. 1.
Canadian
Patent
No. 265,960.
16th March,
1926—

Canadian Patent No. 265,960 (Dreyfus) with Petition and Oath (Patent in suit).

CASE A. CANADA

PETITION.

To THE COMMISSIONER OF PATENTS, OTTAWA, CANADA :

PATENT OFFICE

Dec. 18, 1925.

CANADA.

10 The petition of CAMILLE DREYFUS, a citizen of Switzerland and a resident of New York, County and State of New York, U.S.A.

Showeth, That he has invented certain new and useful improvements relating to FABRICS AND SHEET MATERIALS AND THE MANUFACTURE THEREOF not known or used by others before his invention thereof, and not patented or described in any printed publication in Canada or any foreign country more than two years prior to this application and not in public use or on sale in Canada for more than two years prior to this application.

Your petitioner therefore prays that a patent may be granted to him for the said invention, as set forth in the specification in duplicate relating thereto.

20 And your petitioner hereby appoints LLOYD B. WIGHT (doing business under the firm name of BALDWIN & WIGHT), of Washington, D.C., U.S.A., his attorney with full powers of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to sign the drawings, to receive the patent, and to transact all business in the Patent Office connected therewith.

Your petitioner hereby names and appoints Alexander E. MacRae of 128 Wellington St. in the city of Ottawa, Province of Ontario, Canada, to represent him and stand in his place and stead for all the purposes of the Patent Act, including the service of any proceedings taken thereunder.

30 Signed at New York, New York, U.S.A., this 15th day of December, 1925.

Witnesses :

I. Seltzer.

B. Wilson.

(Sgd.) CAMILLE DREYFUS,

(STAMP)

CASE A

CANADA.

OATH.

County of New York }
State of New York } ss.

40 I, CAMILLE DREYFUS, a citizen of Switzerland and a resident of New York, County and State of New York, U.S.A., make oath and say that I verily believe that I am the inventor of the new and useful improvements relating to Fabrics and Sheet Materials and the Manufacture Thereof described and claimed in the specification relating thereto and for which I solicit a patent by my petition dated the 15th day of December, 1925. And further say that

Exhibits. no application for a patent for said improvement has been filed by me or others
 — with my knowledge or consent in any country except in Great Britain application
 No. 1. 2089 of January 23, 1925, and in the United States application filed December 15,
 Canadian Patent 1925. And I further say that the several allegations contained in the said
 No. 265,960. petition are respectively true and correct.

16th March,
 1926—
continued.

(Sgd.) CAMILLE DREYFUS,

SWORN before me at New York, N.Y., U.S.A., this 15th day of December,
 1925.

GUY A. COWLEY,

Notary Public,

10

Westchester County. Cert. filed in N.Y.
 Co. No. 206B Reg. No. 6045 Commission
 expires March 30th, 1926.

(SEAL)

DOMINION OF CANADA
 Number 265,960

TO ALL TO WHOM THESE PRESENTS SHALL COME

WHEREAS

CAMILLE DREYFUS,

of New York, New York, U.S.A.,

has petitioned the COMMISSIONER OF PATENTS, praying for the grant of a Patent 20
 for an alleged new and useful improvement in FABRICS AND SHEET
 MATERIALS AND THE MANUFACTURE THEREOF, a description of which
 invention is contained in the specification of which a duplicate is hereunto
 attached and made an essential part hereof and has complied with the require-
 ments of The Patent Act.

NOW THEREFORE THE PRESENT PATENT grants to the said
 CAMILLE DREYFUS, his executors, administrators, legal representatives
 and assigns for the period of EIGHTEEN YEARS from the date of these presents,
 the exclusive right, privilege and liberty of making, constructing and using and
 vending to others to be used, in the DOMINION OF CANADA, the said invention, 30
 subject nevertheless to adjudication before any Court of competent jurisdiction.

PROVIDED that the grant hereby made is subject to the conditions
 contained in the Act aforesaid.

IN TESTIMONY WHEREOF, I have hereunto
 set my hand, and caused the Seal of the
 PATENT OFFICE to be hereunto affixed,
 at the CITY OF OTTAWA, in the DOMINION
 OF CANADA this sixteenth day of Novem-
 ber in the year of our Lord, one thousand
 nine hundred and twenty-six.

40

(Sgd.) THOS. L. RICHARD,

Acting Commissioner of Patents.

(L.S.)

Patent No. 265,960.
 Dated Nov. 16, 1926.
 Filed Dec. 18, 1925.

Exhibits.

No. 1.
 Canadian
 Patent
 No. 265,960.
 16th March,
 1926—
continued.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN :

Be it known that I, Camille Dreyfus, a citizen of Switzerland and a resident of New York, in the County and State of New York, United States of America, having invented certain new and useful Improvements relating to "FABRICS AND SHEET MATERIALS AND THE MANUFACTURE THEREOF" of

10 which the following is a specification.

This invention concerns the manufacture of new fabrics or sheet materials having waterproof to gas-proof properties or capable of other applications.

According to the invention, a fabric or sheet material is made by uniting under appropriate conditions of temperature and pressure, woven, knitted or other fabrics, composed of or containing filaments or fibres of thermoplastic cellulose derivative or derivatives with woven, knitted or other fabric composed of or containing filaments or fibres of non-thermoplastic or relatively non-thermoplastic material.

20 According to the invention woven, knitted or other fabric made of yarns composed of filaments or fibres of a thermoplastic cellulose derivative, such for example as cellulose acetate, ethyl-, methyl-, or benzyl-cellulose, nitro-cellulose or other ester or ether of cellulose, or mixtures of such cellulose derivatives, is associated with woven, knitted, or other fabric made wholly or partly of yarns composed of filaments or fibres of a non-thermoplastic or relatively non-thermoplastic material, such for example as silk, cotton, linen, artificial filaments or fibres of the cellulose type, or wool or mixtures of any of such non-thermoplastic filaments or fibres with each other or it may be with filaments or fibres of a thermoplastic cellulose derivative or derivatives, and the associated fabrics are subjected to heat and pressure, with or without employment, assistance or

30 application of plasticising or softening agents or solvents of the thermoplastic cellulose derivative or derivatives; in this way the fabrics are united together and a composite sheet material is obtained in which the pores or interstices are reduced to extremely minute dimensions, or closed completely, by the melting or softening effect produced by the heat and pressure upon the filaments and fibres of the thermoplastic cellulose derivative or derivatives and by the uniting of the fabrics under the heat and pressure. Two of such fabrics, i.e. one of each of the two classes specified above, may be associated and united together as referred to, or the respective fabrics may be disposed in any desired relative number in alternation with each other. Thus for example a fabric or cotton or

40 composed of or containing other non-thermoplastic fibre may be disposed between two fabrics of cellulose acetate or other thermoplastic yarns; or a fabric of thermoplastic yarns may be disposed between two fabrics of cotton or composed of or containing other non-thermoplastic fibres; or four fabrics, two of each class, may be disposed so that the fabrics of thermoplastic yarn alternate respectively with the fabrics of cotton or composed of or containing other non-thermoplastic fibres, and so on.

The extent of the melting or softening effect, degree of closing the pores

Exhibits.
 No. 1.
 Canadian
 Patent
 No. 265,960.
 16th March,
 1926—
continued.

or interstices, and intimacy of union of the fabrics, and therefore the degree of impermeability of the compound fabric or material produced, can vary with the degrees and duration of heat and pressure employed, and with whether plasticisers, or softeners or solvents are employed, and with the number of fabrics united together, or other circumstances.

Thus for example the heat and pressure (with or without employment or assistance of plasticising or softening agents or solvents) may be such as to unite the fabrics together and close or reduce to minute dimensions the pores or interstices of the compound or combined fabric and render the same water-resisting or even gas-resisting, without causing the filaments or fibres of the thermoplastic cellulose derivatives to disappear. Or the heat and pressure may be such as to cause the filaments or fibres of thermoplastic cellulose derivatives to melt and disappear partly or entirely. 10

It is to be understood that the degrees and duration of heat and pressure are interdependent and that all or any of these conditions may be varied according to circumstances or requirements. For example, the less the heat, the greater or longer is the pressure required to produce a given effect or *vice versa*; or again, the same conditions of heat and pressure may be applied for more or less time to produce the effect in a more or less pronounced degree.

The degree of the melting effect and the degree of intimacy of union of the component fabrics, may be increased or accentuated by the employment, assistance or application of plasticising or softening agents or solvents of the thermoplastic cellulose derivative or derivatives as referred to, and it is to be understood that such agents or solvents, may be applied to or incorporated in any or all of the component fabrics before the application of the heat and pressure to the associated fabrics, for example, by the application of such agents or solvents in solution in volatile solvents thereof that are not solvents of the cellulose derivative or derivatives and that alternatively, such agents or solvents may be incorporated in the filaments or fibres of thermoplastic cellulose derivatives in the production thereof, for example by employing such agents in the spinning solutions from which they are made. 20 30

Any plasticising or softening agents or solvents (preferably high-boiling or relatively high-boiling) of the cellulose derivatives may be employed. As some instances there may be mentioned triacetin, paratoluene sulphonamide or its derivatives, diethylphthalate, paratoluene sulphonamide, and high-boiling alkylated xylene sulphonamide derivatives or preparations (for example, monomethyl xylene sulphonamide).

As the melting or softening effect is increased or accentuated by the plasticising or softening agents or solvents, one can employ less heat and/or pressure, for the production of a given effect when such agents or solvents are employed. 40

The invention is particularly applicable when fabric of cellulose acetate yarns is used as the component thermoplastic fabric of the compound fabric or material, and will hereinafter be described in this connection, it being understood, however, that fabrics of other cellulose esters or cellulose ethers may be employed as before indicated.

The heat and pressure may be applied in any appropriate way to the

associated fabrics to be united together, for example by passage between pressure rollers, one or both of which is or are heated, or between a heated roller and a heated or cold plate or surface, or by pressure between heated plates or surfaces or between a heated plate or surface and a cold plate or surface, or by passing the associated fabrics under tension over a single heated roller, e.g. a calender roller, or by any other suitable means. In cases where the associated fabrics are passed through pairs of pressure rollers, the rollers in each pair may rotate at the same or at different speeds. Where the fabrics are passed under tension over a single heated roller, the roller may with advantage be rotated in an
 10 opposite direction to the travel of the fabric.

The manner in which the invention may be carried into effect can be illustrated by the following more detailed description, it being understood that this can be varied widely without departing from the invention.

A woven or warp knitted fabric made of cellulose acetate yarn is associated with woven or knitted fabric of silk, cotton, linen or other fibre, preferably after being coated or treated with a plasticising or softening agent or solvent on the face that is to contact with the latter fabric, and the associated fabrics are subjected to heat and pressure to unite the component fabrics together and give
 20 a material possessing a desired degree of resistance to penetration by water or gases, according to the degree and duration of temperature and pressure, the conditions of heat, pressure and time being interdependent. The less the heat, the greater or the longer is the pressure required to produce a given effect, or the same conditions of heat and pressure may be applied for more or less time to produce the effect in a greater or less degree.

Thus for example the associated fabrics (preferably with the cellulose acetate fabric treated with a plasticising or softening agent or solvent) may be passed between heated pressure rollers, as in a calender, the conditions of heat, pressure and time being interdependent as before mentioned. For instance the associated fabrics may be passed slowly through heated calender rollers at temperatures
 30 between about 100° and 180° C. under pressures of from about 300 to 600 lb or more per square inch, according to the degree of melting or softening effect on the yarns of the cellulose acetate fabric and the degree of impermeability desired in the resulting compound material. The fabrics may be passed repeatedly between the heated rollers if desired, according to the degree of effect required.

Or again the associated fabrics may be passed once or repeatedly between a heated roller and a cold roller or platen, or they may be pressed between heated plates or between a heated plate and a cold platen. Or the heat and pressure may be applied in any other suitable way.

The application of plasticising or softening agents or solvents of the cellulose
 40 acetate or other thermoplastic cellulose derivatives to assist the melting effect and the union of the component fabrics as hereinbefore referred to is especially of advantage where a high degree of impermeability to water is desired or for obtaining gasproof properties in the compound material. By way of example cellulose acetate fabric may be first treated with small quantities of water-insoluble, non-volatile plasticisers, softeners, or solvents of cellulose acetate before being associated with the other fabric for subjection to the heat and pressure. These quantities may vary for instance from about 1% to about 30%

Exhibits.
 —
 No. 1.
 Canadian
 Patent
 No. 265,960.
 16th March,
 1926—
continued.

Exhibits.
 —
 No. 1.
 Canadian
 Patent
 No. 2659,60.
 16th March,
 1926—
continued.

of the total quantity of cellulose acetate in the fabric, but more or less may be employed. The non-volatile plasticisers, softeners or solvents may be applied by spraying, dipping or otherwise, dissolved in a volatile solvent which does not dissolve the cellulose acetate, or in any other convenient way. Any suitable plasticisers, softeners or solvents and any suitable volatile vehicle therefor may be used. As one example monomethyl-xylene sulphonamide may serve as a plasticiser and benzol as a vehicle, a suitable proportion being for instance about 20 grams of the sulphonamide dissolved in 100 grams of benzol for each 100 grams of cellulose acetate fabric. When the volatile solvent of the plasticiser or softener evaporates, the plasticiser or softener remains distributed evenly on the cellulose acetate fabric so that when this is associated with the other fabric and subjected therewith to the heat and pressure, it assists the melting or softening effect on the cellulose acetate yarns and the union of the component fabrics and closing of the pores or interstices of the component fabrics, thereby producing a compound material having waterproof to gas-proof properties according to the degree of dissolving or melting effect, etc., produced on the cellulose acetate by the condition of heat, pressure and time employed. 10

Instead of employing for associating with fabric composed of yarns of thermoplastic filaments or fibres, fabric consisting wholly of yarns of silk, cotton or other non-thermoplastic fibres or filaments one may employ for association therewith "mixed" fabric consisting of a mixture of thermoplastic yarns with yarns of silk, cotton, linen, artificial silk of the cellulose type, wool or other non-thermoplastic fibres or filaments, or consisting of or comprising yarns composed of a mixture of thermoplastic filaments or fibres with non-thermoplastic fibres or filaments. Or one may even, though with less advantage, employ only such mixed fabrics for making the compound material under the effect of heat and pressure with or without application of plasticising or softening agents or solvents, the heat and pressure causing more or less melting or softening of the thermoplastic yarns, filaments or fibres and uniting the component fabrics together to form a compound material possessing greater or less degrees of resistance to penetration by water or even gases, according to the temperature, pressure and duration of pressure or other conditions. 20 30

Whilst fabrics made with yarns or fibres of nitro-cellulose filaments or fibres may be employed in practising the invention this is less advantageous owing to the inflammability of nitrocellulose.

The compound materials made according to the invention may be employed more particularly for applications where resistance to penetration by water or gases is desired, for instance as waterproof materials for garments, coverings, etc., or as materials for airships or other gas container, but materials made according to the invention may be employed for any other technical or industrial applications. 40

I CLAIM AS MY INVENTION :

1. A process for the manufacture of composite sheet material which comprises subjecting a plurality of associated fabrics, at least one of which contains a thermoplastic derivative of cellulose, to heat and pressure, thereby softening said derivative and uniting said fabrics.

2. A process for the manufacture of composite sheet material which

comprises subjecting a plurality of associated fabrics, at least one of which contains a thermoplastic derivative of cellulose, to pressure between heated rolls, thereby softening said derivative and uniting said fabrics.

3. A process for the manufacture of composite sheet material which comprises increasing the ordinary thermoplasticity of a fabric containing a thermoplastic derivative of cellulose, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure.

10 4. A process for the manufacture of composite sheet material which comprises treating a fabric containing a thermoplastic derivative of cellulose with a softening agent, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure.

5. A process for the manufacture of composite sheet material which comprises treating a fabric containing a thermoplastic derivative of cellulose with a softening agent, associating it with another fabric, and uniting the fabric by passing them between heated rolls.

20 6. A process for the manufacture of composite sheet material which comprises applying to a fabric containing a thermoplastic derivative of cellulose a softening agent in solution in volatile solvents which are non-solvents of said derivatives, associating it with another fabric, and uniting the fabric by subjecting them to heat and pressure.

7. A process for the manufacture of composite sheet material which comprises subjecting a plurality of associated fabrics, at least one of which contains an organic derivative of cellulose, to heat and pressure, thereby softening said derivative and uniting said fabrics.

8. A process for the manufacture of composite sheet material which comprises subjecting a plurality of associated fabrics, at least one of which contains an organic derivative of cellulose, to pressure between heated rolls, thereby softening said derivative and uniting said fabrics.

30 9. A process for the manufacture of composite sheet material which comprises increasing the ordinary thermoplasticity of a fabric containing an organic derivative of cellulose, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure.

10. A process for the manufacture of composite sheet material which comprises treating a fabric containing an organic derivative of cellulose with a softening agent, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure.

40 11. A process for the manufacture of composite sheet material which comprises treating a fabric containing an organic derivative of cellulose with a softening agent, associating it with another fabric, and uniting the fabrics by passing them between heated rolls.

12. A process for the manufacture of composite sheet material which comprises applying to a fabric containing an organic derivative of cellulose a softening agent in solution in volatile solvents which are non-solvents of said derivative, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure.

13. A process for the manufacture of composite sheet material which comprises subjecting a plurality of associated fabrics, at least one of which contains

Exhibits.

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No. 1.
Canadian
Patent
No. 265,960.
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continued.

- Exhibits. a cellulose ester, to heat and pressure, thereby softening said ester and uniting said fabrics.
- No. 1.
Canadian
Patent
No. 265,960.
16th March,
1926—
continued.
14. A process for the manufacture of composite sheet material which comprises subjecting a plurality of associated fabrics, at least one of which contains a cellulose ester, to pressure between heated rolls, thereby softening said ester and uniting said fabrics.
15. A process for the manufacture of composite sheet material which comprises increasing the ordinary thermoplasticity of a fabric containing a cellulose ester, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure. 10
16. A process for the manufacture of composite sheet material which comprises treating a fabric containing a cellulose ester with a softening agent, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure.
17. A process for the manufacture of composite sheet material which comprises treating a fabric containing a cellulose ester with a softening agent, associating it with another fabric, and uniting the fabrics by passing them between heated rolls.
18. A process for the manufacture of composite sheet material which comprises applying to a fabric containing a cellulose ester a softening agent in solution in volatile solvents which are non-solvents of said ester, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure. 20
19. A process for the manufacture of composite sheet material which comprises subjecting a plurality of associated fabrics, at least one of which contains cellulose acetate, to heat and pressure, thereby softening said cellulose acetate and uniting said fabrics.
20. A process for the manufacture of composite sheet material which comprises subjecting a plurality of associated fabrics, at least one of which contains cellulose acetate, to pressure between heated rolls, thereby softening said acetate and uniting said fabrics. 30
21. A process for the manufacture of composite sheet material which comprises increasing the ordinary thermoplasticity of a fabric containing cellulose acetate, by subjecting them to heat and pressure.
22. A process for the manufacture of composite sheet material which comprises treating a fabric containing cellulose acetate with a softening agent, associating it with another fabric and uniting the fabrics by subjecting them to heat and pressure.
23. A process for the manufacture of composite sheet material which comprises treating a fabric containing cellulose acetate with a softening agent, associating it with another fabric, and uniting the fabrics by passing them between heated rolls. 40
24. A process for the manufacture of composite sheet material which comprises applying to a fabric containing cellulose acetate a softening agent in solution in volatile solvents which are non-solvents of said acetate, associating it with another fabric, and uniting the fabrics by subjecting them to heat and pressure.

25. A composite sheet material comprising a plurality of fabrics, at least one of which contains a thermoplastic derivative of cellulose, which fabrics have been united into a single sheet by the application of heat and pressure.

(Sgd.) CAMILLE DREYFUS.

New York, N.Y., U.S.A., December 15, 1925.

Exhibits.
—
No. 1.
Canadian
Patent
No. 265,960
16th March,
1926—
continued.

No. 2.

Canadian Patent No. 311,185 (Dreyfus) with Petition and Oath.

PATENT OFFICE
Nov. 8, 1928
CANADA

No. 2.
Canadian
Patent
No. 311,185
12th May,
1931—

10

PETITION

To the Commissioner of Patents, Ottawa, Canada :

The petition of CAMILLE DREYFUS, a citizen of Switzerland and residing at New York, in the County of New York, and State of New York, and whose Post Office address is : Hotel Vanderbilt, New York City, N.Y.

SHOWETH. That he has invented new and useful Improvements in STIFFENING FABRIC AND METHOD OF MAKING THE SAME not known or used by others before his invention thereof, and not patented more than two years prior to this application and not in public use or on sale in Canada
20 for more than two years prior to this application.

Your petitioner therefore prays that a patent may be granted to him for the said invention, as set forth in the specification in duplicate relating thereto.

And your petitioner hereby appoints I. SELTZER and C. W. LEVINSON, or either of them, of Room 1503, 15 East 26th Street, New York, N.Y., U.S.A., his duly authorized Attorneys, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to sign the drawings, to receive the patent, and to transact all business in the Patent Office connected therewith.

Your petitioner hereby names and appoints ROCHFORT H. SPERLING,
30 Electrical Engineer, of Drummondville, Province of Quebec, to represent him and stand in his place for all purposes of the Patent Act, including the service of any proceedings taken thereunder.

Signed at New York, N.Y., U.S.A., this 5th day of November, 1928.

(Sgd.) CAMILLE DREYFUS.

Witnesses :

ELLEN CONNELLY,
GRACE C. WALDRON.

CANADA
OATH

Exhibits.
No. 2.
Canadian
Patent
No. 311,185
12th May,
1931—
continued.

COUNTY OF NEW YORK }
STATE OF NEW YORK } ss.

CAMILLE DREYFUS, a citizen of Switzerland, and resident of the City of New York and State of New York, U.S.A., makes oath and says that he verily believes that he is the inventor of new and useful Improvements in STIFFENING FABRIC AND METHOD OF MAKING THE SAME described and claimed in the specification relating thereto and for which he solicits a patent by his petition dated the 5th day of November, 1928. And further 10 says that no application for a patent for said improvements has been filed by him or others with his knowledge or consent in any country except in the United States of America on December 15, 1927. And he further says that the several allegations contained in the said petition are respectively true and correct.

(Sgd.) CAMILLE DREYFUS.

Sworn to before me at New York, N.Y., this 5th day of November, 1928.

(Sgd.) GUY A. COWLEY,
Notary Public.
Notary Public Westchester County.
Cert. filed in N.Y. Co. No. 424 Reg. 20
No. Commission expires March 30th
1939.

NOTARY SEAL

DOMINION OF CANADA
Number 311,185

TO ALL TO WHOM THESE PRESENTS SHALL COME :

WHEREAS CAMILLE DREYFUS, of New York, New York, U.S.A., has petitioned the COMMISSIONER OF PATENTS, praying for the grant of a Patent for an alleged new and useful improvement in STIFFENING FABRICS AND METHODS OF MAKING THE SAME, a description of which invention 30 is contained in the specification of which a duplicate is hereunto attached and made an essential part hereof, and has complied with the requirements of The Patent Act,

NOW THEREFORE THE PRESENT PATENT grants to the said CAMILLE DREYFUS, his executors, administrators, legal representatives and assigns for the period of EIGHTEEN YEARS from the date of these presents, the exclusive right, privilege and liberty of making, constructing and using, and vending to others to be used in the DOMINION OF CANADA, the said invention, subject nevertheless to adjudication before any Court of competent jurisdiction.

PROVIDED that the grant hereby made is subject to the conditions Exhibits.
 contained in the Act aforesaid.

IN TESTIMONY WHEREOF I have here-
 unto set my hand and caused the
 seal of the PATENT OFFICE to be
 hereunto affixed, at the CITY OF
 OTTAWA, in the DOMINION OF CANADA,
 this Twelfth day of May in the year of
 our Lord, one thousand nine hundred
 and thirty-one.

No. 2.
 Canadian
 Patent
 No. 311,185.
 12th May,
 1931—
continued.

10

(L.S.)

(Sgd.) THOS. L. RICHARD,
Commissioner of Patents.

Patent No. 311,185.
 Dated May 12, 1931.
 Filed Nov. 8, 1928.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN :

Be it known that I, CAMILLE DREYFUS, a citizen of Switzerland,
 residing at New York, in the County of New York, and State of New York,
 20 have invented new and useful Improvements in "STIFFENING FABRIC
 "AND METHOD OF MAKING THE SAME," of which the following is a
 specification.

This invention relates to a stiffening fabric containing organic derivatives
 of cellulose and process of producing the same.

An object of my invention is to produce a fabric containing organic
 derivatives of cellulose that is suitable for use as a stiffening material wherever
 such fabric is necessary. Other objects of my invention will appear from the
 following detailed description.

In the making of garments, particularly outer garments such as suits,
 30 coats, top coats, etc., the use of stiff material is necessary in certain places to
 help retain the shape of the garment. Likewise it is often desirable to use a
 stiff fabric as an inner lining in neckwear such as cravats, to impart desirable
 stiffness to the same. Heretofore, coarsely woven fabrics made of wool, cotton
 or the like, reinforced or not by stiffer material such as hair, have been used
 for this purpose. These materials are open to the objections that they are apt
 to soften when damp and are often bulky.

In accordance with my invention I prepare a stiff fabric containing yarns
 of organic derivatives of cellulose which fabric may be used as a stiffener in all
 kinds of wearing apparel and for such other uses to which it may be put. Because
 40 yarns of organic derivatives of cellulose are not affected by humidity, they will
 retain their stiffness under conditions wherein fabrics of other fibres will become
 softened. Examples of organic derivatives of cellulose are organic esters such
 as cellulose acetate, cellulose formate, cellulose propionate and cellulose
 butyrate and organic ethers such as ethyl cellulose, methyl cellulose
 and benzyl cellulose. The fabric may be composed wholly of one or more of the
 above named organic derivatives of cellulose, or it may be a mixed fabric con-

Exhibits.
 —
 No. 2.
 Canadian
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 No. 311,185.
 12th May,
 1931—
continued.

taining one or more of the above organic derivatives of cellulose and some other fibres such as cotton, mohair or wool.

This invention may be carried out in diverse manners and a few modes of carrying out the same will be given here.

In one form of my invention, the stiffening material may assume the form of a comparatively open mesh fabric made of cellulose acetate yarns. In order to impart the desired stiffness, the yarns used for this purpose are of high twist and preferably of higher denier say above 200 or 300 denier. This fabric may also have in admixture with the cellulose acetate yarn, other yarns of such comparative stiff fibres such as wool, mohair or cotton.

In another mode of carrying out my invention the fabric is made of " spun " 10
 cellulose acetate yarn. In making cellulose acetate yarns ordinarily the filaments are made continuously and are associated together by twisting to form yarns of continuous length. If this continuous yarn is cut up in comparatively short lengths, and the short lengths of yarn spun in a manner analogous to the spinning of cotton or wool yarns, yarns of continuous length known as " spun " cellulose acetate yarns are formed. These yarns form fabrics that are stiffer than those formed of yarn made of continuous filaments of cellulose acetate. In the spinning of the yarn, other fibres such as that of cotton or wool may be incorporated with the cut cellulose acetate yarn and a stiff fabric may be made of this mixed yarn. The fabric may also be made of pure cellulose acetate " spun " yarns and yarns 20
 of cotton, wool or mohair.

Another mode of making a stiff fabric containing organic derivatives of cellulose is to treat a fabric containing the same with a material tending to stiffen it. The fabric may be of any desired knit or weave and may or may not contain other fibres such as cotton, silk or wool. Among the substances that may be used for this purpose are solvents, softening agents or swelling agents for the organic derivatives of cellulose. The stiffening substance may be applied by brushing, flowing, spraying, dipping or in any other suitable manner. As an example of this mode of carrying out my invention, a cellulose acetate fabric is sprayed with ethylene dichloride. Upon evaporation of the ethylene dichloride, 30
 the fabric is stiffened appreciably and may be applied to the above described use. The degree of stiffening obtained by the use of the ethylene chloride may be varied by adding a diluent such as water to the ethylene chloride, the amount of stiffening varying with the concentration of the ethylene chloride.

It is to be understood that the foregoing detailed description is given merely by way of illustration and that many variations may be made therein without departing from the spirit of this invention.

Having described my invention, what I claim and desire to secure by Letters Patent is :

1. A fabric adapted to be used as a stiffening material, said fabric being 40
 comparatively stiff and having yarns containing filaments of organic derivatives of cellulose which impart stiffness thereto.

2. A fabric adapted to be used as a stiffening material, said fabric being comparatively stiff and having yarns containing filaments of organic esters of cellulose which impart stiffness thereto.

3. A fabric adapted to be used as a stiffening material, said fabric being

comparatively stiff and having yarns containing filaments of cellulose acetate which impart stiffness thereto.

4. Wearing apparel having therein a comparatively stiff fabric, which fabric has therein yarns containing filaments of organic derivatives of cellulose which impart stiffness thereto.

5. Wearing apparel having therein a comparatively stiff fabric, which fabric has therein yarns containing filaments of cellulose acetate which impart stiffness thereto.

10 6. In the process of producing a stiffening material, the steps of imparting stiffness to a fabric containing filaments of organic derivatives of cellulose by treatment with an organic solvent or softening agent for said organic derivatives of cellulose, and then removing the solvent or softening agent.

7. In the process of producing a stiffening material, the steps of imparting stiffness to a fabric containing filaments of cellulose acetate by treatment with an organic solvent or softening agent for said cellulose acetate at least partially to coalesce the filaments and then removing the solvent or softening agent.

New York, N.Y., U.S.A.

November 5th, 1928.

(Sgd.) CAMILLE DREYFUS.

Exhibits.
No. 2.
Canadian
Patent
No. 311,185.
12th May,
1931—
continued.

No. 3.

20 **Assignment of Patents, C. & H. Dreyfus to Canadian Celanese Ltd., No. 131,044.**

DOMINION OF CANADA.
PATENT OFFICE.

Certified to be a true and correct copy of Agreement No. 131,044, recorded March 17th, 1926, from Camille Dreyfus and Henri Dreyfus, to Canadian Celanese Limited.

AS WITNESS the seal of the Patent Office hereto affixed at the City of Ottawa in the Dominion of Canada this 28th day of August in the year of our Lord one thousand nine hundred and thirty-five.

J. T. MITCHELL,
Commissioner of Patents.

No. 3.
Assign-
ment of
Patents.
C. & H.
Dreyfus to
Canadian
Celanese
Ltd.
20th Feb-
ruary,
1926—

30

THIS AGREEMENT made the 20th day of February, 1926,

BETWEEN :

CAMILLE DREYFUS and HENRI DREYFUS, both of Basle, Switzerland (herein referred to as "the Vendors").

Of the One Part,

AND :

40 CANADIAN CELANESE LIMITED a Corporation organised under the laws of the Dominion of Canada (herein referred to as "the Purchaser")

Of the Other Part.

Exhibits.
 No. 3.
 Assign-
 ment of
 Patents,
 C. & H.
 Dreyfus to
 Canadian
 Celanese
 Ltd.
 20th Feb-
 ruary,
 1926—
continued.

WHEREAS the Vendors have for some time past made extended experiments in connection with the manufacture of cellulose acetate acetic anhydride synthetic acetic acid and other chemical products and the Vendors have discovered and invented certain secret and manufacturing processes (hereinafter referred to as "the said processes") under which the said products or some of them are being manufactured at a factory at Spondon near Derby in England belonging to British Celanese Limited and at a factory at Cumberland, Maryland, U.S.A., belonging to American Cellulose & Chemical Manufacturing Co., Limited;

AND WHEREAS the said processes or some of them are or may be protected by Letters Patent of invention granted or applied for in the Dominion of Canada and its dependencies, particulars of which patents and applications for patents are set out in the Schedule hereto;

AND WHEREAS by an agreement dated the 20th day of February, 1926, and made between the Vendors of the One Part and the Purchaser of the Other Part the Vendors agreed that they would, when called upon by the Purchaser, execute assignments to the Purchaser, its successors and assigns of the patents, particulars whereof are set out in the Schedule attached and the full benefit thereof;

AND WHEREAS the Purchaser has called upon the Vendors to enter this Agreement;

NOW, THEREFORE, this Agreement witnesseth that in pursuance of the said recited request and in consideration of the sum of One Dollar and other valuable considerations on the signing hereof paid by the Purchaser, the receipt whereof the Vendors hereby acknowledge, the parties hereto have agreed and do hereby agree as follows:—

The Vendors hereby transfer, assign and make over to the Purchaser hereto present and accepting the letters patent of the Dominion of Canada, particulars of which are set forth in the Schedule hereto, and the applications for letters patent of the Dominion of Canada, particulars of which are set forth in the Schedule hereto, and any letters patent which have been issued or which may hereafter be issued on such applications, as well as the exclusive right to manufacture, use and sell in the Dominion of Canada and its dependencies the processes and inventions disclosed in the said letters patent and applications for letters patent.

IN WITNESS WHEREOF the Vendors have hereunto set their hands and seals and the Purchaser has caused these presents to be duly executed in its corporate name by its proper officers thereunto duly authorized as of the day and year first above written.

THE SCHEDULE ABOVE REFERRED TO.
 CANADIAN PATENTS.

40

Official No.	Date of Issue	Name	Title
155724	19th May, 1914	H. Dreyfus	Improvements in processes of manufacture for cellulose esters.

Official No.	Date of Issue	Name	Title	Exhibits.
191800	29th July, 1919	H. Dreyfus	Improvements in processes of making cellulose acetate insoluble in chloroform and in chloroform and alcohol. and transformation products thereof.	No. 3. Assignment of Patents, C. & H. Dreyfus to Canadian Celanese Ltd.
191801	29th July, 1919	H. Dreyfus	Improvements in the manufacture of cellulose acetates and conversion products.	20th February, 1926--
10 191802	29th July, 1919	H. Dreyfus	Improvements in the manufacture of cellulose acetates and conversion products.	<i>continued.</i>
236956	15th Jany., 1924	H. Dreyfus	Improvements in the manufacture of cellulose derivatives.	
248771	21st April, 1925	H. Dreyfus	Improvements in the manufacture of reinforced sheets, webs, plates or the like.	
237709	12 Feby., 1924	H. Dreyfus	Improvement in the manufacture of cellulose derivatives.	
20 252227	28th July, 1925	H. Dreyfus assignee of C. W. Palmer & W. Whitehead.	Improvement in process for the manufacture of artificial silk and like threads.	
245307	16th Dec., 1924	H. Dreyfus	Improvement in the manufacture of cellulose derivatives.	
247234	3rd March, 1925	H. Dreyfus	Improvement in the manufacture of textile fabrics.	
30 248935	21st April, 1925	H. Dreyfus assignee of G. H. Ellis	Improvement in the dyeing or colouring of products made with cellulose acetate.	
248936	21st April, 1925	H. Dreyfus assignee of G. H. Ellis	Improvement in the dyeing or colouring of products made with cellulose acetate.	
248937	21st April, 1925	H. Dreyfus assignee of G. H. Ellis	Improvement in the dyeing or colouring of products made with cellulose acetate.	
253168	1st Sept., 1925	H. Dreyfus	Improvement in the manufacture or treatment of threads of artificial filaments.	

Exhibits.	Official No.	Date of Issue	Name	Title
No. 3. Assignment of Patents, C. & H. Dreyfus to Canadian Celanese Ltd. 20th Feb- ruary, 1926— <i>continued.</i>	252228	28th July, 1925	H. Dreyfus assignee of C. W. Pal- mer & W. Whitehead.	Improvement in apparatus for the manufacture of artificial silk and like threads.
	249159	28th April, 1925	H. Dreyfus assignee of G. H. Ellis	Improvement in the treatment of cellulose derivatives.

PENDING APPLICATIONS

10

Filing No.	Date of Application	Name	Title
S. No. 295199	16th Sept., 1924	G. H. Ellis F. M. Stev- enson C. M. Croft Assignors to H. Dreyfus	Improvements in or relating to the dyeing, printing, stencilling of cellulose acetates.
S. No. 300376	7th Mar., 1925	G. H. Ellis Assignor to H. Dreyfus	Improvements relating to the dyeing or colouring of products 20 or articles made with cellulose acetate.
S. No. 302832	19th May, 1925	C. F. Ryley G.A.Awcock Assignors to H. Dreyfus	Improvements in or relating to solutions, compositions, or pre- parations for textile and like purposes and their applications.
S. No. 302833	19th May, 1925	C. F. Ryley G.A.Awcock Assignors to H. Dreyfus	Improvements in or relating to solutions, compositions or pre- parations for textile and like purposes and their applications. 30
S. No. 304820	22nd July, 1925	G. H. Ellis E. Green- halgh Assignors to H. Dreyfus	Improvements relating to the treatment of products of or containing acetyl cellulose.
S. No. 305464	12th Aug., 1925	G. H. Ellis W. O. Gold- thorpe, Assignors to H. Dreyfus	Improvements in the dyeing, printing or stencilling of acetyl cellulose or products made there- with.

Filing No.	Date of Application	Name	Title	Exhibits. No. 3.
S. No. 305664	19th Aug., 1925	G. H. Ellis, J. Hall, J. Walker, Assignors to H. Dreyfus	Improvements relating to the manufacture of basic derivatives of the aromatic series.	Assignment of Patents, C. & H. Dreyfus to Canadian Celanese Ltd. 20th February, 1926— <i>continued.</i>
10 S. No. 305662	19th Aug., 1925	G. H. Ellis, Assignor to H. Dreyfus	Improvements relating to the treatment of cellulose acetate.	
S. No. 306292	10th Sept., 1925	G. H. Ellis, Assignor to H. Dreyfus	Improvements relating to the dyeing, printing or stencilling of cellulose acetate.	
S. No. 306669	23rd Sept., 1925	H. Dreyfus	Improvements in or relating to the manufacture of cellulose products.	
S. No. 307131	7th Oct., 1925	G. H. Ellis, Assignor to H. Dreyfus	Improvements in or relating to the dyeing or colouring of cellulose acetate.	
20 S. No. 308834	4th Dec., 1925	C. Dreyfus & G. Schneider, Assignor to C. Dreyfus.	Improvements in the manufacture of products having a basis of cellulose derivatives.	
S. No. 308587	25th Nov., 1925	W. A. Dickie & J. H. Roonrey, Assignors to H. Dreyfus.	Improvements relating to the manufacture of products having a basis of cellulose derivatives.	
30 S. No. 308748	30th Nov., 1925	E. Kinsella & H. E. B. Young, Assignors to H. Dreyfus.	Improvements relating to apparatus for the production of artificial yarns or threads.	
S. No. 309250	21st Dec., 1925	C. Dreyfus	Improvements relating to fabrics and sheet materials and manufacture thereof.	
S. No. 309251	21st Dec., 1925	C. Dreyfus	Improvements in manufacture of new improved fabrics.	

40 CANADIAN CELANESE LIMITED

GROVER WELLS,
Vice President.
F. G. BUSH,
Assistant Secretary.

CAMILLE DREYFUS
HENRY DREYFUS.
per CAMILLE DREYFUS.

Exhibits.

NOTARIAL CERTIFICATE OF TRUE COPY

No. 3.
Assignment of
Patents,
C. & H.
Dreyfus to
Canadian
Celanese
Ltd.
20th Feb-
ruary,
1926—
continued.
(Notarial
Certificate.)

State of New York }
County of }
To wit :

I, GUY A. COWLEY, a Notary Public in and for the State of New York, duly commissioned and sworn under authority dated the 14th day of August, 1924, which commission expires on the 30th day of March, 1926, residing and practising at the City of New York, in the said State of New York, do certify that the paper writing hereto annexed is a true copy of a document produced and shown to me from the custody of CAMILLE DREYFUS and purporting to be 10 a Power of Attorney made by HENRY DREYFUS and dated the 20th day of October, 1925, the said copy having been compared by me with the said original document, an act whereof being requested I have granted under my notarial form and seal of office to serve and avail as occasion shall or may require.

GUY A. COWLEY,
Notary Public.

GREAT BRITAIN & IRELAND
LONDON, ENGLAND

CONSULATE GENERAL OF THE UNITED STATES OF AMERICA

} SS.

I, Russell H. Rhodes, Vice-Consul of the United States of America residing 20 at London, England, do hereby make known and certify to all whom it may concern that H. Peter Venn, who hath signed the annexed Certificate, is a Notary Public, duly admitted and sworn and practising in the City of London and that to all acts by him so done full faith and credit are and ought to be given in Judicature and thereout.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my seal of Office at London aforesaid, this 21st day of October in the year of Our Lord, One Thousand Nine Hundred and Twenty-Five.

(Sgd.) RUSSELL H. RHODES,
*Vice-Consul of the United States of 30
America at London, England.*

No. 18993.

ENGLAND

CITY AND COUNTY OF LONDON

} SS.

On this twentieth day of October, One thousand nine hundred and twenty-five, before me, the undersigned, HARRY PETER VENN of the City of London, Notary Public, duly admitted and sworn, practising in the said City, personally came and appeared HENRY DREYFUS, to me known and known to me to be the Individual described in and who executed the hereunto annexed Instrument 40 and he acknowledged to me that he executed the same for the uses and purposes therein expressed.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my Seal of Office at London the day and year first above written.

(Sgd.) H. PETER VENN,
Not. Pub.

KNOW ALL MEN BY THESE PRESENTS THAT I, HENRY DREYFUS of 8 Waterloo Place in the County of London England, HEREBY APPOINT my brother CAMILLE DREYFUS of 15 East Twenty sixth Street, New York in the United States of America to be my ATTORNEY for me and in my name or in the name of my Attorney to generally manage my affairs in any part of the world and in particular to do either alone or jointly with any other person or persons all or any of the things following :—

10 1. TO examine, adjust, settle, ask for, demand, sue for, recover and receive payment and delivery of all accounts, claims, demands, debts, rents, moneys, dividends, goods, shares, notes, securities for money, notices and all other my estate and effects.

2. TO give time for the payment of all moneys and delivery of all effects and securities upon such terms as my said Attorney may think fit and to compromise and settle all claims and demands by or against me and all disputes and differences and to refer any difference to arbitration.

20 3. TO sell, mortgage and dispose of, manage, lease and deal with all lands, houses, patents, patent rights and secret processes or inventions, shares, stocks, funds, debentures, securities, goods and chattels and generally all real and personal property belonging to me or over which I have any power of disposition or which I may own jointly with my said Attorney or any other person with power to transfer or vest the same or the proceeds of sale thereof into the name of my attorney or any nominee or nominees of his.

4. TO purchase, apply for or otherwise acquire shares, stocks, funds, debentures and securities and from time to time to resell mortgage or otherwise deal with, manage and dispose of the same.

30 5. TO attend as my proxy and vote for me at all meetings of Debenture Holders, Debenture Stockholders, Contributory Shareholders and Creditors at which I may be entitled to attend or vote and to demand polls and to appoint any other Company, firm or persons to act as my proxy at any meetings and to prove and vote in any Bankruptcy or liquidation of any Company.

40 6. TO pay all calls that may lawfully be made upon me or other expenses that may be incurred in relation to any of my investments or securities and to give security for the payment of the same and to assent to any arrangement modifying my rights, privileges or duties in relation to any of my investments and to agree to any scheme or arrangement for the increase or reduction of the value or amount of the same or of the capital of any company or corporation and for any such purpose to deposit, surrender or exchange any of my investments or securities or the documents of title relating thereto and to pay any contribution or incur any other necessary or proper expense in connection with any such scheme or arrangement.

7. TO draw cheques or otherwise operate upon any Banking Account standing in my name either alone or jointly with any other person or persons and to open any Banking Account or Accounts in his or my name or otherwise and to pay in or draw out moneys and to sign and endorse dividend and interest warrants or other instruments whatsoever which may seem necessary to my said attorney.

8. FOR all purposes to commence, prosecute, defend or compound any

Exhibits.
—
No. 3.
Assign-
ment of
Patents.
C. & H.
Dreyfus to
Canadian
Celanese
Ltd.
20th Feb-
ruary,
1926—
continued.
(Power of
Attorney.)

Exhibits.

No. 3.
 Assign-
 ment of
 Patents.
 C. & H.
 Dreyfus to
 Canadian
 Celanese
 Ltd.
 20th Feb-
 ruary,
 1926—
continued.
 (Power of
 Attorney.)

actions or other proceedings and to employ legal and other advisers and to accept service for me of any process.

9. FOR any of the purposes aforesaid to execute, sign, make and do all such deeds, transfers, agreements, receipts, documents, acts, matters and things as my said attorney may in his discretion think fit.

10. GENERALLY to act alone or jointly with others with regard to all my property and concerns of every kind both business and private as fully and effectually as I if personally present might or could do it being my intention that all powers and authorities hereby conferred upon my said Attorney shall extend equally and fully to property and transactions in which I am interested jointly 10 with other persons as well as to property and transactions in which I am solely interested and to property and transactions in which I am interested as a Trustee whether alone or jointly.

11. I HEREBY DECLARE that my said Attorney may sub-delegate to any person or persons any of the powers hereby conferred upon such terms and conditions as may seem expedient and may at any time revoke any such sub-delegation.

12. I HEREBY RATIFY AND CONFIRM all and whatsoever my said Attorney or any substitute appointed by him has done or purported to do under the Power of Attorney executed by me in his favour on the Sixth day of 20 February, One Thousand nine hundred and eighteen and further all and whatsoever my said attorney or any substitute appointed by him shall lawfully do or cause to be done hereunder.

AND I HEREBY DECLARE that this Power of Attorney shall be irrevocable for a period of one year from the date thereof and thereafter shall remain in force until revoked by me or until my death and notwithstanding such revocation or my death shall be deemed to remain in force in favour of any person dealing in good faith with my said Attorney until the revocation thereof or my death has actually been communicated to such person.

IN WITNESS whereof I have hereunto set my hand and seal this twentieth 30 day of October, one thousand nine hundred and twenty-five.

SIGNED, SEALED AND DELIVERED by the above named Henry Dreyfus in the presence of:

(Sgd.) HENRY DREYFUS.

P. HUMPHREYS,
 50 Redcliffe Square,
 London, S.W.10,
Secretary.

No. 4.

Assignment of Patents, Camille Dreyfus to Canadian Celanese Ltd., No. 184,149. 40

DOMINION OF CANADA
 PATENT OFFICE

CERTIFIED to be a true and correct copy of Assignment No. 184,149, recorded

No. 4.
 Assign-
 ment of
 Patents.
 Camille
 Dreyfus to
 Canadian
 Celanese
 Ltd.
 23rd Sept-
 ember,
 1933.

September 23rd, 1933, from Camille Dreyfus, to Canadian Celanese Limited.

As WITNESS the seal of the Patent Office hereto affixed at the City of Ottawa in the Dominion of Canada this 28th day of August in the year of our Lord one thousand nine hundred and thirty-five.

J. T. MITCHELL,
Commissioner of Patents

Exhibits.
—
No. 4.
Assign-
ment of
Patents.
Camille
Dreyfus to
Canadian
Celanese
Ltd.
23rd Sept-
ember,
1933—
continued.

10 WHEREAS, I, CAMILLE DREYFUS, residing in New York, New York, have heretofore had granted to me Letters Patent by the Dominion of Canada as per the schedule attached hereto ; and

WHEREAS, CANADIAN CELANESE LIMITED, a corporation organized under the laws of the Dominion of Canada, hereinafter called THE COMPANY is desirous of acquiring the right, title and interest in and to each and all of said Canadian Letters Patent and in and to the inventions described and claimed therein subject to the terms of the Agreement dated 20th day of February, 1926, between CAMILLE DREYFUS and HENRY DREYFUS on the one hand and THE COMPANY on the other hand.

20 NOW, THEREFORE, to all whom it may concern be it known that for and in consideration of the sum of Five (\$5.00) Dollars and other good and valuable considerations to me in hand paid, receipt whereof is hereby acknowledged, and in consideration of the Agreement above referred to, I, the said CAMILLE DREYFUS have sold, assigned, transferred and set over and do hereby sell, assign, transfer and set over unto the said Company, in accordance with the terms of the said Agreement of the 20th day of February, 1926, the whole of the exclusive right, title and interest in and to each and all of the said Letters Patent enumerated in the schedule attached hereto and in and to the inventions therein described and claimed, the same to be held by the said Canadian Celanese Limited
30 for its own use and behoof and for the use and behoof of its successors, assigns or legal representatives in accordance with the terms of the said Agreement of the 20th Day of February, 1926.

THE SCHEDULE ABOVE REFERRED TO
CANADIAN PATENTS

<i>No.</i>	<i>Date</i>	<i>Patentee</i>	<i>Title</i>
299,650	April 29, 1930	C. Dreyfus	High Melting Cellulose Ester products
299,801	April 29, 1930	C. Dreyfus assignee of F. J. Williams & R. Robinson	Method and Apparatus for Winding Yarn
40			
300,045	May 13, 1930	C. Dreyfus	Method of Making Ribbons or Webs
300,046	May 13, 1930	C. Dreyfus	Process of Controlling the Lustre of Fabrics

Exhibits.	No.	Date	Patentee	Title	
No. 4. Assign- ment of Patents. Camille Dreyfus to Canadian Celanese Ltd. 23rd Sept- ember, 1933— <i>continued.</i>	300,245	May 13, 1930	C. Dreyfus assignee of C. F. Beran	Apparatus for Carrying out Chemical Reactions.	
	300,246	May 13, 1930	C. Dreyfus assignee of C. F. Beran	Apparatus for Carrying out Chemical Reactions	
	300,448	May 20, 1930	C. Dreyfus assignee of W. H. Moss, L. N. Lee & K. H. Crutchfield	Method of Making Plastic Sheets	10
	300,869	June 3, 1930	C. Dreyfus assignee of G. Schneider	Plastic Composition	
	302,423	July 29, 1930	C. Dreyfus	Process of Pleating Fabric	
	302,648	July 29, 1930	C. Dreyfus assignee of G. Schneider	Thermoplastic Composition	
	302,649	July 29, 1930	C. Dreyfus assignee of W. H. Moss & B. B. White	Composition containing Cellulose Ethers	20
	302,650	July 29, 1930	C. Dreyfus assignee of W. H. Moss & B. B. White	Production of Articles containing Cellulose Derivatives and Synthetic Resins	
	302,878	Aug. 5, 1930	C. Dreyfus assignee of H. Platt	Partial Saponification of Materials containing Organic Esters of Cellu- lose	
	302,879	Aug. 5, 1930	C. Dreyfus assignee of H. Platt	Partial Saponificatiion of Materials containing Organic Esters of Cellu- lose	30
	303,696	Sept. 2, 1930	C. Dreyfus assignee of W. H. Moss & B. B. White	Synthetic Resin	
	303,697	Sept. 2, 1930	C. Dreyfus assignee of W. H. Moss & B. B. White	Synthetic Resin	40
	303,698	Sept. 2, 1930	C. Dreyfus assignee of W. H. Moss & B. B. White	Synthetic Resin	
	303,699	Sept. 2, 1930	C. Dreyfus assignee of W. H. Moss	Synthetic Resin	

	<i>No.</i>	<i>Date</i>	<i>Patentee</i>	<i>Title</i>	<i>Exhibits.</i>
	304,293	Sept. 23, 1930	C. Dreyfus assignee of H. Platt	Process of Treating Organic Deriva- tives of Cellulose	No. 4. Assign- ment of Patents.
	304,294	Sept. 23, 1930	C. Dreyfus assignee of H. Platt	Treatment of Fabrics, Fibres and Articles containing Organic Deriva- tives of Cellulose	Camille Dreyfus to Canadian Celanese Ltd.
	304,295	Sept. 23, 1930	C. Dreyfus assignee of W. H. Moss	Process of Coating Surfaces	23rd Sept- ember, 1933— <i>continued.</i>
10	304,450	Sept. 30, 1930	C. Dreyfus assignee of W. Whitehead	Apparatus for Making Artificial Filaments	
	305,048	Oct. 28, 1930	C. Dreyfus	Hosiery Manufacture	
	305,265	Oct. 28, 1930	C. Dreyfus assignee of H. Platt, W. Whitehead & F. J. Williams	Tinting Liquid	
20	305,534	Nov. 4, 1930	C. Dreyfus assignee of L. J. O'Dowd	Textile Package Holder	
	305,535	Nov. 4, 1930	C. Dreyfus assignee of W. McC. Cameron & C. M. Croft	Method of Delustering Knit Fabrics	
	306,413	Dec. 2, 1930	C. Dreyfus assignee of W. H. Moss	Process of Making Plastic Sheets for Laminated Glass	
30	306,829	Dec. 16, 1930	C. Dreyfus assignee of W. H. Moss	Solvent for Derivatives of Cellulose	
	306,830	Dec. 16, 1930	C. Dreyfus assignee of W. Whitehead	Production of Artificial Filaments	
	306,831	Dec. 16, 1930	C. Dreyfus assignee of W. Whitehead	Production of Artificial Filaments	
40	307,035	Dec. 23, 1930	C. Dreyfus assignee of W. H. Moss	Coated Article	
	307,036	Dec. 23, 1930	C. Dreyfus assignee of W. H. Moss	Method of Coating Products	
	307,037	Dec. 23, 1930	C. Dreyfus assignee of W. H. Moss	Method of Coating Products	

Exhibits.	No.	Date	Patentee	Title	
No. 4. Assign- ment of Patents. Camille Dreyfus to Canadian Celanese Ltd. 23rd Sept- ember, 1933— <i>continued.</i>	307,239	Dec. 30, 1930	C. Dreyfus assignee of H. Platt	Fireproof Fabric	
	307,989	Jan. 20, 1931	C. Dreyfus assignee of W. H. Moss	Process of Preparing Varnishes and Lacquers containing Organic De- rivatives of Cellulose	
	308,209	Jan. 27, 1931	C. Dreyfus assignee of H. Platt	Method of Making Fabrics	10
	308,248	Feb. 3, 1931	C. Dreyfus	Process of Cutting Fabrics	
	308,436	Feb. 3, 1931	C. Dreyfus assignee of H. Platt	Ornamental Fabric	
	308,437	Feb. 3, 1931	C. Dreyfus assignee of H. Platt & C. M. Croft	Method of Producing	
	308,604	Feb. 10, 1931	C. Dreyfus assignee of H. Platt & N. Shane	Process and Apparatus for Treating Fabrics	20
	308,605	Feb. 10, 1931	C. Dreyfus assignee of W. Whitehead	Process of Applying Dyes	
	308,606	Feb. 10, 1931	C. Dreyfus assignee of W. H. Moss	Method of Forming Laminated Glass	
	308,607	Feb. 10, 1931	C. Dreyfus assignee of W. H. Moss	Method of Making Laminated Glass	30
	308,608	Feb. 10, 1931	C. Dreyfus assignee of W. H. Moss	Method of Making Laminated Glass	
	308,623	Feb. 17, 1931	C. Dreyfus	Process of Embossing Circular Knit Fabrics	
	308,936	Feb. 24, 1931	C. Dreyfus assignee of H. Taylor	Apparatus for Forming Artificial Silk Filaments	
	309,130	Mar. 3, 1931	C. Dreyfus assignee of W. Whitehead	Process of Producing Cellulose Ace- tate Yarn	40
	309,131	Mar. 3, 1931	C. Dreyfus assignee of W. Whitehead	Process of Producing Cellulose Ace- tate Yarn	
	309,361	Mar. 10, 1931	C. Dreyfus assignee of L. R. Hubbard	Dry Cleaning Soap	

<i>No.</i>	<i>Date</i>	<i>Patentee</i>	<i>Title</i>	<i>Exhibits.</i>
309,756	Mar. 24, 1931	C. Dreyfus assignee of C. I. Haney	Process of Treating Cellulose Esters	No. 4.
309,983	Mar. 31, 1931	C. Dreyfus assignee of W. H. Moss	Process of Making Derivatives of Cellulose Compositions	Assignment of Patents. Camille Dreyfus to Canadian Celanese Ltd. 23rd Sept- ember, 1933— <i>continued.</i>
309,984	Mar. 31, 1931	C. Dreyfus assignee of W. H. Moss	Process of Improving the Clarity of Cellulose Derivatives	
10	310,250	April 7, 1931	C. Dreyfus assignee of G. Schneider	Coated Article
	310,251	April 7, 1931	C. Dreyfus assignee of G. Schneider	Method of Uniting Articles
	310,252	April 7, 1931	C. Dreyfus assignee of G. Schneider	Process of Making Fabrics
20	310,732	April 21, 1931	C. Dreyfus assignee of W. Whitehead	Process of Producing Cellulose Ace- tate Yarn
	310,930	April 28, 1931	C. Dreyfus assignee of W. H. Moss & B. B. White	Polishing Composition
	311,185	May 12, 1931	C. Dreyfus	Process of Producing Stiffening Fabrics
30	311,770	May 26, 1931	C. Dreyfus assignee of W. H. Moss	Laminated Glass
	311,771	May 26, 1931	C. Dreyfus assignee of G. W. Miles	Silk Product
	312,024	June 2, 1931	C. Dreyfus assignee of G. Miles	Composition of Cellulose Ethers and Esters
	312,025	June 2, 1931	C. Dreyfus assignee of G. W. Miles	Process of Extracting Pearl Essence from Fish Scales
40	312,026	June 2, 1931	C. Dreyfus assignee of G. Schneider	Method of Making Organic Esters of Cellulose
	312,235	June 9, 1931	C. Dreyfus assignee of W. H. Moss	Adhesive Composition for Uniting Articles
	312,236	June 9, 1931	C. Dreyfus assignee of G. Schneider	Process of Rubberizing Fabrics

Exhibits.	No.	Date	Patentee	Title	
No. 4. Assign- ment of Patents. Camille Dreyfus to Canadian Celanese Ltd. 23rd Sept- ember, 1933— <i>continued.</i>	312,666	June 23, 1931	C. Dreyfus assignee of W. Whitehead	Process of Dyeing Organic Deriva- tives of Cellulose	
	312,667	June 23, 1931	C. Dreyfus assignee of C. W. Palmer	Process of Calendering or Ironing Fabrics	
	312,668	June 23, 1931	C. Dreyfus assignee of W. Whitehead & H. E. Martin	Process of Preparing Textile Ma- terials	10
	312,669	June 23, 1931	C. Dreyfus assignee of W. Whitehead	Method of Producing Artificial Straw	
	312,906	June 30, 1931	C. Dreyfus assignee of G. Schneider	Process of Preparing Cellulose Pro- pionates	
	312,945	July 7, 1931	C. Dreyfus	Pile Fabric	
	313,136	July 7, 1931	C. Dreyfus assignee of C. Hargreaves	Loom Device	20
	313,166	July 14, 1931	C. Dreyfus	Method of Making Crepe Fabrics	
	313,336	July 14, 1931	C. Dreyfus assignee of W. Whitehead	Method of Saponifying Cellulose Esters	
	313,337	July 14, 1931	C. Dreyfus assignee of W. Whitehead	Method of Saponifying Cellulose Esters	
	313,338	July 14, 1931	C. Dreyfus assignee of W. Whitehead	Saponification of Cellulose Esters	30
	313,339	July 14, 1931	C. Dreyfus assignee of W. Whitehead	Saponification of Cellulose Esters	
	313,340	July 14, 1931	C. Dreyfus assignee of L. N. Lee	Process of Treating Cellulose Esters	
	313,341	July 14, 1931	C. Dreyfus assignee of C. W. Palmer	Production of Ornamental Fabrics	40
	313,857	July 28, 1931	C. Dreyfus assignee of H. Platt	Method of Sizing Dyed Yarn	
	313,858	July 28, 1931	C. Dreyfus assignee of W. H. Moss & B. B. White	Resin and Coating for Plastic Com- positions	

<i>No.</i>	<i>Date</i>	<i>Patentee</i>	<i>Title</i>	<i>Exhibits.</i>
314,309	Aug. 11, 1931	C. Dreyfus assignee of L. N. Lee	Process of Improving Cellulose Derivatives	--- No. 4.
314,310	Aug. 11, 1931	C. Dreyfus assignee of H. E. Martin & L. N. Lee	Process of Preparing Cellulose Esters	Assignment of Patents. Camille Dreyfus to Canadian Celanese Ltd.
10 314,311	Aug. 11, 1931	C. Dreyfus assignee of W. Whitehead	Dry Spinning Apparatus	23rd Sept- ember, 1933— <i>continued.</i>
314,312	Aug. 11, 1931	C. Dreyfus assignee of W. Whitehead	Method of Forming Filaments	
314,909	Sept. 1, 1931	C. Dreyfus assignee of W. Whitehead	Manufacture of Fabrics	
315,580	Sept. 29, 1931	C. Dreyfus	Surgical Dressing	
315,581	Sept. 29, 1931	C. Dreyfus	Insulating Composition	
20 315,771	Sept. 29, 1931	C. Dreyfus assignee of W. McC. Cameron & F. J. Williams	Hosiery	
315,772	Sept. 29, 1931	C. Dreyfus assignee of W. H. Moss	Adhesive and Method of Applying the Same	
315,773	Sept. 29, 1931	C. Dreyfus assignee of W. Whitehead	Textile Material	
30 316,422	Oct. 20, 1931	C. Dreyfus assignee of W. Whitehead	Process of Making Artificial Filaments	
316,423	Oct. 20, 1931	C. Dreyfus assignee of W. Whitehead	Process of Producing Cellulose Acetate Yarns	
316,587	Oct. 27, 1931	C. Dreyfus assignee of W. Whitehead	Textile Product	
40 316,841	Nov. 3, 1931	C. Dreyfus assignee of G. Schneider	Cellulose Treating Apparatus	
317,112	Nov. 10, 1931	C. Dreyfus assignee of H. Platt	Fabric Marking Ink	
317,113	Nov. 10, 1931	C. Dreyfus assignee of W. Whitehead	Tinting Liquid for the Identification of Yarns	

Exhibits.	No.	Date	Patentee	Title	
No. 4. Assign- ment of Patents. Camille Dreyfus to Canadian Celanese Ltd. 23rd Sept- ember, 1933— <i>continued.</i>	317,114	Nov. 10, 1931	C. Dreyfus assignee of H. Platt	Textile Material Colouring Method	
	317,115	Nov. 10, 1931	C. Dreyfus assignee of R. G. Dort	Textile Material Colouring Method	
	317,116	Nov. 10, 1931	C. Dreyfus assignee of W. Whitehead	Process of Treating Textile Fila- ments	10
	317,117	Nov. 10, 1931	C. Dreyfus assignee of G. W. Seymour	Cellulose Derivative Composition	
	317,329	Nov. 17, 1931	C. Dreyfus assignee of G. Schneider	Thermoplastic Composition	
	317,330	Nov. 17, 1931	C. Dreyfus assignee of G. Schneider	Thermoplastic Composition	
	317,331	Nov. 17, 1931	C. Dreyfus assignee of W. H. Moss	Synthetic Resin and Coating	20
	317,726	Dec. 1, 1931	C. Dreyfus, assignee of W. H. Moss	Laminated Glass	
	317,918	Dec. 8, 1931	C. Dreyfus assignee of C. D. Walton, W. E. Crooks & F. T. Small	Apparatus for Handling Textile Yarns	30
	317,919	Dec. 8, 1931	C. Dreyfus assignee of W. H. Moss	Laminated Glass	
	317,920	Dec. 8, 1931	C. Dreyfus assignee of G. Schneider	Textile Material	
	317,959	Dec. 15, 1931	C. Dreyfus	Sound Record	
	318,145	Dec. 15, 1931	C. Dreyfus assignee of W. H. Moss	Laminated Glass	40
	318,146	Dec. 15, 1931	C. Dreyfus assignee of F. J. Williams	Textile Material	
	318,147	Dec. 15, 1931	C. Dreyfus assignee of G. Schneider	Cellulose Derivative Composition	
318,186	Dec. 22, 1931	C. Dreyfus	Textile Material		

	<i>No.</i>	<i>Date</i>	<i>Patentee</i>	<i>Title</i>	<i>Exhibits.</i>
	318,342	Dec. 22, 1931	C. Dreyfus assignee of F. J. Williams	Yarn Treating Apparatus	— No. 4.
	318,370	Dec. 29, 1931	C. Dreyfus	Coating Composition Containing Cellulose Ethers	Assign- ment of Patents.
	318,521	Dec. 29, 1931	C. Dreyfus assignee of W. Whitehead	Production of Artificial Filaments	Camille Dreyfus to Canadian Celanese Ltd.
10	318,561	Jan. 5, 1932	C. Dreyfus	Cellulose Derivative Article	23rd Sept- ember, 1933—
	318,757	Jan. 5, 1932	C. Dreyfus assignee of G. W. Miles	Manufacture of Cellulose Esters	<i>continued.</i>
	318,758	Jan. 5, 1932	C. Dreyfus assignee of W. H. Moss	Cellulose Composition Derivative	
	318,759	Jan. 5, 1932	C. Dreyfus assignee of W. Whitehead	Artificial Bristles or Straw	
20	318,931	Jan. 12, 1932	C. Dreyfus assignee of W. H. Moss & B. B. White	Process of Decolorizing Resin and Product	
	318,932	Jan. 12, 1932	C. Dreyfus assignee of W. H. Moss and G. W. Seymour	Resin and Coating or Plastic Com- position	
	319,148	Jan. 19, 1932	C. Dreyfus assignee of W. H. Moss	Synthetic Resin	
30	319,149	Jan. 19, 1932	C. Dreyfus assignee of W. H. Moss	Purification of Cellulose Derivatives	
	319,150	Jan. 19, 1932	C. Dreyfus assignee of W. H. Moss	Coating Composition	
	319,151	Jan. 19, 1932	C. Dreyfus assignee of W. H. Moss & B. B. White	Coating Composition	
40	319,152	Jan. 19, 1932	C. Dreyfus assignee of W. H. Moss & B. B. White	Coating Composition	
	319,358	Jan. 26, 1932	C. Dreyfus assignee of G. W. Miles	Cellulose Conversion	

<i>Exhibits.</i>	<i>No.</i>	<i>Date</i>	<i>Patentee</i>	<i>Title</i>	
Exhibits. No. 4. Assign- ment of Patents. Camille Dreyfus to Canadian Celanese Ltd. 23rd Sept- ember, 1933— <i>continued.</i>	319,549	Feb. 2, 1932	C. Dreyfus assignee of W. H. Moss	Resin and Coating or Plastic Com- positions containing the same	
	319,550	Feb. 2, 1932	C. Dreyfus assignee of W. H. Moss	Resin and Coating or Plastic Com- positions containing the Same	
	319,728	Feb. 9, 1932	C. Dreyfus assignee of W. H. Moss	Coating Compositions and Film Pro- duced Thereby	10
	319,729	Feb. 9, 1932	C. Dreyfus assignee of W. H. Moss	Coating Compositions and Films Produced Therefrom	
	319,730	Feb. 9, 1932	C. Dreyfus assignee of W. H. Moss & B. B. White	Coating Compositions and Films Produced Therefrom	
	319,731	Feb. 9, 1932	C. Dreyfus assignee of W. H. Moss & B. B. White	Coating or Plastic Compositions con- taining Synthetic Resin	20
	319,732	Feb. 9, 1932	C. Dreyfus assignee of W. H. Moss	Resin and Coating or Plastic Com- positions containing the Same	
	319,733	Feb. 9, 1932	C. Dreyfus assignee of W. H. Moss	Compositions Containing Derivatives of Cellulose	
	319,734	Feb. 9, 1932	C. Dreyfus assignee of W. H. Moss & G. W. Seymour	Coating Compositions	30
	319,735	Feb. 9, 1932	C. Dreyfus assignee of W. Whitehead	Spinning of Artificial Filaments	
	319,736	Feb. 9, 1932	C. Dreyfus assignee of W. Whitehead	Spinning of Artificial Filaments	
	319,737	Feb. 9, 1932	C. Dreyfus assignee of G. R. Blake	Conditioning Textile Materials	40
	320,249	Mar. 1, 1932	C. Dreyfus assignee of R. G. Dort & H. Platt	Treatment of Textile Materials con- taining Carbonisable Fibres and Products Thereof	
	320,250	Mar. 1, 1932	C. Dreyfus assignee of W. Whitehead	Derivative of Cellulose Compositions and Methods of making the Same	

	<i>No.</i>	<i>Date</i>	<i>Patentee</i>	<i>Title</i>	<i>Exhibits.</i>
10	320,658	Mar. 15, 1932	C. Dreyfus assignee of The Independ- ence Trust Co. of Charlotte, N.C., U.S.A., Administrator C.T.A. of the Estate of T. B. Meisenheimer, Deceased	Methods of Tinting Yarn and Products Thereof	No. 4. Assign- ment of Patents. Camille Dreyfus to Canadian Celanese Ltd. 23rd Sept- ember, 1933— <i>continued.</i>
	320,913	Mar. 22, 1932	C. Dreyfus assignee of G. Rivat	Differential Coloured Fabrics and Methods of Producing the Same	
	320,914	Mar. 22, 1932	C. Dreyfus assignee of G. Schneider	Cellulose Acetate and Method of Producing the Same	
20	322,361	May 10, 1932	C. Dreyfus assignee of G. Schneider	Filaments, Foils and the Like and Method of Making the Same	
	322,362	May 10, 1932	C. Dreyfus assignee of W. H. Moss	Method of Coating and Product Thereof	

IN TESTIMONY WHEREOF I have hereunto set my hand and affixed
my seal this 17th day of September, 1932

CAMILLE DREYFUS.

COUNTY OF NEW YORK }
STATE OF NEW YORK } S.S.

30 On this 17th day of September, 1932, before me personally came CAMILLE
DREYFUS, to me personally known and known to me to be the individual
described in and who executed the foregoing assignment, and who acknowledged
to me that he executed the same of his own free will and for the purpose therein
set forth.

BERNARD H. SCHWARTING,
Notary Public.

No. 10.

Exhibits.

No. 10.
Notice of
Motion and
Order
dated
26th Nov-
ember and
30th Dec-
ember,
1935,
respectively

Notice of Motion for Order to Answer certain questions and Order thereon.

IN THE EXCHEQUER COURT OF CANADA.

Between—

THE B. V. D. COMPANY LIMITED	...	...	...	...	...	<i>Plaintiff</i>
						and
CANADIAN CELANESE, LIMITED	...	...	...	...	...	<i>Defendant.</i>

TAKE NOTICE that an application will be made before the presiding judge in chambers at the Exchequer Court Building at Ottawa, on Friday, the 29th day of November, 1935, at ten thirty o'clock in the forenoon or so soon thereafter as the motion can be heard for an order directing Camille Dreyfus, the president of the Defendant Company, to attend at his own expense at such time and place as may be fixed by the Registrar for the purpose of being further examined for discovery, as president of the Defendant Company as aforesaid and as the assignor to the said Company of the patents in question in this action, upon the matters with respect to which he refused to answer questions on his examination for discovery held herein on November 20th and 22nd 1935, and also on the matters within the knowledge of the Defendant Company with respect to which the said Camille Dreyfus had not informed himself on the occasion of the said examination and with respect to which he was then unable to state what the knowledge of the Defendant Company was. 10

AND TAKE NOTICE that the Plaintiff will ask that any direction given on November 20th, 1935, which is inconsistent with the order now asked be rescinded.

AND TAKE NOTICE that, without affecting the generality of the foregoing, the matters upon which the Plaintiff asks that the said Camille Dreyfus should be directed to answer questions are more particularly those referred to in the schedule attached hereto.

AND TAKE NOTICE that upon such motion will be read the notes of the examination for discovery of the said Camille Dreyfus taken herein on the 20th and 22nd days of November, 1935, a certified copy of the assignment of the patents in question in this action, and such other material as counsel may advise. 30

Dated at Ottawa, this 26th day of November, 1935.

SMART & BIGGAR,
of Solicitors for the Plaintiff.

To: Messrs. BELCOURT & GENEST,
Agents for Defendant's Solicitors.

SCHEDULE.

Exhibits.

The matters with respect to which the Plaintiff asks that Camille Dreyfus should answer questions are as follows:—

1. Whether the Defendant Company has at any time made any fabrics such as are described in either of the patents in suit.
2. If so, when were such fabrics made, what was their character, and what was the process by which they were made.
3. Whether the company has any knowledge of the making by others of any fabrics such as are described in either of the patents in suit prior to
10 May 23rd, 1935.
4. If so, by whom were such fabrics made, what was their nature, and by what process were they produced.
5. Whether the company has any knowledge of the making pursuant to licences under either of the patents in question of any fabrics of a kind other than that constituting the collars of the shirts marked as Exhibits 5, 6 and 7.
6. Whether the company gave any instructions to any of the licensees with regard to the manufacture of fabrics such as are described in either of the patents in question, and if so, what these instructions were.
7. Whether the company has any information with regard to the materials
20 used by any of their licensees for the manufacture of fabrics in accordance with either of the patents in question or of the processes followed by any licensees, and if so, what these materials and processes are.
8. Whether the British and United States companies to which were assigned the corresponding British and United States patents upon the applications for which the defendant company relies to establish a date of invention have ever made any fabrics such as are described in the said patents or either of them.
9. If so, when were such fabrics first made, what was the nature of them, and by what process or processes were they made?
10. Whether either the company or the witness is not aware that certain
30 statements in the specification of the patents in question are untrue and misleading.
11. Why, if no effort to exploit patent No. 265,960 was made by the company during the seven and a-half years intervening between the application for the said patent and the first attempt to exploit it, the company began to exploit it in May, 1935.
12. Whether the witness, before January 23rd, 1925, knew of the existence of materials of the kind recommended for use in the patent which were not adapted to serve the purpose of making a fabric such as that claimed.
13. What information the witness had at that time with regard to materials
40 of the kind proposed by the patents in question to be used in carrying out the processes therein described and claimed.
14. What at that time was common knowledge in the art.

No. 10.
Notice of
Motion and
Order
dated
26th Nov-
ember and
30th Dec-
ember,
1935,
respectively
—continued.

Exhibits. IN THE EXCHEQUER COURT OF CANADA

No. 10.
Notice of
Motion and
Order
dated
26th Nov-
ember and
30th Dec-
ember,
1935,
respectively
—continued.

Monday, the 30th day of December, A.D., 1935

BEFORE : THE HONOURABLE MR. JUSTICE McLEAN in Chambers.

Between

THE B. V. D. COMPANY, LIMITED Plaintiff
and
CANADIAN CELANESE, LIMITED Defendant

UPON the application of Counsel for the Plaintiff and upon hearing read the Notice of Motion herein dated the 26th day of November, 1935, for an Order directing Camille Dreyfus, President of the Defendant Company to attend 10 at his own expense at such time and place as may be fixed by the Registrar for the purpose of being further examined for discovery, as president of the Defendant Company and as the assignor to the said Company of the patents in question in this action, upon the matters with respect to which he refused to answer questions on his examination for discovery held on November 20th and 22nd, 1935, and also on the matters within the knowledge of the Defendant Company with respect to which the said Camille Dreyfus had not informed himself on the occasion of the said examination and with respect to which he was then unable to state what the knowledge of the Defendant Company was, and more particularly those questions which are more particularly referred to in a schedule attached to 20 the said notice of motion, and upon hearing what was alleged by Counsel for the Plaintiff as well as for the Defendant ;

IT IS ORDERED that this application be and the same is hereby dismissed ;

AND IT IS FURTHER ORDERED that the costs of and incidental to this application be reserved.

ARNOLD W. DUCLOS,
Registrar.

No. 28.
Statement
as to
adhesion.

No. 28.

Statement as to adhesion.

30

EFFECT OF INCREASED TIME

	Time in Hot Press	Adhesion		Total
		Front	Back	
1C	15 secs.	3.1	2.9	6.0
1B	30-45 secs.	3.06	3.0	6.06
1D	60 secs.	2.9	2.4	5.3
1E	180 secs.	2.6	2.5	5.1

EFFECT OF TEMP. DURING DRYING

	Lbs. Steam	Temp.				
		°C	°F.			
1G	None	Room Temp.		2.6	3	5.6
3D	20	126°—259°		3.1	2.6	5.7
3E	60	153°—307°		3.2	2.25	5.45

Exhibits.
No. 28.
Statement
as to
adhesion—
continued.

Exhibit B. Statement as to Permeability Tests.

B
Statement
as to
Permea-
bility
Tests.

PERMEABILITY TESTS

10 Samples A & B—Trubenized under regular conditions using temp.* of 20 lbs.
of steam.

Sample V—Same 3 fabrics not Trubenized but stretched tight.

All 3 tests run in identical containers side by side at room temperature.

Grams water vapor passed thru 1 sq. ft. of material after time noted.

Time after start of test						Grams water vapor passed thru per sq. ft. of material		
						Sample A	B	V
2 hrs. ...	...	...	...	...	2.5	0.83	0 (none)	
4 hrs. ...	...	...	...	...	15.8	12.5	5.0	
6 hrs. ...	...	...	...	...	16.7	16.7	13.3	

20

(Copy)

(Sgd.) G. J. ESSELEN.

“ J.1.” License, Canadian Celanese Ltd. to Tooke Bros. Ltd. dated May 23, 1935.

“ J.1.”

LICENSE AGREEMENT

License
Canadian
Celanese
Ltd. to
Tooke Bros.
Ltd.,
23rd May,
1935—

THIS AGREEMENT entered into this 23rd day of May, 1935, by and between CANADIAN CELANESE LIMITED (hereinafter called “Celanese”) and MESSRS. TOOKE BROS. LIMITED, MONTREAL, P.Q. (hereinafter called “the licensee”).

WITNESSETH that

WHEREAS the Licensee desires to secure a non-exclusive and non-transferable license under the following Canadian Letters Patent:

30 Camille Dreyfus No. 265,960 issued November 16th, 1926.

Camille Dreyfus No. 311,185 issued May 12th, 1931.

AND WHEREAS Celanese is the owner of each of the above-mentioned Letters Patent.

NOW THEREFORE, Celanese and the Licensee, in consideration of the premises, and in consideration of the payment of One Dollar (\$1.00) by each of them to the other paid, receipt of which is hereby acknowledged, and for other good and valuable consideration, have agreed and do hereby agree as follows:

40 1. Celanese agrees to grant and hereby does grant to the Licensee, subject to the provisions hereof, all of which are conditions of such grant, a non-exclusive

* Sic.

Exhibits.
 " J.1."
 License
 Canadian
 Celanese
 Ltd. to
 Tooke Bros.
 Ltd.,
 23rd May,
 1935—
continued.

and non-transferable license to use the improvements of said Letters Patent under said patents, to make and sell collars, bosoms and cuffs that are attached to or are parts of men's shirts or detached collars made and sold only with shirts of identical material (not exceeding two per shirt), hereinafter called " matched " collars (but no other detached or loose collars or any detached or loose bosoms or cuffs), as fully as Celanese may by virtue of such patents, for the full term of which said Letters Patent have been granted, upon the conditions and subject to rights of cancellation as herein set forth.

2. The Licensee accepts said non-exclusive and non-transferable license and agrees that all such rights as are herein granted are personal to the Licensee and that this license does not confer upon the Licensee any right to grant sub-licenses. 10

3. The Licensee agrees to pay to Celanese the sum of Three Hundred Dollars (\$300.0) at the signing and delivery of this agreement and agrees to pay a minimum monthly royalty of Three Hundred Dollars (\$300.00) in advance on the first day of August, 1935, and on the first day of each month thereafter. Minimum royalty payments made in each calendar year shall be credited against other royalties set forth in Paragraph numbered " 4 " hereof but this only to the extent that such other royalties shall be payable in the same calendar year, the intent being that in any calendar year the aggregate of all royalty payments by the Licensee shall equal (a) the total of the minimum royalty payments specified for that year, or (b) the total of the earned royalties payable in that year under the provisions of paragraphs 4 and 5 hereof, whichever of said totals is the larger. 20

4. The Licensee agrees to pay Celanese the following royalties :

(a) for shirts manufactured by the Licensee with stiffened attached or " matched " collars and/or cuffs (but not bosoms) made with or containing cellulose acetate or other derivative of cellulose a royalty of Twenty-Five (25c) per dozen for each dozen shirts so manufactured by the Licensee.

(b) a royalty of fifty cents (50c) per dozen for each dozen shirts manufactured by the Licensee with stiffened attached bosoms with or without attached or " matched " collars or attached cuffs, made with or containing cellulose acetate or other derivative of cellulose. 30

5. On the 15th day of each month after date hereof, the Licensee will furnish to Celanese certified statements of all manufacture during the preceding calendar month of articles described in paragraph numbered " 4 " hereof. On the 15th day of January, April, July and October of each year, the Licensee will pay to Celanese the royalty payments on all manufacture in the preceding three calendar months as provided in paragraph numbered " 4 " hereof. Certified statements of manufacture of articles shall be signed under oath by two officers of the Licensee if a corporation, by two partners if a partnership, or be signed by a certified public accountant approved by Celanese. 40

6. All minimum and other royalty payments shall be made by the Licensee at the office of Celanese in Montreal, P.Q., or at such other place or places in the Dominion of Canada as Celanese may from time to time designate by written notice to the Licensee.

7. (a) Celanese agrees that as long as this License remains in effect and the

Licensee pays the royalties as in this agreement provided it will not sue the Licensee for infringement of any patent now owned or controlled or hereafter acquired or controlled by Celanese and relating to the goods specified in paragraph numbered " 4 " hereof.

(b) All developments and improvements made by the Licensee in the use of cellulose acetate or other derivative of cellulose in the art of laminating fabrics containing cellulose acetate or other derivative of cellulose in any form and to any extent and in articles made therefrom and all applications for Letters Patent pertaining thereto shall be made on behalf of Celanese and shall be assigned to
 10 Celanese and shall become a part of the subject matter of this agreement.

8. The Licensee agrees to keep true and complete records and books of account, including job records, accurately to show operations under the terms of this agreement and Celanese is hereby given the right of access to the plants, the records and to the books of account of the Licensee for the purpose of verifying said statements as to royalty payments, said access to be at reasonable business hours.

9. The Licensee will mark all products made or sold in accordance with this agreement with a proper patent notice by label or stamp in such manner and form as it may be from time to time advised by Celanese.

20 10. The Licensee is not given any right whatsoever to sue infringers of any of said patents or patents to be issued, but Celanese reserves to itself full, complete and exclusive discretion to determine the advisability of filing any suits against infringers and to file and prosecute only such suits, if any, as in its discretion are desirable or necessary.

11. The Licensee admits the validity of the patents referred to herein and agrees not to contest the validity of any of the aforesaid patents and agrees not to become voluntarily a party directly or indirectly to any procedure disputing the validity or tending to impair the value of any of said inventions or Letters Patent covering the same, during the period of this license and at
 30 all times thereafter except as to such patent or patents as may be adjudicated invalid by a court of competent jurisdiction from whose decision no appeal is or can be taken.

12. The Licensee agrees not to use the name of Celanese in connection with any products manufactured under this license, except upon such conditions as may be hereafter prescribed by Celanese.

13. In case of the receivership, bankruptcy, forced assignment, or other financial difficulty by reason of which the Licensee is prevented from carrying out the terms of this agreement, then all rights granted hereunder to the Licensee may be terminated by Celanese, at its election, upon written notice
 40 of the Licensee.

14. The Licensee may at its election be relieved of obligation to pay the minimum monthly royalty upon the following conditions:—

(a) The Licensee shall give to Celanese before the end of any calendar year after 1937 three months written notice by registered mail of its election to discontinue minimum monthly royalty payments from and after the end of that calendar year ;

(b) After receipt of such notice from the Licensee, this agreement

Exhibits.
 " J.I."
 License
 Canadian
 Celanese
 Ltd. to
 Tooke Bros.
 Ltd.,
 23rd May,
 1935—
continued.

Exhibits.

"J.1"

License
Canadian
Celanese
Ltd. to
Tooke Bros.
Ltd.
23rd May,
1935—
continued.

shall continue in effect in all other particulars subject to the right of Celanese to terminate this agreement upon three months notice ;

(c) No notice of election by the Licensee to discontinue the minimum monthly royalty may be given while the Licensee is in default of any payment of royalty.

15. If at any time Celanese should waive its rights due to any breach of any of the provisions of this agreement, then such waiver is not to be construed as a continuing waiver of other breaches of the same or other provisions of this agreement.

16. In the event that the Licensee shall default in the performance of any of its obligations hereunder, then Celanese has the right to cancel this agreement upon giving the Licensee thirty days written notice, the cancellation of the agreement to be effective at the end of said thirty day period unless the Licensee shall have removed said condition of default within said period. 10

17. In the event Celanese shall hereafter grant to any other Licensee a license covering the same subject matter with lower royalty, except minimum royalty, the Licensee shall be thereafter entitled to said lower royalty.

IN WITNESS WHEREOF, Celanese and the Licensee have affixed their names and seals the day and year first written above.

TOOKE BROS. LTD.,

R. G. Bock, V.P. (L.S.),
Licensee.

CANADIAN CELANESE LIMITED

By CHARLES M. PALMER (L.S.)
Vice-Pres.

20

"J.2."

License
Agreement
Canadian
Celanese
Ltd. to
John
Forsyth
Ltd.,
28th May,
1935—

"J.2." License Agreement, Canadian Celanese Ltd. to John Forsyth Ltd., dated 28th May, 1935.

LICENSE AGREEMENT

THIS AGREEMENT entered into this twenty-eighth day of May, 1935, by and between CANADIAN CELANESE LIMITED (hereinafter called "Celanese") and JOHN FORSYTH LIMITED, of Kitchener, Ontario, Canada, (hereinafter called "the Licensee") 30

WITNESSETH that

WHEREAS the Licensee desires to secure a non-exclusive and non-transferable license under the following Canadian Letters Patent :

Camille Dreyfus No. 265,960 issued November 16th, 1926.

Camille Dreyfus No. 311,185 issued May 12th, 1931.

AND WHEREAS Celanese is the owner of each of the above mentioned Letters Patent.

NOW THEREFORE Celanese and the Licensee, in consideration of the premises, and in consideration of the payment of One Dollar (\$1.00) by each of them to the other paid, receipt of which is hereby acknowledged, and for other good and valuable consideration, have agreed and do hereby agree as follows : 40

1. Celanese agrees to grant and hereby does grant to the Licensee, subject to the provisions hereof, all of which are conditions of such grant, a non-exclusive

and non-transferable license to use the improvements of said Letters Patent under said patents, to make and sell collars, bosoms and cuffs that are attached to or are parts of men's shirts or detached collars made and sold only with shirts of identical material (not exceeding two per shirt), hereinafter called "matched" collars (but no other detached or loose collars or any detached or loose bosoms or cuffs), as fully as Celanese may by virtue of such patents, for the full term for which said Letters Patent have been granted upon the conditions and subject to rights of cancellation as herein set forth.

2. The Licensee accepts said non-exclusive and non-transferable license and agrees that all such rights as are herein granted are personal to the Licensee and that this license does not confer upon the Licensee any right to grant sub-licenses.

3. The Licensee agrees to pay to Celanese the sum of Three Hundred Dollars (\$300.00) at the signing and delivery of this agreement and agrees to pay a minimum monthly royalty of Three Hundred Dollars (\$300.00) in advance on the first day of August, 1935 and on the first day of each month thereafter. Minimum royalty payments made in each calendar year shall be credited against other royalties set forth in paragraph numbered "4" hereof but this only to the extent that such other royalties shall be payable in the same calendar year, the intent being that in any calendar year the aggregate of all royalty payments by the Licensee shall equal (a) the total of the minimum royalty payments specified for that year, or (b) the total of the earned royalties payable in that year under the provisions of paragraphs 4 and 5 hereof, whichever of said total is the larger.

4. The Licensee agrees to pay Celanese the following royalties:—

(a) for shirts manufactured by the Licensee with stiffened attached or "matched" collars and/or cuffs (but not bosoms) made with or containing cellulose acetate or other derivative of cellulose a royalty of Twenty-Five (25c.) per dozen for each dozen shirts so manufactured by the Licensee.

(b) a royalty of fifty cents (50c.) per dozen for each dozen shirts manufactured by the Licensee with stiffened attached bosoms with or without attached or "matched" collars or attached cuffs, made with or containing cellulose acetate or other derivative of cellulose.

5. On the 15th day of each month after date hereof, the Licensee will furnish to Celanese certified statements of all manufacture during the preceding calendar month of articles described in paragraph numbered "4" hereof. On the 15th day of January, April, July and October of each year, the Licensee will pay to Celanese the royalty payments on all manufacture in the preceding three calendar months as provided in paragraph numbered "4" hereof. Certified statements of manufacture of articles shall be signed under oath by two officers of the Licensee if a corporation, by two partners if a partnership, or be signed by a certified public accountant approved by Celanese.

6. All minimum and other royalty payments shall be made by the Licensee at the office of Celanese in Montreal, P.Q., or at such other place or places in the Dominion of Canada as Celanese may from time to time designate by written notice to the Licensee.

Exhibits.
"J.2."
License
Agreement,
Canadian
Celanese
Ltd. to
John
Forsyth
Ltd.,
28th May,
1935—
continued.

Exhibits.
 " J.2."
 License
 Agreement,
 Canadian
 Celanese
 Ltd. to
 John
 Forsyth
 Ltd.,
 28th May,
 1935—
continued.

7.—(a) Celanese agrees that as long as this License remains in effect and the Licensee pays the royalties as in this agreement provided it will not sue the Licensee for infringement of any patent now owned or controlled or hereafter acquired or controlled by Celanese and relating to the goods specified in paragraph numbered " 4 " hereof.

(b) All developments and improvements made by the Licensee in the use of cellulose acetate or other derivative of cellulose in the art of laminating fabrics containing cellulose acetate or other derivative of cellulose in any form and to any extent and in articles made therefrom and all applications for Letters Patent pertaining thereto shall be made on behalf of Celanese and shall be assigned to Celanese and shall become a part of the subject matter of this agreement. 10

8. The Licensee agrees to keep true and complete records and books of account, including job records, accurately to show operations under the terms of this agreement and Celanese is hereby given the right of access to the plants, the records and to the books of account of the Licensee for the purpose of verifying said statements as to royalty payments, said access to be at reasonable business hours.

9. The Licensee will mark all products made or sold in accordance with this agreement with the proper patent notice by label or stamp in such manner and form as it may be from time to time advised by Celanese. 20

10. The Licensee is not given any right whatsoever to sue infringers of any of said patents or patents to be issued, but Celanese reserves to itself full, complete and exclusive discretion to determine the advisability of filing any suits against infringers and to file and prosecute only such suits, if any, as in its discretion are desirable or necessary.

11. The Licensee admits the validity of the patents referred to herein and agrees not to contest the validity of any of the aforesaid patents and agrees not to become voluntarily a party directly or indirectly to any procedure disputing the validity or tending to impair the value of any of said inventions or Letters Patent covering the same, during the period of this license and at all times thereafter except as to such patent or patents as may be adjudicated invalid by a court of competent jurisdiction from whose decision no appeal is or can be taken. 30

12. The Licensee agrees not to use the name of Celanese in connection with any products manufactured under this license, except upon such conditions as may be hereafter prescribed by Celanese.

13. In case of the receivership, bankruptcy, forced assignment, or other financial difficulty by reason of which the Licensee is prevented from carrying out the terms of this agreement, then all rights granted hereunder to the Licensee may be terminated by Celanese, at its election, upon written notice to the Licensee. 40

14. The Licensee may at its election be relieved of obligation to pay the minimum monthly royalty upon the following conditions,

(a) The Licensee shall give to Celanese before the end of any calendar year after 1937 three months written notice by registered mail of its election to discontinue minimum monthly royalty payments from and after the end of that calendar year ;

(b) After receipt of such notice from the Licensee, this agreement shall continue in effect in all other particulars subject to the right of Celanese to terminate this agreement upon three months notice ;

(c) No notice of election by the Licensee to discontinue the minimum monthly royalty may be given while the Licensee is in default of any payment of royalty.

10 15. If at any time Celanese should waive its rights due to any breach of any of the provisions of this agreement, then such waiver is not to be construed as a continuing waiver of other breaches of the same or other provisions of this agreement.

16. In the event that the licensee shall default in the performance of any of its obligations hereunder, then Celanese has the right to cancel this agreement upon giving the Licensee thirty days written notice, the cancellation of the agreement to be effective at the end of said thirty day period unless the Licensee shall have removed said condition of default within said period.

17. In the event Celanese shall hereafter grant to any other Licensee a license covering the same subject matter with lower royalty, except minimum royalty, the Licensee shall be thereafter entitled to said lower royalty.

20 IN WITNESS WHEREOF, Celanese and the Licensee have affixed their names and seals the day and year first above written.

JOHN FORSYTH LTD.,
J. D. C. FORSYTH (L.S.),
Licensee.

CANADIAN CELANESE LTD.,
By CHARLES M. PALMER (L.S.)
Vice-Pres.

“ J.3.” License Agreement, Canadian Celanese Ltd. and Cluett, Peabody & Co. of Canada Ltd., dated 28th May, 1935.

LICENSE AGREEMENT.

30 THIS AGREEMENT entered into this twenty-eighth day of May, 1935, by and between CANADIAN CELANESE LIMITED (hereinafter called “Celanese”) and CLUETT, PEABODY & CO., of CANADA LTD., Kitchener, Ontario, Canada (hereinafter called “the Licensee”),

WITNESSETH that

WHEREAS the Licensee desires to secure a non-exclusive and non-transferable license under the following Canadian Letters Patent :

Camille Dreyfus No. 265,960 issued November 16th, 1926.

Camille Dreyfus No. 311,185 issued May 12th, 1931.

AND WHEREAS Celanese is the owner of each of the above mentioned Letters Patent,

40 NOW THEREFORE, Celanese and the Licensee, in consideration of the premises, and in consideration of the payment of One Dollar (\$1.00) by each of them to the other paid, receipt of which is hereby acknowledged, and for other good and valuable consideration, have agreed and do hereby agree as follows :—

1. Celanese agrees to grant and hereby does grant to the Licensee, subject to the provisions hereof, all of which are conditions of such grant, a non-

Exhibits.
“ J. 2.”
License Agreement
Canadian Celanese Ltd. to John Forsyth Ltd.
28th May, 1935—
continued.

“ J.3.”
License Agreement,
Canadian Celanese Ltd. and Cluett, Peabody & Co. of Canada Ltd.,
28th May, 1935.

Exhibits.
 " J.3." License Agreement, Canadian Celanese Ltd. and Cluett, Peabody & Co. of Canada Ltd., 28th May, 1935—
continued.

exclusive and non-transferable license to use the improvements of said Letters Patent under said patents, to make and sell collars, bosoms and cuffs that are attached to or are parts of men's shirts or detached collars made and sold only with shirts of identical material (not exceeding two per shirt), hereinafter called "matched" collars (but no other detached or loose collars or any detached or loose bosoms or cuffs), as fully as Celanese may by virtue of such patents, for the full term for which said Letters Patent have been granted, upon the conditions and subject to rights of cancellation as herein set forth.

2. The Licensee accepts said non-exclusive and non-transferable license and agrees that all such rights as are herein granted are personal to the Licensee and that this license does not confer upon the Licensee any right to grant sub-licenses. 10

3. The Licensee agrees to pay to Celanese the sum of Three Hundred Dollars (\$300.00) at the signing and delivery of this agreement and agrees to pay a minimum monthly royalty of Three Hundred Dollars (\$300.00) in advance on the first day of August, 1935 and on the first day of each month thereafter. Minimum royalty payments made in each calendar year shall be credited against other royalties set forth in paragraph numbered "4" hereof but this only to the extent that such other royalties shall be payable in the same calendar year, the intent being that in any calendar year the aggregate of all royalty payments by the Licensee shall equal (a) the total of the minimum royalty payments specified for that year, or (b) the total of the earned royalties payable in that year under the provisions of paragraphs 4 and 5 hereof, whichever of said totals is the larger. 20

4. The Licensee agrees to pay Celanese the following royalties :

(a) for shirts manufactured by the Licensee with stiffened attached or "matched" collars and/or cuffs (but not bosoms) made with or containing cellulose acetate or other derivative of cellulose a royalty of Twenty-Five (25c) per dozen for each dozen shirts so manufactured by the Licensee.

(b) a royalty of fifty cents (50c) per dozen for each dozen shirts manufactured by the Licensee with stiffened attached bosoms with or without attached or "matched" collars or attached cuffs, made with or containing cellulose acetate or other derivative of cellulose. 30

5. On the 15th day of each month after date hereof, the Licensee will furnish to Celanese certified statements of all manufacture during the preceding calendar month of articles described in paragraph numbered "4" hereof. On the 15th day of January, April, July and October of each year, the Licensee will pay to Celanese the royalty payments on all manufacture in the preceding three calendar months as provided in paragraph numbered "4" hereof. Certified statements of manufacture of articles shall be signed under oath by two officers of the Licensee if a corporation, by two partners if a partnership, or be signed by a certified public accountant approved by Celanese. 40

6. All minimum and other royalty payments shall be made by the Licensee at the office of Celanese in Montreal, P.Q., or at such other place or places in the Dominion of Canada as Celanese may from time to time designate by written notice to the Licensee.

7. (a) Celanese agrees that as long as this License remains in effect and the

Licensee pays the royalties as in this agreement provided it will not sue the Licensee for infringement of any patent now owned or controlled or hereafter acquired or controlled by Celanese and relating to the goods specified in paragraph numbered " 4 " hereof.

(b) All developments and improvements made by the Licensee in the use of cellulose acetate or other derivative of cellulose in the art of laminating fabrics containing cellulose acetate or other derivative of cellulose in any form and to any extent and in articles made therefrom and all applications for Letters Patent pertaining thereto shall be made on behalf of Celanese and shall be assigned
10 to Celanese and shall become a part of the subject matter of this agreement.

8. The Licensee agrees to keep true and complete records and books of account, including job records, accurately to show operations under the terms of this agreement and Celanese is hereby given the right of access to the plants, the records and to the books of account of the Licensee for the purpose of verifying said statements as to royalty payments, said access to be at reasonable business hours.

9. The Licensee will mark all products made or sold in accordance with this agreement with a proper patent notice by label or stamp in such manner and form as it may be from time to time advised by Celanese.

20 10. The Licensee is not given any right whatsoever to sue infringers of any of said patents or patents to be issued, but Celanese reserves to itself full, complete and exclusive discretion to determine the advisability of filing any suits against infringers and to file and prosecute only such suits, if any, as in its discretion are desirable or necessary.

11. The Licensee admits the validity of the patents referred to herein and agrees not to contest the validity of any of the aforesaid patents and agrees not to become voluntarily a party directly or indirectly to any procedure disputing the validity or tending to impair the value of any of said inventions or Letters Patent covering the same, during the period of this license and at
30 all times thereafter except as to such patent or patents as may be adjudicated invalid by a court of competent jurisdiction from whose decision no appeal is or can be taken.

12. The Licensee agrees not to use the name of Celanese in connection with any products manufactured under this license, except upon such conditions as may be hereafter prescribed by Celanese.

13. In case of the receivership, bankruptcy, forced assignment, or other financial difficulty by reason of which the Licensee is prevented from carrying out the terms of this agreement, then all rights granted hereunder to the Licensee may be terminated by Celanese, at its election, upon written notice
40 to the Licensee.

14. The Licensee may at its election be relieved of obligation to pay the minimum monthly royalty upon the following conditions:—

(a) The Licensee shall give to Celanese before the end of any calendar year after 1937 three months written notice by registered mail of its election to discontinue minimum monthly royalty payments from and after the end of that calendar year;

(b) After receipt of such notice from the Licensee, this agreement

Exhibits.

—
" J.3." License Agreement, Canadian Celanese Ltd. and Cluett, Peabody & Co. of Canada Ltd., 28th May, 1935—
continued.

Exhibits.

“ J.3.”

License
Agreement,
Canadian
Celanese
Ltd. and
Cluett,
Peabody &
Co. of
Canada
Ltd.,
28th May,
1935—
continued.

shall continue in effect in all other particulars subject to the right of Celanese to terminate this agreement upon three months' notice ;

(c) No notice of election by the Licensee to discontinue the minimum monthly royalty may be given while the Licensee is in default of any payment of royalty.

15. If at any time Celanese should waive its rights due to any breach of any of the provisions of this agreement, then such waiver is not to be construed as a continuing waiver of other breaches of the same or other provisions of this agreement.

16. In the event that the Licensee shall default in the performance of 10 any of its obligations hereunder, then Celanese has the right to cancel this agreement upon giving the Licensee thirty days written notice, the cancellation of the agreement to be effective at the end of said thirty day period unless the Licensee shall have removed said condition of default within said period.

17. In the event Celanese shall hereafter grant to any other Licensee a license covering the same subject matter with lower royalty, except minimum royalty, the Licensee shall be thereafter entitled to said lower royalty.

IN WITNESS WHEREOF, Celanese and the Licensee have affixed their names and seals the day and year first above written.

CLUETT, PEABODY & CO. OF CANADA, LIMITED.

THOMAS C. STONE (L.S.)

Vice-Pres.

Licensee

CANADIAN CELANESE LIMITED

By CHARLES M. PALMER (L.S.)

Vice-Pres.

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