In the Privy Council

No. 17 of 1952

ON APPEAL

FROM THE SUPREME COURT OF ALBERTA
(APPELLATE DIVISION)

BETWEEN

MICHEAL BORYS (*Plaintiff*) *Appellant*

AND

CANADIAN PACIFIC RAILWAY COMPANY and
IMPERIAL OIL LIMITED *Defendants* (*Respondents*)

RECORD OF PROCEEDINGS
VOLUME 2

CHARLES RUSSELL & CO.,
37 Norfolk, The Strand, London,
for the Appellant.

BLAKE & REDDEN,
17, Victoria Street, S.W.1.,
for the Respondent
CANADIAN PACIFIC RAILWAY COMPANY.

LAWRENCE JONES & CO.,
Winchester House, Old Broad St. London, E.C.2.,
for the Respondent
IMPERIAL OIL LIMITED.

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and IMPERIAL OIL LIMITED,

Defendants
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RECORD OF PROCEEDINGS

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125	Photostatic Copy of "The Oil-Well Driller, A History of The World's Greatest Enterprise, The Oil Industry", by Charles A. Whiteshot,		588	834
126	List, "Composition of Some Petroleum Gases of Alberta", submitted by Dr. Fancher,		600	835
127	List, "Physical Properties of Some Crude Oils of Alberta", submitted by Dr. Fancher,		600	835
128	Photostatic Excerpts from "Second Geological Survey of Pennsylvania, 1875 to 1879", by John F. Carll,		611	835
129	Photostatic Excerpts from "Technical Paper 51, Department of the Interior, Bureau of Mines, 'Possible Causes of the Decline of Oil Wells and Suggested Methods of Prolonging Yield', by L.G. Huntley",		611	835
130	Figure No.1 prepared by Dr. Fancher,		621	836
131	Figure No. 2 prepared by Dr. Fancher,		625	837
132	Figure No. 3 prepared by Dr. Fancher,		628	838
133	Figure No. 4 prepared by Dr. Fancher,		630	839
134	First Annual Report on the Mineral Resources of Alberta, by Dr. John A. Allan,	1920	663	840

No.	Description of Document	Date	Filed at	Printed at
	PART II - PLAINTIFF'S EXHIBIT			
135	Photostatic Copies of passages from "Alberta Facts and Figures of 1950",		674	840
	DEFENDANTS' EXHIBIT			
136	Interim Order of The Board of Arbitration, Right of Entry Arbitration Act, between Imperial Oil Limited and Micheal Borys,	Nov.28,1949	700	840
	: : : : : : : : : :			

Afternoon Session,
November 20, 1950.

JOHN McGREGOR THOM,
continued direct examination by Mr. Steer:

Q Have you there two documents, documents numbered 1701AV and 583AW? A. Yes, sir.

MR. STEER: Subject to my learned friend's objection, these are the same type of documents and I would ask to have them marked.

THE COURT: What are they, transfers?

MR. STEER: Yes, my lord. There is a transfer registered as 583AW from the Canadian Pacific Railway to E. A. Fauteux of the southwest quarter of Section 15-57-24-4, reserving all coal on or under the said land. And the second one is 1701AV, Canadian Pacific to Felegine Girard, of a quarter section, which perhaps I need not take time to describe, again reserving to the Canadian Pacific Railway Company all coal on or under the said land.

MR. HELMAN: What are the dates on those, Mr. Steer?

MR. STEER: The dates are, respectively, the 16th of June, 1910, for 583AW and the 6th of August, 1912 for 1701 AV.

Q And would you give us, from those documents, Mr. Thom, the Form numbers? A. With regard to the Fauteux transfer, at the foot of the page, "Form 108-1000-Nov. '09," and at the foot of the Girard transfer, "Form 108-1000-Nov. 11."

THE COURT: Exhibit 37.

TWO TRANSFERS FROM CANADIAN PACIFIC RAILWAY MARKED EXHIBIT 37.

Q MR. STEER: Now, have you 3684 AQ and 6788BZ, Mr. Thom? A. Yes.

Q 3684AQ, dated February 12, 1913, Canadian Pacific Railway to Ludger Montpetit, a quarter section, reserving unto the Canadian Pacific Railway Company, their successors and assigns, all coal and petroleum. 6788BZ, 21st of May, 1915, Canadian Pacific to Anton Leiendecker, a quarter section, reserving all coal and petroleum. I tender those as the next exhibit, my lord.

THE COURT: Exhibit 38.

TWO TRANSFERS FROM CANADIAN PACIFIC RAILWAY COMPANY MARKED EXHIBIT 38.

Q MR. STEER: Now, would you give me 7414CK and 4217DC? A. Yes.

Q 7414CK is dated March 8, 1921, Canadian Pacific Railway to O. T. Johnson, a quarter section, "excepting and reserving thereout and therefrom unto the Company, its successors and assigns, all coal, petroleum and valuable stone". And 4217DC, dated 18th February, 1922, Canadian Pacific Railway to Edward Haarstad, a quarter section with the same reservation, all coal, petroleum and valuable stone. And the form number here, Mr. Thom, can you give it to us? A. Of the Haarstad one, at the foot of the page, C.B.1-1000-2-22, and on the Johnson one, at the foot of the page, C.B. 1-1000-11-20.

MR. STEER: I tender those, my lord.

THE COURT: Exhibit 39.

MR. NOLAN: These documents are subject, my lord, to the same objection with regard to documents of a similar nature.

THE COURT: All of them.

TWO TRANSFERS IN QUESTION FROM CANADIAN PACIFIC RAILWAY MARKED EXHIBIT 39.

MR. NOLAN: It being appreciated, my lord, that these are transfers flowing from Agreements for Sale made we know not when and containing we know not what.

Q MR. STEER: Numbers 2683BT and 4014BZ.

A Yes.

Q 2683BT, my lord, dated March 1st, 1917, Canadian Pacific Railway to Gerlach, a quarter section, reserving unto the company, their successors and assigns, all gas, petroleum, mines and minerals belonging to the company. And 4017BZ is dated March 21st, 1918, Canadian Pacific Railway to Edmonton, Dunvegan and British Columbia Railway Company, a parcel, apparently, for a roadway. I should have mentioned the fact that in the preceding reservation the full power to work was also reserved, because this one differs.

This one reserves unto the company, their successors and assigns, all gas, petroleum, mines and minerals belonging to the company, which may be found to exist in, upon or under the said land, and the power to work is struck out and initialled, my lord. I tender those.
THE COURT: Exhibit 40.

TWO TRANSFERS IN QUESTION FROM CANADIAN PACIFIC RAILWAY MARKED EXHIBIT 40.

Q MR. STEER: I did not get the Form numbers of those, Mr. Thom. What are they? A. On the E.D. & B.C. Railway transfer, at the foot of the page "Form 500-9-12"; and on the other transfer at the foot of the page "Form 500-9-12."
Q Now, have you got 2683BT and 4017BZ? A. Those are in, Mr. Steer.
Q I put those in, I beg your pardon. We have put in now five groups, have we? A. There is one more.
Q Pardon? A. There is one more.
Q Six groups I had, didn't I? A. Yes.
Q Yes. Numbers 3408BT and 7389EP? A. Yes.
Q Number 7389EP is dated the 28th of September, 1935, Canadian Pacific Railway to Ludger Montpetit, a quarter section, reserving unto the company, its successors and assigns, all mines and minerals which, without restricting the generality thereof, shall be deemed to include all Gas and Petroleum belonging to the company, and number 3408BT, Canadian Pacific to E.D. & B.C. Railway Company, a similar parcel to one obtained by them previously, a small parcel which I take to be for a right-of-way, reserving thereout and therefrom all petroleum, mines and minerals belonging to the company which may be found to exist in, upon or under the said land. I tender those, my lord.
THE COURT: Exhibit 41.

TWO TRANSFERS IN QUESTION FROM CANADIAN PACIFIC RAILWAY MARKED EXHIBIT 41.

Q MR. STEER: That is all. No, just one moment. I am showing you this Montpetit transfer, which is a part of Exhibit 41, and at the top of the document where the registration stamp appears,

appears a number, the words "Contract I.D.8308", isn't that right? A. Yes.
Q Have you any idea what that is? A. No.
Q And on these other documents there are similar notations? A. I believe there are.
Q That is all, thank you.

CROSS-EXAMINATION BY MR. NOLAN:
Q Mr. Thom, there has been marked in this case the original lease between the Canadian Pacific Railway Company and the Imperial Oil Limited as Exhibit number 6, and incorporated in it is a document entitled "Mineral Certificate"? A. Yes.
Q And that is signed by one of the officers of your department? A. Mr. Gall.
Q Mr. Gall? A. Yes.
Q Of North Alberta Land Registration District? A. Yes.
Q And what is it, Mr. Thom? A. It is a certificate, certifying that Canadian Pacific Railway Company on the 12th of October, 1949 is the owner of all coal, petroleum and valuable stone within, upon or under the northeast quarter of Section 19-50-26-4.
Q And would you mind reading the two last printed lines on that Government form?

A "And that the interest in minerals dealt with in the disposition attached to this certificate is registered in the name of the person purporting to execute the disposition."

Q And the disposition is the lease between the Canadian Pacific Railway Company and the Imperial Oil Limited?
A Yes, that is correct.
MR. NOLAN: My lord, I was going to ask that that might be given a number, although it is in and bound with the lease, because it is a document that will be referred to, and I think it is a mistake, if I may say so, to have two documents incorporated together, simply because they are under the same binding and they are entirely different documents.
THE COURT: Would exhibit 6A serve the purpose, Mr. Nolan?
MR. NOLAN: Perfectly.
THE COURT: The whole of it has been

marked Exhibit 6?
MR. NOLAN: Yes, my lord.
THE COURT: All right, we have that marked Exhibit 6A.
MR. NOLAN: Thank you, my lord. That is all I have to ask the witness, my lord.

MINERAL CERTIFICATE IN QUESTION MARKED EXHIBIT 6A.

THE COURT: Any other questions?
MR. HELMAN: Yes, my lord. I have some.

CROSS-EXAMINATION BY MR. HELMAN:

Q Coming to the property that is the subject matter of this action, and you know the northeast quarter, I haven't the description before me . . . A. Yes.

Q . . . there was a caveat registered on behalf of Model Oils Limited. Have you got that here? A. Yes.

MR. HELMAN: I would like to tender that as an exhibit, my lord.
THE COURT: Any objection?
MR. STEER: I have no objection, my lord.
THE COURT: Exhibit 42.

CAVEAT ON BEHALF OF MODEL OILS MARKED EXHIBIT 42.

MR. HELMAN: That caveat bears date of the 10th of November, 1949, and it forbids the registration of any person as transferee or owner of or of any instrument affecting the said estate or interest, and the interest is set out, that the Model Oils Limited claims an interest under a lease of all mines and minerals, other than coal, petroleum and valuable stone, within, upon or under the land hereinafter described, which lease is dated the 9th day of November, A.D. 1949 and made between Micheal Borys of Rural Route number 3, Leduc, in the Province of Alberta, as Lessor, and the said Model Oils Limited, as Lessee.

Q Was the actual lease as referred to in this document, which has now been made Exhibit 42, filed in the Land Titles Office? A. No.

Q Are there any other documents that you have which affect the title of the northeast quarter of Section 19, Township 50, Range 26, West of the 4th Meridian, which have not been made exhibits in this case?

A I will have to look. There are a number of instruments registered on the title. There is an easement to Imperial Pipe Line Limited, a caveat filed by Imperial Oil, a caveat filed by Devonian Natural Gas Company Limited, and the Mineral Certificate to the last exhibit.

Q Well, I think we might as well put these documents in. A. I haven't got them.

Q You have not got them? A. No.

Q The Devonian Natural Gas Company one is, as I understand it, merely an easement on . . .

MR. STEER: My lord, if my learned friend is relying in any way on these documents then I would submit that we ought to have the documents.

MR. HELMAN: I see. Well, the witness hasn't got them.

MR. STEER: Well, perhaps you can arrange with him to get them, if you are relying on them.

MR. HELMAN: We might as well have them all filed. Perhaps Mr. Thom could send them in to the Clerk of the Court, my lord, and we could file them without the necessity of his coming back again.

THE COURT: Oh, he won't have to come back. All he has to do is telephone up on a pass and get them down here, and he is going to stay here all week. There is nothing else to do. A. I take objection to that, sir.

Q THE COURT: I think you had better get them down, Mr. Thom. A. I will phone up for them, sir.

Q MR. HELMAN: Mr. Thom, you put in evidence here in connection with some other pieces of property a transfer of natural gas with the reservation of the type that we have in this case, namely, a reservation of all coal, petroleum and valuable stone. Would you today register a transfer of the natural gas? A. No.

RE-DIRECT EXAMINATION BY MR. STEER:

Q Would you say why, Mr. Thom? A. Since I first got wind of this case perhaps I have been a little over-cautious, but I am certainly cautious anyway.

Q That is the reason? A. Yes.

Q You heard about the dispute that was involved in this lawsuit and then you decided yourself that you would not register such transfers in the future?

A That is correct.

Q Until this suit was determined, is that right? A. That is correct.

THE COURT: Any other questions from anybody? All right, Mr. Thom, thank you.

WILLIAM MELVILLE PEEL, having been first duly sworn, examined by Mr. Steer, testified as follows:

Q Mr. Peel, you are the registrar of land titles for the South Alberta District, with an office at Calgary?

A Deputy Registrar.

Q Deputy Registrar? A. Yes.

Q How long have you occupied that position? A. Since 1937.

Q And prior to that, were you in the office of the Registrar? A. I have been in the office since 1912.

Q And in that period of time have you had experience with various types of documents going through the office? A. Yes, Mr. Steer.

Q Have you had occasion to issue titles for mines and minerals? A. Yes.

Q Have you had occasion to issue titles for natural gas? A. Yes, I think we have.

Q Have you had occasion to issue titles for petroleum?

A Yes.

Q Now, have you had occasion to issue titles for petroleum and natural gas? A. Yes, Mr. Steer.

Q Now, you have some documents there relating to Legal Subdivisions 2 and 7 in Section 33, and the West half of Section 15-21-4-West of the 5th. Perhaps you haven't, but I have got certified copies of them. A. Yes, you have.

MR. NOLAN: My lord, the mere description of the land makes me object to the introduction

on the ground that I have already put forward.
MR. STEER: I take it, my lord, that the objections of my learned friends apply to all this type of evidence.
MR. NOLAN: Thank you, Mr. Steer.
THE COURT: Yes.
MR. HELMAN: We do not have to make objection each time?
MR. STEER: No.

Q Now, I am showing you here, Mr. Peel, two certified copies of titles. One is 41 D.11 showing the Canadian Pacific Railway Company to be the owner of an estate in fee simple, dated the 21st day of May, 1929, in all petroleum and natural gas within, upon or under Legal Divisions 2 and 7 of Section 33, Township 20, Range 3, West of the 5th Meridian, and the other one is 41 D. 9 and shows the Canadian Pacific Railway Company to be the owner of all the petroleum under the West half of Section 33, Township 20, Range 3, West of the 5th Meridian. A. Yes.

Q And what I show you now is what? A. It is the application by the C.P.R. Law Department for a new certificate to issue, for a separate certificate to issue for the petroleum and natural gas rights in Legal Subdivisions 2 and 7 of Section 33, in Township 20, Range 3, West of the 5th Meridian, and the West half of Section 15, in Township 21, Range 4, West 5th Meridian, and a separate Certificate of Title for the petroleum rights in the West half of Section 33, Township 20, Range 3, West of the 5th Meridian.

Q And it was pursuant to that request, of which this document is a certified copy, that those two titles were issued? A. Yes, sir.

Q And they were issued out of what title? A. Of this one, the one covering Legal Subdivisions 2 and 7 was issued from Certificate of Title J.H. 4, and the West half of 33, from Certificate of Title J.H. 4 and B.U. 152.

Q Have you got copies of those? A. I think you have, sir.

Q I think you were to get them? A. I got them for you this morning.

Q And to whom were they delivered, Mr. Peel? A. Delivered to Mr. Fisher's stenographer.

Q That is one of them, is it?
THE COURT: Before you start on that, you have been giving evidence as to two certified

copies and of an application, that is three documents?
MR. STEER: Yes, my lord.
THE COURT: We have not marked them.
MR. STEER: These are connected, my lord, and I was going to suggest that they be all marked as one exhibit, because I propose to ask your lordship to keep them together.
THE COURT: All right.
Q MR. STEER: What have you got there?
A A certified copy of title B.U. 152.
Q And it was from that title that one of these titles issued? A. Yes, sir.
MR. HELMAN: Would you identify which one is which?
MR. STEER: Just one moment, please, Mr. Helman. I will do that for you in a moment.
MR. HELMAN: All right.
Q MR. STEER: What have we here? A. A certified copy of title J. H. 4.
Q And which title issued solely out of J.H. 4? A. The one covering Legal Subdivisions 2 and 7.
MR. STEER: That is not marked as an exhibit yet?
THE COURT: No.
Q MR. STEER: And the other one? A. From both Certificates of Title J.H. 4 and B.U. 152.
MR. STEER: My lord, I was going to suggest that these be kept together and marked as one exhibit. Perhaps they ought to be given a number, just whatever your lordship thinks. They are interconnected.
THE COURT: Yes, I see they are. I think if there is going to be cross-examination on them they all might be marked Exhibit 43 and then Exhibits 43A, B, C, D and E, and they could be referred to easily then.
MR. STEER: Yes, I was going to suggest that. Now, my lord, what I was going to suggest is this, that we take the request and mark it Exhibit 43A.
THE COURT: All right.

REQUEST FROM CANADIAN PACIFIC RAILWAY COMPANY MARKED EXHIBIT 43A.

MR. STEER: And that we have the original

Certificate of Title B.U. 152 marked Exhibit 43B.

CERTIFICATE OF TITLE IN QUESTION MARKED EXHIBIT 43B.

MR. STEER: And the original title J.H.4 marked Exhibit 43C.

TITLE IN QUESTION MARKED EXHIBIT 43C.

MR. STEER: And then title 41 D 9, which would be marked 43D.

THE COURT: Exhibit 43D.

TITLE IN QUESTION MARKED EXHIBIT 43D.

MR. STEER: And title 41 D 11 would be marked Exhibit 43E, my lord.

TITLE IN QUESTION MARKED EXHIBIT 43E.

Q Now, you have there, Mr. Peel, or, rather, I have here, certified copies of the title? A. That is the certified copy of the Certificate of Title 41 B. 14.

Q And that is dated? A. Dated the 29th of May, 1929.

Q Covering? A. All natural gas within, upon or under the whole of Section 5.

Q All right, that is as far as we need to go on it. And that comes from? A. That comes from C.I. 217.

Q And the other one is? A. All petroleum within, upon or under the whole of Section 5.

Q And the title number? A. C.I. 217.

Q No, the title number? A. I beg your pardon. 40 R. 64.

Q THE COURT: 40? A. 40 R. 64, my lord.

Q MR. STEER: And then will you look at these two certified copies and tell me what they are? I think we will take the other one first.

A I beg your pardon. 3571 E.C. It is a request from the Law Department of the C.P.R.

" As requested in your letter to me of

"the 9th instant, I enclose herewith Duplicate Certificate of Title No. C.I.217 covering Sections 1, 3 and 5 of Township 27, Range 6, West 5th Meridian.

Would you please proceed to the issue of a Certificate of Title covering the petroleum rights under the said Section 5, in Township 27, Range 6, West 5th Meridian, forwarding the Duplicate Certificate of Title for said petroleum rights to me when issued."

Q And in response to that request am I right in suggesting that this title 40 R. 64 was issued? A. Yes, sir.

MR. STEER: May I tender that, my lord?

THE COURT: Title 40 R.64?

MR. STEER: Yes.

THE COURT: Exhibit 44. Do you want that number for all of them, Mr. Steer, or should they be marked in series?

MR. STEER: I think we will mark them separately, my lord.

THE COURT: All right. Mark that exhibit 44A, the request.

MR. STEER: 44A is the request and 44B is title 40 R. 64.

REQUEST FROM CANADIAN PACIFIC RAILWAY MARKED EXHIBIT 44A.

THE COURT: And 44B is?

MR. STEER: Title 40 R. 64.

COPY CERTIFICATE OF TITLE 40 R. 64 MARKED EXHIBIT 44B.

Q MR. STEER: Well, then, Mr. Peel, this document? A. That is a request by the C.P.R. Legal Department to issue a certified copy, I mean, a separate certificate of title for the natural gas rights in Section 5, Township 27, Range 6, West of the 5th, and the right to work the same.

Q And was it in response to that request that title 41 B. 14 was issued? A. Yes.

MR. STEER: That request I tender, my lord, as Exhibit 45A.

THE COURT: Request, Exhibit 45A.

REQUEST FROM CANADIAN PACIFIC RAILWAY MARKED EXHIBIT 45A.

MR. STEER: And the title 41 B. 14 will be marked as Exhibit 45B.
THE COURT: Exhibit 45B.

CERTIFIED COPY CERTIFICATE OF TITLE 41 B. 14 MARKED EXHIBIT 45B.

Q MR. STEER: Are those titles still outstanding? A. I believe they are, sir. I did not look but I think so.
Q Will you tell us what those documents are, Mr. Peel?
A Which one would you like first?
Q The earliest in date, the title. A. 30 B. 234 in the name of the Canadian Pacific Railway Company, covering all coal and petroleum within, upon or under those parcels of land situate in Township 20, Range 2, West of the 5th Meridian, in the Province of Alberta and the right to work the same, and being the East half and the South West quarter of Section 1, and the South East quarter of Section 3, and the West half of Section 7 and the West half of Section 19 and the South half of Section 21, containing together 1600 acres, more or less.
MR. STEER: I would like to put that in, my lord.
THE COURT: Exhibit 46A.

CERTIFIED COPY CERTIFICATE OF TITLE 30 B. 234 MARKED EXHIBIT 46A.

Q MR. STEER: Yes? A. 43 V. 35 is in the name of the Royalite Oil Company Limited, covering the West half of Section 7, in Township 20, Range 2, West of the 5th Meridian, in the Province of Alberta, containing 320 acres more or less, reserving unto the Canadian Pacific Railway Company all coal and petroleum.
Q That is, all coal and petroleum is reserved to the C.P.R. in that title? A. Yes, sir.
THE COURT: That will be Exhibit 46B.

MR. STEER: Yes, my lord.

CERTIFIED COPY CERTIFICATE OF TITLE 43 V. 35 MARKED EXHIBIT 46B.

Q MR. STEER: Then I have here a group of four certified copies of transfers? A. Yes, sir.

MR. STEER: These are certified copies of transfers, my lord, with different wordings as to reservation, and I will ask to put them in as one exhibit. 1104 E.N. is a transfer from the Canadian Pacific Railway to Duke of a quarter of section of land,"excepting and reserving thereout and therefrom unto the Company, its successors and assigns, all coal, petroleum and valuable stone which may be found to exist in, upon or under the said land."

MR. CHAMBERS: The date?

MR. STEER: The date is July 3rd, 1920.

MR. CHAMBERS: Thank you.

MR. STEER: And the next one is 1194 U . . .

THE COURT: Do you want these put in as one exhibit?

MR. STEER: Yes, my lord.

THE COURT: Under one number?

MR. STEER: Yes, my lord.

THE COURT: All right.

MR. STEER: It is dated the 8th of July, 1908, from the Canadian Pacific Railway to Byron, a quarter section of land reserving unto the Canadian Pacific Railway, their successors and assigns, all coal on or under the said land. 7268 E.T. dated the 26th of November, 1938, a transfer Canadian Pacific Railway Company of a parcel, excepting and reserving unto the company, its successors and assigns, all mines and minerals, which, without restricting the generality thereof, shall be deemed to include all Gas and Petroleum belonging to the Company. 2650 A.F., dated the 13th of December, 1910, Canadian Pacific Railway to Richardson, of a parcel of land, excepting and reserving unto the Canadian Pacific Railway Company, their successors and assigns, all coal and petroleum which may be found to exist within, upon or under the said land.

THE COURT: Exhibit 47.

FOUR TRANSFERS FROM CANADIAN PACIFIC RAILWAY MARKED EXHIBIT 47.

Q MR. STEER: And then I have here, Mr. Peel, a collection of, I think it is, 19 abstracts. Will you verify that number? A. Yes, Mr. Steer.

MR. STEER: 19 abstracts. Now, those are similar, my lord, to the group of abstracts from North Alberta that I put in this morning, with varying reservations, and perhaps until argument takes place it won't be necessary for me to go through them in detail.

THE COURT: Exhibit 48.

19 ABSTRACTS FROM SOUTH ALBERTA MARKED EXHIBIT 48.

MR. STEER: They are 19 abstracts covering various parcels of land in the name of the Canadian Pacific Railway Company and transferred by that company.

Q That is all, thank you, Mr. Peel.

THE COURT: Mr. Nolan?

MR. NOLAN: I have no questions, thank you, my lord.

THE COURT: Mr. Helman?

MR. HELMAN: Yes, I want to ask the witness a question or two.

CROSS-EXAMINATION BY MR. HELMAN:

Q Mr. Peel, the reservation in this case is all coal, petroleum and valuable stone. Has the South Alberta Land Registration District issued any transfers to the surface owner who had that reservation, any transfers of the natural gas? A. Do you mean in those particular parcels of land?

Q I do not mean in those parcels. Do you know of them ever having done it? That is, if there is a reservation of petroleum, have they permitted the surface owner to deal with the natural gas? A. I think there are cases where one has petroleum and the other has natural gas.

Q Those with the C.P.R. - you understand what I am talking about, there is a reservation in a man's title where there has been reserved to the C.P.R. all coal, petroleum and valuable stone, and the surface owner, now I am not talking about the C.P.R.,

the surface owner is purporting or wants to deal with the natural gas. Now, I suggest to you that the South Alberta Land Registration District has never registered such a transfer? A. I do not recollect one, Mr. Helman.

Q When I was talking about surface owner, I meant a man who owned everything except the reservation, you understood that? A. Yes. I do not remember one, Mr. Helman. There may have been a registration but I cannot remember one.

RE-DIRECT EXAMINATION BY MR. STEER:

Q What you are saying, Mr. Peel, is this, as I understand it: You have got a title in the C.P.R., the C.P.R. then transferred the land reserving to itself all coal, petroleum and valuable stone?

A Yes.

Q And what you are saying to my learned friend, as I understand it, is, that you know of no case in which the owner of that land reserving to the C.P.R. petroleum had made a transfer of the natural gas.

A Natural gas alone?

Q Yes? A. I do not remember one, Mr. Steer.

Q Yes. Do you know of cases where the petroleum having been reserved, the owner of the petroleum transferred the natural gas? A. I do not remember one of those either, Mr. Steer. There may have been, though.

Q Your knowledge is confined to the splitting of the titles that we have referred to today? A. Yes, sir.

Q I see.

MR. HELMAN: There is one other thing I should have asked before.

THE COURT: All right.

RE-CROSS-EXAMINATION BY MR. HELMAN:

Q These various transfers that you have put in, Mr. Peel, don't indicate the actual transaction between the vendor and the actual purchaser of the land? A. No.

Q So that the actual purchase and the reservation may have taken place years before and subsequently completed by a transfer at some specific date which would contain a reservation which had been made some years before under the Agreement for Sale of land?
A Do you mean that the date of the registration of the transfer might be many years subsequent to the Agreement for Sale?
Q Yes, that is it. A. Oh, yes.
THE COURT: All right, thank you. That is all, Mr. Peel. A. Thank you, my lord.
THE COURT: Next.

ROSS ALEXANDER DROPPO, having been first duly sworn, examined by Mr. Riley, testified as follows:

Q Mr. Droppo, sir, where do you live? A. Royalties, Alberta, a part of Turner Valley.
Q Whereabout is Royalties from Calgary? A. Beg your pardon?
Q Whereabout is Royalties from Calgary? A. About 50 miles South West.
Q And you know the Turner Valley field? A. Very well.
Q Whereabout is Royalties from the Turner Valley field?
A Oh, it is about in the heart of the southern part of it.
Q In the heart of the Southern part of it? A. Yes.
Q How long have you been in the petroleum and natural gas business, sir? A. 24 years.
Q Since the year . . . A. . . . 1926.
Q Yes. When you started in, what were you doing?
A Oh, I was working around the Royalite No. 1 plant.
Q The Royalite No. 1 plant? A. Yes.
Q Is that the plant of the Royalite Oil Company Limited?
A Yes, in Turner Valley.
Q It is now an independent company? A. Yes, sir.
Q When you worked for it it was a subsidiary of Imperial?
A That is correct.
Q And then after working around the Royalite scrubbing plant, what did you do then? A. I went roughnecking in drilling for Newell & Chandler.
Q Roughnecking for Newell & Chandler? A. Yes.
Q They were drilling contractors? A. That is right.
Q And after drilling for Newell & Chandler, what did you do? A. I went on working for National Pet-

roleum Corporation Limited as Production Superintendent.

Q As Production Superintendent? A. Yes.
Q Is that what you are engaged in now, sir? A. Yes, sir.
Q I see. Now, what fields have you visited, including Turner Valley? Turner Valley is where you live?
A Yes, sir. Del Bonita and Twin River.
Q I see. And you have worked in the scrubbing plant, been on a drilling rig as a driller, and now you are Production Superintendent? A. Yes.
Q Do you encounter the word "petroleum", sir? A. Oh, yes, very much.
Q Amongst your fellow workers? A. Yes, very much.
Q Yes, and what in the ordinary parlance of those working in the field is petroleum? A. Crude oil.

MR. NOLAN: Just a moment. My lord, this raises an important question, and if I might just take a moment to expand on the objection which I want to make. We have had the benefit of the opinion of Mr. Harvie, the benefit of the opinion of Dr. Nauss, the benefit of the opinion of Mr. O'Connor of the meaning of the word "petroleum" when they encountered it, as my friend says. Well, now, my lord, this sort of thing could go on indefinitely, and all the citizens of Alberta who are eligible to come and give evidence could come in and tell you what they thought about the meaning of the word "petroleum" as they encountered it in the various walks of life, giving the court their opinion as to the meaning of the word. Unfortunately for the plaintiff, that cannot go on indefinitely because there is a section of the Alberta Evidence Act which brings these matters of opinion to a finality. I am reading from section 10 of the Alberta Evidence Act, being chapter 106 of the Revised Statutes of Alberta, 1942, and that section says:

> "Where it is intended by any party to examine as witnesses persons entitled according to the law or practice to give opinion evidence not more than three of such witnesses may be called upon either side."

And my submission, my lord, is that we have had opinion evidence from three witnesses, and the plaintiff is now attempting to obtain the opinion

of a fourth, which he cannot do. Your lordship will observe that the rule does not talk about expert witnesses in words; it says,"witnesses entitled according to the law or practice to give opinion evidence", and, my lord, I simply submit that my learned friend has exhausted his quota of opinion evidence and the rule should be applied.

THE COURT: What have you to say, Mr. Riley?

MR. RILEY: Mr. Steer wants to speak to that, sir.

MR. STEER: This raises the question, my lord, that was raised in our opening. The question that your lordship has to decide is simply this: Does petroleum include natural gas? The authorities which were cited to your lordship, in my respectful submission, are conclusive that what we are dealing with is a question of evidence and not a question of opinion. The question that is asked of this witness, what, in his experience, in fact, is the import to a workman. What we are doing is examining, my lord, into the mind of a man . . .

THE COURT: No.

MR. STEER: I beg your pardon, sir.

THE COURT: Not that question, the question was put to this witness that what was in the minds of the workers in Turner Valley field, not in his opinion.

MR. STEER: That would be perhaps too broad.

THE COURT: Well, at least that was my understanding of the question.

MR. STEER: But my submission is that this witness, or any other witness, to a reasonable number, nobody would suggest that we are going to carry it to extremes, but we are dealing with the question of fact and the authorities lay it down that you examine into the minds of the land owner, of the man in business, and of the man who was interested in mining this substance. You examine into their minds and you find out what in ordinary speech among these men was the meaning of the word, that is the evidence which it is being attempted to elicit from this witness, and with your lordship's permission we propose to call two or three other witnesses belonging to various classes for the purpose of putting before your lordship the import

of the word to that individual.
THE COURT: Yes. What was the question, Mr. Howard?
BY THE REPORTER: "And what in the ordinary parlance of those working in the field is petroleum?"
THE COURT: Well, what he is asking is this, what the roughnecks think of petroleum, what the drillers think, and, I presume, what does he think. Isn't that the purport of your question?
MR. RILEY: The purport of my question is, sir, how in fact is the language used, that is what I am getting at.
THE COURT: By everybody around there?
MR. RILEY: Yes, my lord, no opinion with regard to it.
THE COURT: He says he has been in the business 24 years and I presume that his answer is going to be what he has found out in 24 years. It is not his opinion.
MR. RILEY: No, sir.
THE COURT: It is in the nature of evidence regarding general reputation.
MR. NOLAN: Yes, but, my lord, we have got to be awfully careful that it is not the witness's opinion, that it is not the opinion of the witness or other people's opinion, because that is even more objectionable.
THE COURT: Well, I think it is clearly the witness's knowledge of what other people have told him.
MR. HELMAN: That is hearsay, my lord, unless it is opinion evidence, and it is therefore not admissible. It is only admissible on the one ground. It is either opinion or hearsay.
MR. NOLAN: And your lordship will remember when I read from the judgment of Mr. Justice Boyle in the Stuart case this morning, and referred to the two authorities, North British Railway and Lord Provost and Farie, that had been referred to by my friend Mr. Steer, and his lordship says:

> "I had serious doubts at the time as to admissibility of this evidence but as it was strongly pressed by counsel, seemingly relying . . . "

on the two cases I have mentioned,

". . .I admitted it, but I now can see no authority in these cases after reading them for admitting such evidence."

Then I referred to the Canadian Abridgement.
THE COURT: Yes, I have those.
MR. NOLAN: You have a note of those?
THE COURT: Yes, I have.
MR. NOLAN: Where they said that the question of opinion was not what was wanted, and established the fact that was endeavoured to be proved in that case.
THE COURT: Well, I think my safe course is to follow that which the late Mr. Justice Boyle followed on being pressed by both sides with regard to it, "I will accept it and then I will decide for myself whether or not I pay any attention to it."
MR. NOLAN: But, my lord - -
THE COURT: That is what he did.
MR. NOLAN: But your lordship has in mind, of course, that my objection was primarily based upon a number of people whose opinion could be asked on this matter.
THE COURT: Yes, that is true. Well, doesn't it appear to be clear that the number of witnesses that can be heard is three?
MR. STEER: On opinion, yes, my lord.
MR. RILEY: On opinion, but I am asking for the facts as to the user of the language amongst that class of persons, which is something very different from an opinion, my lord. You see, in the Barnard-Argue case, which went to the Privy Council, the vernacular of the mining world, the commercial world and so on, was dealt with, and if you go back to Chancellor Boyd's judgment in the court below, here is what you find:

"Hence the present case will turn, not on the chemical or mineralogical signification of the terms used in the reservation, but on the meaning of them at the time, as used by ordinary persons concerned with the subject, and especially as to the meaning understood and accepted by the parties. A short reference may be made to the testimony of various witnesses called, representing farmers, business

"men, and mining engineers, with, I think, no dissentient voice."

Now, surely it is some assistance, of some assistance, to have in this court evidence from the vernacular of various walks of life as to how the term is understood and spoken. That is the evidence I seek to develop.

THE COURT: Well, I am going to hear you but at the moment I do not think much of it. I will follow the late Mr. Justice Boyle, though, and consider it.

MR. RILEY: Could I have that question read?

THE COURT: Would you read the question to him again, Mr. Howard?

BY THE REPORTER: "And what in the ordinary parlance of those working in the field is petroleum?"

A Crude Oil.

Q MR. RILEY: Is the term "natural gas" one that is widely used amongst the class of people you have told us about? A. Sometimes. We mostly refer to it out there as tail gas.

Q And what is tail gas? A. It is gas that we have no use for, and used for heating purposes on our leases and it goes to the scrubbing plant to have the odour taken out of it, and then supply the mains of the Gas Company, coming into Calgary and other villages.

Q Does the tail gas contain natural gasoline? A. Well, sometimes it does.

Q All right, sir. Just answer my friends.

CROSS-EXAMINATION BY MR. NOLAN:

Q Is there a substance known as naphtha used in Turner Valley? A. Well, I understand that there is quite a bit of naphtha recovered out of the dry gas.

Q Is that called petroleum? A. I have not heard it called petroleum, no. I have always heard it called naphtha.

Q Is there condensate produced down there? A. Gosh, I couldn't tell you, to tell you the truth.

Q You do not know? A. No.

Q Would you call naphtha a petroleum substance?
A Well, not personally, no. We have had that naphtha which we have produced out of the ordinary well that we burned in our own automobiles out there.
Q Yes? I do not think there has been much said here about naphtha. What is it, Mr. Droppo? A. Well, it is a kind of source of gasoline, as far as I know. We burned it in our automobiles when we couldn't burn any crude oil.
Q It is extracted from gas? A. I suppose it is, I do not know.
Q You have been around there . . . A. I haven't extracted any out of it.
Q But you have been around there for 26 years and you ought to know where the naphtha comes from. Do you?
A Yes.
Q Where does it come from? A. Out of the separator.
Q And what goes into the separator? A. Well, gas, I guess.
Q I guess it does. Thank you.

CROSS-EXAMINATION BY MR. HELMAN:
Q When you are talking about what you understand by the meaning of the word "petroleum" you are talking about what you deal with on the surface, aren't you?
A Crude oil, yes.
Q It is on the surface. You haven't anything in your mind about any description of the substance in the reservoir? A. No, I have never been down there. I cannot describe it at all.
MR. STEER: That is all, thank you.

STANLEY E. SLIPPER, having been first duly sworn, examined by Mr. Steer, testified as follows:-

Q You appear here as a witness, Mr. Slipper, in commencing, under a subpoena? A. That is right, sir.

Q Will you tell the Court what your education has been?

A I am a graduate geologist from Queen's University, graduated in 1911. Since 1913 I have been engaged as a geologist in petroleum and natural gas in various capacities, primarily with the Geological Survey of Canada, then with the Federal Department of the Interior.

Q Let us go through that, Mr. Slipper, please. You left Queen's in 1911? A. That is correct.

Q And you entered the employ of. . .? Q A. The Geological Survey of Canada.

Q Yes. Now, how long did you remain in the employ of the Geological Survey of Canada? A. Until 1918.

Q In one capacity or another? A. In one capacity or another.

Q Yes. And prior to 1911, where had your vacations been spent? A. In various parts of Western Canada on geological surveys for the Dominion Government.

Q I see. Then you commenced to work for the Geological Survey, and what did you do in 1914? A. In 1914 I was engaged in mapping the geology of the Foothills, particularly Turner Valley.

Q And '15 to '18? A. '15 to '18 I was engaged in various geological surveys connected with natural gas, petroleum and water over Alberta, and I was also in charge of the Western phases of the geological survey collecting bore hole information and inspecting oil and gas and water wells.

Q And from 1918 to 1920? A. I was in consulting practice.

Q Private practice? A. Private practice.

Q And from 1921 on? A. From 1921 on, yes, I was in private practice.

Q Did you go back into the employ of the Geological Survey? A. No, I went back into the employ, or I was employed by the Department of the Interior.

Q Oh, yes. When would that be? A. That was from - I am sorry, I got mixed up there. That was from 1920 to '25.

Q Yes. Well, then, after '25 what was your job?

A After '25 I was Chief Geologist for the Canadian

Western Natural Gas Company and the Northwest Utilities Company.

Q Until when? A. Until 1940.

Q And after that? A. From 1940 on I have had various positions which were largely connected with private practice, being retained for more or less longer periods by various companies.

Q Have you written anything in your line? A. I have written several reports in the Geological Survey publications, Department of Interior publications, and in scientific papers connected with geology.

Q And I understand that you are a Fellow of the Royal Society of Canada? A. I am a Fellow of the Royal Society of Canada, yes.

Q Just tell us what that amounts to? A. That is a very old scientific society which is a branch of the Royal Society of England, and it is a society that you join by invitation, and have some record or standing of merit in your profession.

Q And it is the record in your case of professional achievement in the realm of geology, is that right?

A Yes, that is right.

Q Are you a registered professional engineer? A. I am a registered professional engineer in Alberta and British Columbia.

Q Now, from this broad experience in this area, what, to you, is the import of the word "petroleum"?

MR. NOLAN: You see, my lord, we are back again where we were before. This is the fourth witness that has been asked this question.

THE COURT: He is in a different class, though, Mr. Nolan. The last witness only gave evidence as to what was the general belief as to what petroleum was. It seems to me that Mr. Slipper comes here in the class of an expert and is giving his own opinions.

MR. NOLAN: My lord, I was not counting the last witness, because your lordship quite rightly says the question put to the other witness was, what, in ordinary parlance of those working in the field, is petroleum.

THE COURT: Yes.

MR. NOLAN: Well now, we will exclude the last witness from my objection, my lord, but I go back to the witnesses, Harvie, Nauss and O'Connor, who were asked just what this witness is being asked, the import of the word "petroleum". Now, your lordship will remember that section 10 of the Evidence Act says that you are limited to three opinion

witnesses and that, of course, includes, I submit, experts, because an expert is only an opinion witness with "expert" pinned on to him as a label.
THE COURT: Well, an expert does not mean anything unless he can give his own opinion from his own knowledge, but I think we can dispose of one that you might call an expert, Mr. O'Connor.
MR. NOLAN: No, my lord.
THE COURT: I am not going to consider Mr. O'Connor as an expert in oil unless he is an expert in law and an expert in oil too. He might be an expert in law, but he certainly is not any expert in oil, and in considering the evidence I would not consider him as such.
MR. NOLAN: I follow your lordship perfectly, but, my lord, the plaintiff brings him forward as an opinion witness and says to him, "In your opinion, what does 'petroleum' include?" Now, whether his opinion is worth listening to, whether it is founded on any knowledge or opinion or experience or on anything else, he still is asked to give his opinion and, having been asked, there is one strike against the plaintiff under section 10 of the Evidence Act. Now, I submit that, following upon that, we have the other two witnesses, Harvie and Nauss, and that the Plaintiff has exhausted the number of opinion witnesses that he can call in this case.
THE COURT: Surely, if I listened to MR. Harvie, I think he avoided giving an opinion on his own account.
MR. NOLAN: But, my lord, he was asked, if my memory serves me, "Mr. Harvie, what is your understanding of the word 'petroleum'?", and he said, "It was my thought that 'petroleum'", you remember, my lord, that was the language used or language to that effect, and I think it can not be challenged that he did express an opinion. Whether your lordship will pay any attention to it,or give any weight to it, is one thing, but whether my learned friends should be permitted to go on calling opinion evidence, having adduced three witnesses, is another.
MR. STEER: My lord, my learned friend and I part company right at the opening.
MR. NOLAN: Of this case?
MR. STEER: Of this argument. Considering for a moment what this action is, here is a man with

broad experience in the natural gas and petroleum field. He has told your lordship what that experience is, and then he is asked this simple question, "From your experience, what does the word 'petroleum' mean to you?" Now, what has he to do? He has to look into his mind, and your lordship knows the well-known cases that say that the state of a man's mind is as much a state of fact as the state of his digestion. He has to look into his mind, and he has to tell us, out of that experience of his, what it is that this plain word means to him. That, in my respectful submission, is a question of fact, and it is not a question of opinion at all. And that proposition, my lord, is perfectly consistent, as my friend Mr. Riley points out, with all that was done in Barnard-Argue. They called these people, they asked them what this word signified to them, and in one case, one passage, I recall they state that the evidence is limited, it is not any wonder, because of the remoteness of the time. Now, we have not got that question here, so much, the remoteness of the time, because Mr. Slipper can tell us about the situation from 1911 on. But I come back to the proposition, my lord, that all I am asking Mr. Slipper is what is in his mind when he uses the word "petroleum". And when he answers that question, my lord, in my submission he is stating a fact as to what is in his mind, and that applies, in my respectful submission, to all the people who are here, including Dr. Nauss, except to the extent that Dr. Nauss was indulging in an examination of scientific theories and opinions, but that has not any bearing on this question, "What, in fact, does this word import to you?"

THE COURT: Well, that is the question of the witness now?

MR. STEER: Yes, my lord.

THE COURT: This witness?

MR. STEER: That is what I am asking him, and I say that is a question of fact.

MR. HELMAN: My lord, if my learned friend's position was sound, there is no witness who gives opinion evidence who could not be said to be giving evidence of question of fact. Every witness tells what is in his mind on a particular subject matter. A doctor who goes in the box is telling what is in his mind on the subject matter.

And it is all opinion evidence. And my friend refers again and again to the Farquharson case and the evidence that was given there, but they had no such statute as we have that confines opinion evidence to three witnesses.

THE COURT: All right, Mr. Steer, I am going to have the answer.

MR. STEER: Will the reporter please repeat the question?

BY THE REPORTER: "Now, from this broad experience in this area, what, to you, is the import of the word 'petroleum'?" A. Petroleum is an oily liquid occurring in nature and obtained from bore holes.

THE COURT: I did not get the last. "And obtained from . . ."?

MR. STEER: "Obtained from bore holes," my lord.

Q And do you attach any importance to its derivation?

A The name, as I have been taught, is derived from "petra", rock, and "oleum", oil, meaning "rock oil", and probably that definition is contained within the derivation.

Q Now, have you appeared from time to time before various boards in this province to give evidence? A. I have.

Q On questions involving petroleum and natural gas? A. I have.

Q Have you seen anything in those proceedings to cause you to depart . . .

MR. NOLAN: Just a minute, Mr. Steer. Ask him what he has seen; that would be better, I think.

MR. STEER: Perhaps it would

MR. NOLAN: Yes.

MR. STEER: Perhaps it would, yes.

Q What have you to say as to any experience you have had in such hearings with regard to the question that concerns us, the meaning of this word? A. Petroleum has always been used in reference to a liquid, that is, ordinary crude oil. There are two or three references to it. Used in the generic sense, petroleum, it is said to include petroleum and natural gas, but in all cases that have come to my attention there has been a footnote of a definition indicating that the word is used as a departure from its ordinary meaning and is used to include petroleum and natural gas.

Q By definition? A. By definition.

Q Now, what do you say from your experience is the import of the word "natural gas"? A. Natural gas is a fuel in gaseous form which is obtained from bore holes.
Q THE COURT: Natural gas is what?
A A fuel.
Q MR. STEER: Obtained in a gaseous state from bore holes? A. Yes, from bore holes. The definition can be stated in a slightly different way to be made probably a little more comprehensive. It can be called a combustible substance in gaseous form that is obtained from bore holes or from natural openings in the surface of the earth, and natural gas sometimes occurs as natural seepages.
Q Natural seepages? A. Yes.
Q All right, thank you.

CROSS-EXAMINATION BY MR. NOLAN:
Q Mr. Slipper, in the course of your investigation and research into the situation respecting gas in the Province of Alberta. . . A. Yes?
Q You have made several such investigations, that is so? A. That is so, sir.
Q I take it that you have informed yourself as to the history of the development of gas in this Province, and oil too? A. Yes.
Q Well, we have had no evidence on that point, and perhaps you would be good enough to give the Court the benefit of your investigation. First, dealing with gas, when was the first gas well discovered in Alberta? A. The first gas well in Alberta, Mr. Nolan?
Q Yes? A. According to my knowledge, the first gas well that was used to supply gas commercially was drilled at Alderson - I do not know whether the station still exists or not - on the C.P.R. not far from Medicine Hat.
Q West of Medicine Hat? A. Yes.
Q Yes? A. About 30 miles, something like that.
Q In what year, Mr. Slipper? A. In 1908.
Q Pardon? A. In 1906.
Q When it was first drilled? A. I think so, sir. I have no data before me.
Q Perhaps I could ask you this, my information was that

the first gas well drilled at Alderson was in 1884?
A Well, it may have been.
Q I see. A. I know about that one. I have been to it. I visited it when I first came to Alberta in 1913. No doubt there were other gas wells that had gas. In fact, in 1892 out on the Athabasca River there were wells that were drilled for oil and did not get any oil, but they got natural gas. Those were drilled by the Geological Survey at a place called Pelican Rapids on the Athabasca River, but they weren't used commercially.
Q You were thinking, when you said 1906, of commercial wells? A. Yes.
Q Commercial production? A. Yes.
Q But the fact remains that years before there had been gas encountered in this Province? A. Yes.
Q And in addition to Alderson, was there some drilling on the South Saskatchewan River in the Medicine Hat area? A. Yes, they were drilling shallow wells there in what was called the upper Medicine Hat sand, which occurred in the flat there at about 700 or 800 feet, and they were getting some gas, and it was used in a small way. I do not know who used it, probably the C.P.R. used it.
Q Was that in the '90's? A. Somewhere in the '90's, yes.
Q And then you have made mention of what we can call the Pelican well? A. Yes.
Q Was that the well that caught fire, Mr. Slipper?
A Yes, that is right.
Q And the fire was started in 1897? A. Yes, I think so.
Q And burned. . . A. That particular fire started in 1898, I think that is right.
Q Is it a fact that it burned for over 20 years? A. Yes.
Q And were there, shall I say, more extensive supplies of gas found in the shallow wells at Medicine Hat in the early 1900's, and particularly in 1904? A. Yes, that is correct.
Q And what was the principal gas zone in that field, in the shallow wells? A. They called it the lower Medicine Hat sand.
Q I am told that the principal gas zone was under the shallow wells? A. They call it the lower Medicine Hat sand.
Q The lower Medicine Hat sand? A. Yes.
Q Was it first tapped by a well drilled by the Canadian Pacific Railway Company in 1908? A. I think that is correct.

Q And perhaps it is fair to say that the bed marked the commencement of commercial gas production in Alberta? A. Yes, sir.
Q Now, sir, I suppose the development in the Medicine Hat area continued after this year, 1908? A. Yes, it continued rather, rather intensive development was carried on beyond 1908.
Q Would it be correct to say that by 1914 there were some 20 producing wells in that area? A. Oh, I think so, yes.
Q When was the Bow Island field discovered, Mr. Slipper?
A 1911.
Q Just a moment, please. Where is Bow Island?
A Bow Island is about 30 miles due east of Medicine Hat.
Q Yes. And the first discovery there was in what year?
A 1911, I think.
Q Wasn't it a date earlier than that when you consider that the Canadian Western Natural Gas, Light, Heat & Power Company were drilling between 1911 and 1913?
A I do not know just what date it was that that occurred, whether it was '10 or '11.
Q MR. STEER: Mr. Slipper, you said Bow Island was east of Medicine Hat? A. I am sorry.
Q MR. NOLAN: It is southwest of Medicine Hat, not southeast? A. Yes, I am sorry.
Q There was considerable development carried out in the Bow Island field by the Canadian Natural Gas, Light, Heat & Power Company? A. Yes.
Q Between the years 1911 and 1921? A. That is correct.
Q And there was a pipe line laid to Calgary? A. That is correct.
Q What year was that? A. 1912.
Q And when did this Bow Island field, is that the correct way to describe it? A. That is right.
Q When did it begin to show signs of exhaustion? A. 1917, I think. I have none of these dates. I have not prepared myself.
Q Is it correct to say by 1927 the field was showing signs of exhaustion? A. 1927 it was almost exhausted.
Q And was it used as a reservoir for Turner Valley gas on and after that year? A. That is right.
Q There was some development near Brooks, and where is Brooks? A. Brooks is on the Canadian Northern, or Canadian Pacific Railway Company about halfway between Calgary and Medicine Hat.
Q And was the early development in that Brooks field in

the year 1910? A. I think it was '10, yes.
Q And was that for the purpose of serving the Town of Brooks? A. That is right.
Q Does it still serve that purpose? A. That one well, I guess it probably does, that No. 1 Brooks well. I think that it does, yes.
Q Turning to the Turner Valley field, there were seepages of gas detected there in the early years?
A Yes. For long years ahead of any development natural gas was known in seepages.
Q When was the Dingman No. 1, which we call the discovery well, brought in? A. In the early summer of 1914.
Q Yes. About the really large development in Turner Valley was when? A. Was 1924.
Q And that was? A. Royalite No. 4 well.
Q And that was a large gas condensate well? A. It was a large gas well.
Q You would not say "condensate"? A. I do not know whether it was a condensate or just a naphtha spray.
Q It came in on the Paleozoic limestone? A. Yes.
Q At the approximate depth of 3700 feet? A. Yes, that is right.
Q Do you know about the development of the gas discovery in the Viking area, Mr. Slipper? A. Yes.
Q Was that in 1914? A. 1914.
Q The discovery? A. Yes, 1914.
Q And a pipe line was laid to transport that gas to Edmonton in 1923? A. Well, it was completed in '24.
Q Oh, in '24? A. Yes.
Q And by that time there must have been a number of producing wells in the field to support the pipe line?
A There were 11 gas wells.
Q And when were the wells in the Kinsella portion of the field connected to the transportation line to Edmonton? A. I can not give you the date.
Q Just as recently as 1940, isn't it? A. It is very recent, but I do not know the exact date.
Q All right. Was there some drilling done - this is following the year 1927, Mr. Slipper - was there some drilling done in the vicinity of Wainwright? A. In '27?
Q No, after '27? A. Yes.
Q And was gas discovered there? A. Yes, some gas was discovered there.
Q But I understand that the main new development was in the Foremost area? A. Yes, Foremost, that is the next gas field of any importance.
Q The discovery well there had been drilled many years

before? A. Yes, it had been drilled as a wildca or a prospect hole for oil.

Q Yes? A. By the United Oil Company.

Q And then the Canadian Western Light, Heat & Power Company commenced drilling operations there extensively in 1923? A. I think so.

Q And do you know there was a connection by an 8-inch pipe line to the Bow Island-Calgary 16-inch line?

A Yes.

Q And since that time that gas has been used to meet the peak load demands for gas in Calgary? A. That is right.

Q Well, now, what about the discovery of crude oil in Alberta? A. What do you wish to ask me about it, sir?

Q I was going to ask you if it was first discovered on the west flank of Turner Valley in 1936? A. No, I do not think so.

Q Earlier than that? A. It was discovered back, away back,when, in, say, the '90's, down at Pincher Creek.

Q And there was, in fact, a company formed to sell stock? A. Yes, and they produced oil.

Q Do you know how much and for how long? A. Not a great deal, not for very long, but the old Lineham Oil Company was the active company.

Q And that was in the '90's, wasn't it? A. Something like that.

Q Is it correct to say that the development of the oil industry died down after those discoveries in Pincher Creek in the 90's? A. Well, there was sporadic drilling going on all the time.

Q There were wells being drilled? A. Occasionally.

Q But when we come to the year 1936, and in the Turner Valley, we find crude oil, don't we? A. That is right.

Q Yes? A. There was crude oil discovered at Wainwright before that.

Q Was there? A. Yes.

Q In commercial quantities? A. Yes, commercial quantities.

Q In what year? A. I can not give you the year, but it was prior to 1936.

Q Do you know of any other places where crude oil was discovered? A. Was discovered prior to that?

Q Yes? A. I think at a place called Diana on the Battle River, there was some small production.

Q Now, heretofore, as I understand it, Turner Valley

had been producing a liquid known as condensate?
A Yes, sir.
Q That is right, is it? A. Yes, sir, it is a term used.
Q Would you call those liquids which are recovered from separators and condensate wells "petroleum"?
A Yes.
Q You would? A. Yes.
Q Well, then, I suppose those discoveries in 1936 gave immense stimulus to activity in the Turner Valley field? A. Yes.
Q And can you tell his lordship just in a general way what happened after the discovery of crude oil?
A Succeeding the development or the discovery of crude oil at Royalite No. 4 the drilling proceeded up and down the known position of the structure, on the top of the structure, and was drilled very closely and a great deal of natural gas and liquid product that comes with natural gas through the separator was produced.
Q And what was that liquid product called? A. Naphtha. Condensate. There are lots of names for it.
Q Yes. And drilling did not proceed very much further, did it? A. Drilling did not proceed very much further than along the top of this structure because the drilling equipment was not adequate to drill the deeper side of the anticline.
Q How deep were you drilling, Mr. Slipper? A. The deepest well in Turner Valley for a great many years, I don't know for sure, but I think it was 4,000 feet.
Q But the structure was very difficult to drill into?
A Yes. The development of rotary drilling had not progressed far enough to drill down the deeper flank of the structure.
Q Yes? A. So that as drilling equipment developed and steadily was improving, drilling proceeded down the western flank of the Valley until it reached a heavier crude oil in the lower flanks that had a gravity that is similar to that which you have in what you call "crude oil", a brown ordinary oil, and that oil was in quite large quantities, and they did not have to produce so much gas with it.
Q They had to produce some? A. They had to produce some, but not nearly as much as at the top.
Q Yes? A. When they were drilling the top of the structure there was no gas market to take the extremely large quantities of gas that were produced.

Q Now, let us just explore that for a moment. I understand there was tail gas left after the separation of the valuable liquid? A. There was tail gas and free gas, lots of it.
Q But after you had taken out those things which were marketable commercially and valuable, namely, what? Naphtha? A. Petroleum.
Q Petroleum? A. Yes.
Q All right. And then there was left this tail gas or free gas that was burned in the air, was it, Mr. Slipper? A. Large quantities of it was burned in the air.
Q Please go on. A. And as they got down the flank they got into this heavier oil and with not so much gas and were permitted to produce it in larger quantities.
Q There wasn't so much waste gas? A. There wasn't so much waste gas, yes.
Q Yes? A. And from there on the lower flanks of Turner Valley were rapidly developed until the field was completed, drilled up.
Q And how many wells were drilled, approximately? A. I wouldn't know now, 200 or something like that.
Q Would you term the Turner Valley field to be predominately an oil field or a gas field, or would you say that it has changed its character, or what would you say? A. No, I would say it is a gas and oil field.
Q A gas and oil field? A. Yes.
Q There was some drilling for oil in the Vermilion area?
A Yes, there was. Do you mean at any time?
Q Yes. Yes, I mean at any time. A. Yes, there had been drilling.
Q Drilling around 1937? A. Yes, 1939, at the beginning of the war.
Q I see. And were there significant exploratory efforts made in the Foothills area? A. Yes.
Q Brazeau? A. Yes.
Q Ram River? A. Yes.
Q Clearwater? A. Yes.
Q And Pincher Creek? A. Yes.
Q Well, on and after the year 1942, Mr. Slipper, is it correct to say that there was a decline in the Turner Valley so far as crude oil production was concerned? A. Yes.
Q What happened? A. The field, like any other field, becomes depleted both of energy and of products.

Q And was there any marked development in any other parts of Alberta in the year 1942 and afterwards? I am thinking particularly of Medicine Hat?
A Medicine Hat?
Q Yes. There was more development there? A. Yes, there was considerable development, yes, and exploratory drilling all over the province.
Q And that would be true, I suppose, too, of the McColl-Frontenac and associate efforts? A. Yes.
Q Who drilled wells at Pendant d'Oreille? A. Yes.
Q Manyberries? A. Yes.
Q Black Butte and Smith Coulee? A. That is correct.
Q And there was, of course, drilling carried on by Imperial Oil Limited in the Kinsella portion of the Kinsella-Viking field? A. That is correct.
Q What happened in the Princess area? A. The Princess area.
Q Yes? A. They got some encouragement both with oil and gas, quite a great deal, but it is still a producing field of petroleum.
Q And there is an extensive program of drilling in that area now? A. Well, no, not too extensive.
Q There is a program of drilling? A. There is a program.
Q And there is drilling in the Elk Point area? A. I don't know. I guess there is. There has been drilling there.
Q You do not know much about that? A. Well, I do not know whether they are doing any drilling now.
Q Well, then, in 1947, Mr. Slipper, the discovery of the Leduc oil field took place? A. That is right.
Q And that is an oil and gas field, isn't it? A. It is an oil and gas field.
Q Gas is not as predominant as oil in that field, is it? A. No, it is not produced predominantly.
Q I know you are a gas man, Mr. Slipper, and I know where your sympathies lie, but we have been getting a good deal more oil than gas out of the Leduc field up to date? A. Yes, definitely so.
Q And I suppose that the discovery of the field in the Leduc district, or vicinity, could be said to have altered or changed the direction of the exploratory efforts in this Province? A. It did, sir.
Q With the result that what happened? A. That exploration without being confined mostly to the southern and central part of the Province proceeded northward.

Q Yes. And we find such places as St. Paul? A. Yes.
Q Pouce Coupe? A. Yes.
Q Is that what you are thinking of? A. Well, no, Redwater.
Q Oh, Redwater? A. Yes, and these other fields were discovered in that intensive exploration.
Q Yes. And it was the year following, I think, the discovery of Leduc? A. Yes, the year following the discovery of Leduc.
Q And what about the Golden Spike area? Where is Redwater, by the way? A. Redwater is north, it extends north, northwest and southeast, with the little town of Redwater about the central part of it, and I do not know how far it is from Edmonton, as a matter of fact.
Q I am told it is 50 miles northeast of Leduc? A. That would be about right.
Q And then at Woodbend? A. Yes.
Q And where is Woodbend? A. Woodbend is across the North Saskatchewan from Leduc.
Q Was there a discovery made there? A. Yes.
Q Important? A. Very.
Q And that was in 1948, Mr. Slipper? A. Yes.
Q Was that oil or gas? A. So far as I know, it is an oil field.
Q Yes. Now, when did Golden Spike come into prominence? A. Oh, not long after Leduc was discovered.
Q And that was in 1949, wasn't it? A. 1949, that is right.
Q And was there a discovery or an extension of existing fields in 1949 at Simmons? A. There was an extension at Simmons from Redwater, yes.
Q At Bon Accord? A. Bon Accord is a new discovery.
Q Excelsior? A. That is correct.
Q What is it? A. It is an oil field.
Q And Whitemud? A. An oil field.
Q And Normandville? A. It is gas and oil field.
Q We have said nothing about Lloydminster, have we, Mr. Slipper? A. No.
Q What is the field at Lloydminster? When was it first discovered, and describe it to us, will you, please?
A Lloydminster is located in the northeastern part of Alberta and in the northwestern part of Saskatchewan, lies south of the Town of Lloydminster, and oil is obtained in a series of beds which are called the Lower Cretaceous at a depth of about 1800 to 2000 feet. The oil is a heavy oil. The wells produce

on the average of 50 barrels per day. I can not tell you the area of it. I do not remember. There are occasional bodies of gas connected with the occurrence of the oil.

Q Now, how do those bodies of gas operate? We have been told here about the gas cap and how it operates?

A Yes.

Q That is a gas cap floating on an oil pool? A. Yes.

Q We have been told about the gas in solution and the effect of its motivating power. What does the gas do at Lloydminster? A. The gas at Lloydminster - well, I do not know what it does, but it occurs in kind of irregular and unexpected accumulations throughout the oil field.

Q Yes. It is in solution with the oil to some extent?

A I do not think so; it might be.

Q Well, in any event, that is, generall speaking, the history of development of the gas and oil industry?

A Yes.

Q In Alberta? A. Yes.

Q Up to the present time? A. Yes.

Q And development is going on every day? A. Yes.

Q It changes from day to day? A. Yes.

Q An estimate of reserves made yesterday might be changed tomorrow? A. That is correct.

Q Because of what happens? A. Yes.

Q Both new wells coming in? A. New wells, new extensions.

Q Or wells not coming in? A. Yes, or wells not coming in.

MR. STEER: Or abandoned.

Q MR. NOLAN: Or abandoned. Now, I just want to ask you one thing, Mr. Slipper, about your general answers to my learned friend, Mr. Steer. You do agree with me that "petroleum" can be used in a generic sense? A. It only can be used in a generic sense if there is something in the definition and the context of the geological reports that I am reading, otherwise I would be confused. I would not know what the report was referring to.

Q You would examine the context? A. It might have it, and it might not have the meaning, but if anybody had the idea that he could write about natural gas and call it petroleum, I would not understand him.

Q Well then, you might tell me what books you read when you were at Queen's University in qualifying yourself as a geologist? A. What books I read?

Q Yes, what were the main texts? A. Oh, there was Chamberlain and Salisbury mostly, they were two professors. They were two standard writers on geology, which is like your Blackstone, for instance.

Q But not quite as ancient? A. No, not quite. They would probably be in the same relative position.

Q Were they American or Canadian geologists? A. Yes, American. There were others.

Q Will you just name one or two or three of the important ones? A. There were text books by Schukart on Oil which were used. I just cannot remember offhand.

Q Yes? A. But with regard to the generic sense in which this word was used, it certainly was not used often. And I have only seen it in recent years myself.

Q Did you ever read Redwood? A. Yes, I have read Redwood.

Q Did you see what he said about it? A. No, I did not. I did not read him for that purpose, but I have read him.

Q If I told you what he said, that Sir Boverton Redwood defined petroleum as being - let me tell you what he did say. He says:

> " Of the two general terms used to denote these substances, bitumen is older than petroleum, the latter not being found in classical Latin. At the present time petroleum in its widest sense may be considered to embrace all the hydrocarbons, gaseous, liquid or solid, occuring in nature."

MR. STEER: My lord, my learned friend appears to be reading from a typewritten document of a passage taken from a book. I submit that he should put the book in the witness's hands.

MR. NOLAN: Well, I won't put it to the witness now because I want to get the book and I have not the book. Have you got the book, Mr. Steer?

MR. STEER: I have not. I would like very much to see it. A. I haven't got one of those books. I quite agree with you that he might say that, but I have read him, principally in the older days, but I just do not remember seeing it there.

Q MR. NOLAN: Well, I would ask you this, Mr. Slipper: Does it make a difference in the usage of this word as to whether the people employing it are dealing with the production of petroleum from wells or whether they are only handling the liquid petroleum after it comes from the well? A. I do not know, sir. The only thing I know of is in my own sphere of geology, and I know that we use petroleum as a liquid, and natural gas as a gas.

Q Supposing I said to you, Mr. Slipper, "I would like you to give me a word that is comprehensive enough to include crude oil, natural gas, L.P.G., natural gasoline and condensate," what word would you use?

A The natural hydrocarbons.

Q You would use "the natural hydrocarbons"? A. Yes.

Q I suggest to you that you would do nothing of the sort because no one would know what you were talking about, and that you would use the word "petroleum"?

A Well, that is what I would use if you wanted me to classify them together, sir. I do not see why anybody would not understand me.

Q Well, do you say that if you wanted to include crude oil and natural gas . . . A. Yes?

Q . . . the only name that you can superimpose upon them is "hydrocarbons"? A. That is correct.

Q You would not say "petroleum"? A. Not if I was using it the way that you asked me to use it.

Q Would it depend upon who you were talking to as to how you would use it? A. Not necessarily.

Q Well, would it or would it not? A. Well, for instance, I would not talk to an uneducated man about natural hydrocarbons because he would not know what hydrocarbons are.

Q He would know what "petroleum" was? A. Yes, but he would be thinking of the liquid, sir, and you would get him confused again.

Q That is, providing, of course, that you know what he was thinking about? A. Well, I am sorry. I can not do that either.

Q Well, you won't agree with me that there is a single word in the language that will include these substances? A. Not without a definition.

Q Well, I would like you to define them, all these hydrocarbons occurring in nature, whether they are gaseous, liquid or solid. Is that a good enough definition? A. Yes.

Q That would be petroleum? A. No, that would

be the natural hydrocarbons. That is the way I would define them.

Q All right. Well then, do I understand from your evidence that there is a firm dividing line between natural gas and petroleum? A. That there is a firm . . .

Q Yes, dividing line? Now, we are all natural hydrocarbons, aren't we? A. Yes, that is right.

Q Let us divide them up between natural gas and petroeum. A. At ordinary temperature?

Q Yes. A. And pressure?

Q Yes. A. There are certain hydrocarbons that are so close to the liquid and gaseous phase that any slight change in either one or the other, that is, the pressure or temperature, might produce a liquid, and in that case I would say that the liquid is petroleum and the residue is natural gas.

Q And, conversely, if the alteration were the other way, you might produce gas from a liquid? A. Yes, that is right. The vapour.

Q Yes? A. That is right.

Q And that would be, in your estimation, natural gas?

A Yes.

Q So that the distinction between these two substances, in your estimation, depends upon the pressure and the temperature? A. Yes, oh, certainly.

Q And any alterations in one or both . . . A. Would change them.

Q Would change these substances which, by insensible gradations, are transmuted one into the other? A. Yes.

Q Thank you.

THE COURT: Gentlemen, Mr. Helman will want to cross-examine Mr. Slipper, but we are going to adjournfor the next 15 minutes, so that will make it exactly 4:00 o'clock, and we will have this room aired out.

(Hearing adjourned and resumed after short adjournment.)

THE COURT: All right, Mr. Helman.

CROSS-EXAMINATION BY MR. HELMAN:

Q Dr. Slipper . . . A. Pardon me, it is Mr. Slipper.

Q Mr. Slipper, thank you. You have specialized in the gas part of the hydrocarbon production? A. Yes, sir.

Q So that you are what we could call gas-minded, that is a common expression? A. Yes, I suppose so.

Q And you said something that you had some books in which the word "petroleum" was used as a generic term, but that there was a footnote attached to it. Could you give me the names of those? A. No, I said I had read books, I am sorry; I did not specify it because I could not.

Q Were you here this morning when I was reading some definitions to Dr. Nauss? A. No, I was not.

Q I see. I was reading a definition of petroleum that was contained in the book, "The Science of Petroleum". You are familiar with this work, "The Science of Petroleum", are you? A. Yes, sir.

Q This is Volume 1. I understand they are down to five volumes here now? A. Yes, sir.

Q And it is considered as one of the most authoritative and comprehensive books on the subject, isn't it?

A It is considered comprehensive, yes, sir.

Q And authoritative? A. Probably in a large part.

Q And at the start it has a part dealing with the nomenclature of crude oil and its products, and then it has the nomenclature of petroleum products. This part here is written by Professor Nash and Professor Hall of the Department of Oil Engineering and Refining, University of Birmingham, England. A. Yes.

Q And this is the definition that they give of petroleum, Mr. Slipper.

" Petroleum, in its widest sense, may be considered to embrace all hydrocarbons, solid, liquid and gaseous, occurring in nature. It is more precisely defined as a material, occurring naturally in the earth, which is predominantly composed of mixtures of chemical compounds of carbon and hydrogen with or without other non-metallic elements such as sulphur, oxygen, nitrogen, etc. Petroleum may contain, or be composed of, such compounds in the gaseous,

"liquid and/or solid state, depending on the nature of these compounds and the existent conditions of temperature and pressure; it may, and frequently does, contain other extraneous material, including non-hydrocarbon gases, water, and earthy matter, in admixture."

A Will you read that last part again?

Q "It may, and frequently does, contain other extraneous material, including non-hydrocarbon gases, water, and earthy matter, in admixture. That portion of petroleum which, under normal conditions, is in the gaseous state, is commonly termed 'natural gas' (although the term 'natural gas' may not be restricted to this definition), but it should be understood that, in so far as all compounds are capable of existing in the solid, liquid or gaseous states, depending upon the conditions of temperature and pressure, no strict distinction can rightly be drawn between gaseous, liquid or solid components of petroleum."

Now, what have you to say about that? A. It was written by a chemist, I think, not a geologist.

Q I beg your pardon? A. It was written by a chemist.

Q The Department of Royal Engineering and Refining of the University of Birmingham, England. A. Yes, but chemists.

Q Well then, would you say that to the chemists petroleum has this definition? A. It might have, I don't know. I am a geologist.

Q I see. And I may read you another definition, Mr. Slipper. It is in the "Petroleum Production Engineering" by Uren . . .

MR. STEER: My learned friend will pardon me, my lord. I think I should put this position before your lordship. Mr. Slipper is called here as a witness of fact. His experience has to do with geology and, in my submission, my friend has no right to go into these questions of opinion with him.

THE COURT: Don't you think Mr. Slipper can take care of himself as a witness?

MR. STEER: I think he can, my lord.

THE COURT: Well then, I would not like to tell Mr. Helman where he can start and where he

can stop. I am convinced this witness can take care of himself.

MR. STEER: Very good, sir.

Q MR. HELMAN: I am looking, Mr. Slipper, at a book called "A Textbook of Petroleum Production Engineering", by Lester Charles Uren, Associate Professor of Petroleum Engineering at the University of California. This is the 1924 edition. A. Yes.

Q Now, that book is recognized as an authoritative book? A. Quite so.

Q And here is what Professor Uren says:

> " Petroleum is a mixture of naturally occurring hydrocarbons which may assume either the solid, liquid or gaseous state. These three phases of petroleum are transmutable, one into the other, by the application of moderate changes in temperature and pressure."

Now, I want to go back just to the first sentence where he said that:

> " Petroleum is a mixture of naturally occurring hydrocarbons which may assume either the solid, liquid or gaseous state."

And I point out to you that that authority has a much broader definition of petroleum than the one you have given to us today. A. That is correct.

Q Now, will you go back with me for a moment to 1906, because that is the date of the agreement in this case, Mr. Slipper, and will you tell me if it was known by that time that there was a common origin of oil and gas and coming from the same source material? A. In 1906, that would be the time when the authority on such matters in Alberta was Mr. Eugene Coste. As a matter of fact, he looked after the drilling of those wells in 1906 and his theory at that time was that oil and gas originated from inorganic sources, which is quite different than the present day ideas of it.

Q That was Eugene Coste's theory? A. That is correct.

Q But that was not a theory generally accepted by geologists in 1906, was it? A. No, but it was accepted by quite a large proportion of geologists.

Q Now, the preponderance of the geologists swang the

other way that they had an inorganic origin?
A Yes, so far as I know.
Q And the better opinion then was, and still is, that it is of an organic origin? A. That is correct, sir.
Q And what I am getting at, that the common origin of oil and gas as coming from the same source material was understood by a large body of geologists?
A Under either theory it would be so, sir.
Q By 1906 it was understood that gaseous constituents accompanied crude oil, that is, that gas was dissolved in oil? A. Well, I do not know whether they had many ideas about how it occurred underground. Their ideas were all as to what they saw at the surface, and they saw gas and oil come from the same well.
Q They both came from the same well? A. Yes.
Q So that they knew that oil could not be produced without producing gas? A. Yes.
Q Your answer was "yes" to that, was it? A. Yes. I am sorry.
Q And they knew that you got oil and gas from wells?
A That is right.
Q And the technique of operating wells was to use the gas as a propulsive force to get the oil up to the surface? A. Now you are getting down into reservoir engineering, sir. I do not think they had much idea about that particular thing in those days. Most of them considered, I think, that the oil was propelled towards the hole by water because after a well was played out, water came and replaced the oil. I do not know whether they had any conception in 1906 of the important role that natural gas took in the production of oil.
Q Well, but in Ontario they had been producing oil for some time by 1906? A. Oh, yes. Well, I mean to say, I do not know that they had. They may have but I do not know.
Q So then what you are trying to tell me then is that you do not know one way or the other about that?
A That is correct.
Q I see. Now, what is solution gas? A. Well, it means that gas that is dissolved in oil.
Q It is like sugar that is dissolved in water? A. No, it is not the same.
Q Well, what is it like? A. It is like, well, I

don't know that I can compare it. It is just the solution of some gas in oil.

Q It has been dissolved? A. Yes.

Q So that it is all a solution at that time? A. Yes.

Q And in the reservoir where you have solution gas it is all a liquid in the reservoir, that is, the solution? A. It is a liquid phase, yes.

Q Yes? A. But the gas is not a liquid.

Q The gas is not a liquid? A. No.

Q But the substance? A. It is a liquid phase.

Q It is a liquid phase? A. Yes.

Q Well, that is a good enough answer for my purposes. Now, in the reservoir . . . A. I should say when I said that, that that is what I have been told; I do not know.

Q You do not know? A. No.

Q You have not made a study of that either? A. No.

Q I see. You are familiar with the Leduc field, I assume, Mr. Slipper? A. To some extent. I have not carried on any intensive studies of Leduc.

Q You have not carried on any intensive studies of Leduc? A. No.

Q Well now, if I told you that we have here a quarter section and there are some wells that are producing in the neighborhood. . . A. Yes.

Q You would agree that there is some change taking place in the underground constituents in the reservoir?

A It would be a reasonable assumption.

Q And this underground change would mean that due to the withdrawal of oil and gas in the neighbourhood that there is a change in the reservoir right underneath this property, that is, the gas cap gas is passing off and the solution gas is coming out of solution and going into the gas, isn't that right? A. Might we say the change in energy, conditions and distribution.

Q And a change in the physical components of what is in the reservoir? A. No, I imagine the physical components are the same thing in there.

Q They may be the same, but they are altering in the sense that solution gas is coming out of the oil?

A Yes, that is right.

Q And there are some liquid forms of petroleum that will be changing their form? A. I do not know.

Q You do not know that. Are you a member of the Association of Petroleum Engineers, the Association . . .

A A.P.I.?

Q Yes? A. No, I am not.

Q You know about it. Has it a committee on natural gasoline and natural gas? A. I have heard that it has.
Q Are you a member of the American Association of Petroleum Geologists? A. Yes, sir.
Q They have a section dealing with natural gas?
A They may have, I do not know about it.
Q Were you present at their meeting at Banff this year, Mr. Slipper? A. Yes, I was.
Q And I understand that you delivered an address on the gas fields of Alberta? A. No. My wife and I went for a drive and I did not get back in time.
Q They had you on the program that you were going to do that? A. Yes.
Q That is a very happy way of getting out of it. A. I should have done it today.
Q I beg your pardon? A. I should have done it today.
Q All right.
THE COURT: Any more questions?
MR. STEER: No, my lord.
THE COURT: Thank you, Mr. Slipper. Next.

OLIVE MARGARET FISHER,
having been first duly sworn, testified as follows:
MR. RILEY: My lord, before proceeding with this witness perhaps I might just explain what it is that I propose to do. Dr. Fisher is a specialist in the English language and I have had her search the Public Library with a view to finding out all authoritative definitions of petroleum and natural gas from works as far back as possible, and down to 1906. The works she has searched included, first, dictionaries. I have a summary of a definition she has found and I propose to place on the record just what she has done, reading to her the definitions she has found, with the appropriate references, and establish the authoritative nature of the works from which she has compiled the quotations. It is a matter which would be, perhaps, judicially noticed by the Court because the Courts do take judicial notice of dictionaries and works of reference, but nonetheless, sir, it might be of some convenience in this case to do it in the fashion suggested. It

will not take long.
MR. NOLAN: Just excuse me a moment, please, my lord. I take it my friend feels it would be of more assistance to the court if the report of this witness were put in in written form.
MR. RILEY: I did not quite contemplate that. I have a compilation from the witness, but I propose to read her each one.
MR. NOLAN: Oh?
MR. RILEY: And show where it came from, and the authoritative nature of it. It will not take very long.
MR. NOLAN: You mean rather than handling the books themselves?
MR. RILEY: The books are all available in court, if you want them.
THE COURT: There are a good many books there.
MR. RILEY: They are here, my lord, if they want to look at them.

DIRECT EXAMINATION BY MR. RILEY:

Q Now, Dr. Fisher, I understand you have been a teacher of the English language for some years? A. Over 30.
Q Would you tell the court your education and your training? A. I hold a Bachelor's degree in Education and English from the University of Chicago, Master of Arts degree in Education and English from Stanford University. I taught in the Normal School, Calgary, and after that, the Faculty of Education here, where I was Associate Professor for five years until my retiremenet this fall. And my teaching has been concerned always with the matters of English, teaching English.
Q Yes. And you have an honourary degree of Doctor of Laws, too? A. Yes.
Q From the University of Alberta, haven't you? A. Yes.
Q 1950? A. Yes.
Q During your career, has it been necessary to pay attention to the meaning and usage of words in the English language? A. Constantly, sir.
Q How does one determine the ordinary, accepted meaning of a word, by . . .
MR. NOLAN: You see, my lord, - I am just wondering if I may interrupt - whether we are

again going to have the opinion of this witness, or whether this witness is going to tell the Court by reason of her research and investigation she has found certain things. If that is so, that is one thing. But asking the witness, going into her mind, about the thing is another thing, and that I object to.

MR. RILEY: I am asking her to give the reason for the way she determines these things.

MR. NOLAN: "What, in your opinion," is the proper method?

THE COURT: I think all Mr. Riley is trying to do is to show that his witness is mentally strong.

MR. NOLAN: If that is all he is trying to do, I will admit it, my lord, and save him all that trouble.

THE COURT: Strong enough to interpret what she reads in these enormous books?

MR. NOLAN: I am certain, my lord, that she cannot carry them.

MR. HELMAN: I expect your lordship to read them.

THE COURT: I will read them.

Q MR. RILEY: What records did you consult to determine the ordinary meaning of a word, or what records do you consult, to determine the ordinary meaning of a word? A. Dictionaries.

Q Yes? A. And after dictionaries, naturally, encyclopedias, if one wishes to go further, and technical dictionaries, if there are technical terms involved.

Q Now, in this particular case, you know that the litigation concerns the meaning of the word "petroleum", and perhaps "natural gas", and I asked you to look in the Public Library for old works, especially, but any reference works you could find respecting the meaning of those words. Did you do so? A. Yes.

Q Now, have you got your memorandum in front of you?

A Yes.

Q Did you consult Funk & Wagnalls New Standard Dictionary, the complete edition, 1914? A. Yes, sir.

Q Is that an English or an American work, or what is it?

A An English and an American work.

Q Is it accepted as authoritative? A. Funk & Wagnalls is authoritative.

Q Did you find the definition of petroleum at page 1849?

A Yes.
Q And does that definition read:

"An inflammable oily liquid mixture of numerous hydrocarbons, chiefly of the paraffin series, that exudes from the earth and is extensively used for heat and light."

A Yes.
Q And in that same work did you find a definition of crude at page 622? A. Yes.
Q And did that definition read:

"Crude - in a state needing preparation for use in manufacture or mercantile exchange; not refined; unprepared by any process; raw; as crude petroleum; crude material, a relative term."

A Yes.
Q And did you find oil defined at page 1715? A. Yes.
Q Defined as:

"A neutral liquid usually of either vegetable or animal origin, but sometimes of mineral origin, that is insoluble in water, but sometimes soluble in alcohol, and always in ether. Mineral oils form a class somewhat by themselves and include petroleum oils distilled from peat, shale, etc. They are generally thought to have been formed by the decomposition of animal and vegetable remains, although petroleum is regarded by certain writers as Mendeloff, as of purely mineral origin."

A Yes.
Q Did you consul Webster's International Dictionary of 1897? A. Yes, sir.
Q Is that an English or American work? A. American.
Q Is it accepted as authoritative? A. Yes.
Q Did you find a definition of petroleum at page, is it 1073? A. 1093.
Q 1093? A. Yes.
Q Does that definition read:

"rock oil, mineral oil, or natural oil, - a dark

"brown or greenish inflammable liquid which at certain points exist in the upper strata of the earth from whence it is pumped or forced by pressure of the gas attending it. It consists of a complex mixture of various hydrocarbons, largely of the methane series but may vary much in appearance, composition and properties. It is refined by distillation and the products include kerosene, benzene, gasoline, paraffin, etc. "

A Yes.
Q Did you consult Webster's New International Dictionary, Unabridged, 2nd Edition, 1934? A. Yes.
Q Did you find a definition of petroleum at page 1883?
A Yes.
Q And did that definition read as follows:

"Petroleum from Latin petra, a rock, and oleum, oil. An oily, inflammable liquid, almost colourless to black, but usually of a dark brown or greenish hue, existing at many places in the upper strata of the earth. Petroleum is usually obtained by pumping or is forced out of drilled wells by the pressure of the gas occurring with it."

A Yes.
Q Did you find a definition of natural gas at page 1631?
A Yes.
Q Did that definition read:

"A gas issuing from the earth's crust through natural openings or bored wells and frequently accompanied by petroleum."

A Yes.
Q Did you find a definition of crude oil at page 1692?
A 1612, sir, I think.
Q 1612? A. Yes.
Q Reading? A. "A crude substance."
Q "A crude substance"? A. Yes.
Q What does your definition of a "crude substance" read?

A "Crude. A crude substance specifically petroleum as extracted from the ground. Crude oil."

Q So that your definition reads: "A crude substance, specifically petroleum, as extracted from the ground. Crude oil"? A. Yes.
Q Did you consult the Shorter Oxford English Dictionary in two Volumes, 1933? A. Yes.
Q Is that accepted as an authoritative work? A. Beyond doubt.
Q Is it English or American? A. It is English.
Q Did you find a definition of petroleum at page 1483?
A Yes.
Q Did that definition read:

> "Petroleum, a mineral oil, varying from light yellow to dark brown or black, occurring in rocks or on the surface of water in various parts of the world, used especially as a source of oils for illumination and mechanical power."

A Yes.
Q "Rock oil." A. Yes.
Q Did you consult New English Dictionary on Historical Principles? A. Yes.
Q 1909? A. Yes.
Q Is that work regarded as authoritative? A. Yes, sir.
Q Is petroleum defined in Volume 7 at page 753 in language as follows:

> "Petroleum, a mineral oil varying from light yellow to dark brown or black, occurring in rocks or on the surface of water in various parts of the world, in modern times of great economic importance especially as a source of oils for illumination and mechanical power, rock oil."

A Yes.
Q Did you find there in Volume 7, at page 92, oil defined? A. Yes.
Q And is that definition:

> "The oils constitute a very large group of natural substances of animal, vegetable or mineral origin. They are divided into three classes: (1) Fatty or fixed oils, (2) essential or volatile oils, (3) mineral oils which are chemical mixtures of hydrocarbons and are used

"chiefly as illuminants."

A Yes.
Q Did you consult the Universal Dictionary of The English Language, 1932? A. Yes.
Q And is that work regarded as authoritative? A. Yes.
Q And is an English or an American publication? A. It is an English publication.
Q Did you find the definition of petroleum at page 855? A. Yes.
Q Reading as follows:-

"Petroleum, inflammable mineral oil found in the crust of the earth in certain regions, used for illumination and for driving certain types of engines."

A Yes, sir.
Q Did you consult the Century Dictionary, 1911? A. Yes, sir.
Q Is that an English or American work? A. An American work.
Q And is it regarded as authoritative? A. Yes.
Q At page 4428 did you find a definition of petroleum?
A Yes, sir.

Q "Petroleum, an oily substance of great economical importance, especially as a source of light, occurring naturally, oozing from crevices in rocks or floating on the surface of the water, and also obtained in very large quantity in various parts of the world by boring into the rocks, rock oil."

A Yes, sir.
Q Now, with reference to encyclopedias . . . A. May I say I checked one thing there, the New Funk & Wagnalls Standard Dictionary, 1913, at the top of your first page, to be perfectly sure about that . . .
Q I am sorry, I do not understand you. A. At the very top, the Funk & Wagnalls New Century Dictionary, 1913.
Q It is 1913? A. I thought you said 1914.
Q Anyway, it is 1913 in place of where, if I said, I said 1914, is that where we are at? A. Yes, I just wanted to be sure.
Q Now, did you look at the Encyclopedia Americana, the

edition copyrighted in 1904-1905. A. Just one moment, Mr. Riley. Yes, sir.

Q And is there a page? A. There is no page. It is in Volume 12.

Q It is in Volume 12? A. Yes.

Q But the page is not numbered? A. No.

Q Did you find a heading, "petroleum"? A. Yes, sir.

Q And is it an article, of which I will only read the first two paragraphs:

"Petroleum: Petroleum, in some of its forms has been known and used by mankind in various parts of the world from time immemorial, but its history as an important commercial product extends over a period of less than 50 years. The word is derived from the Latin 'petro', a rock, and 'oleum', oil, and literally means 'rock oil'. It is also known in some parts of the world in its crude state as naphtha, which comes from the Persian 'nafata'. As used in the United States and England, the term naphtha is applied only to one of the lighter products, which are given off in the process of distillation. In Germany petroleum is known as 'erdoel', or earth oil, and 'steinoel', stone oil; the French and Italian equivalent is 'petrole'. All these terms are embodied under the general one, 'mineral oil', which clearly distinguishes it from other oils of an animal and vegetable nature. There are semi-liquid and solid varieties of petroleum, known as asphalt, bitumen, and maltha. These vary in weight in the natural state from 50° Baume, or .7841 specific gravity, to 10° Baume, or water equal to 1.0, and in some instances are heavier than water. Petroleum ranges in colour from a water white transparency to jet black, but the most common variety is dark green, which by reflected light is shown to have a brownish yellow tinge. It is a highly inflammable substance and its chief constituents are carbon and hydrogen with varying quantities of oxygen and nitrogen. Some varieties are also impregnated with or combined with sulphur. This is more especially true of petroleum that has an asphalt base.

Origin of Petroleum - Numerous theories have

"been advanced to account for the existence of petroleum, but no complete and entirely satisfactory solution of the problem has yet been presented. For many years it has been claimed by the geologists that petroleum was formed in the rocks by the decomposition of animal and vegetable matters. Of late, many scientists have supported the idea that the formation of petroleum was due to the natural distillation of shales and hydrocarbons, found in the earth's crust, by internal heat. Its chemical origin from inorganic matter appears the more probable, since it has been discovered in some of the lower geological formations, of an age when animal and vegetable life was not superabundant. It has been manufactured for years from the artificial distillation of shales in various parts of the world and scientists have been able to produce a substance closely resembling it in every way by purely chemical means. It has also been made artificially by the destructive distillation of animal and vegetable matter."

Now, at that time, was the Encyclopedia Americana accepted and regarded as authoritative? A. Oh, yes.

Q And there is quite a history of petroleum in that volume?

MR. NOLAN: What was the date of that, Mr. Riley?

MR. RILEY: It is an edition of the Encyclopedia Americana, copyrighted 1904-1905, Mr. Nolan. There is no date on it other than that that I was able to find on it.

Q Now, did you look at the Encyclopedia Americana, the 1924 edition, Volume 21, at page 680? A. Yes, sir.

Q Do we find there:

"Petroleum, the general name applied to one of the three great classes of natural oily liquids, the other two being the essential oils and the fixed oils. It is obtained ready formed from the earth and from various localities. It belongs to a great series of bodies grouped under the name 'Bitumens' which together comprise a range of materials of the highest importance to the well being of the human family. The familiar bitumens are the gaseous; natural

"and solid, occurring in nature (see Bitumen). Here the application of the term is limited to the liquid which is so important an article of commerce, though reference will also be made to natural gas which accompanies petroleum."

A Yes, sir.
Q What do you take from:

"Here the application of the term is limited to the liquid."

MR. NOLAN: That is a matter of opinion. It is not what this witness is asked to do. I am going to object to her telling what meaning she derived from what was put down in that definition because she has not been qualified in any way to discuss these questions of petroleum or natural gas or any of the natural hydrocarbons. She is a lady who has spent her life teaching English, English language and literature.

MR. RILEY: Now, I was not asking her to give opinions about petroleum and natural gas. I asked her what is her understanding in English, as to what she would take from the word "here" in the context.

MR. NOLAN: The word "here"?

MR. RILEY: Yes, the word "here".

A In this definition, that is what I would take it to be.

MR. NOLAN: What we are concerned with here is what your lordship will take from these definitions. All we are doing is putting the definitions before your lordship.

THE COURT: That is all.

MR. HELMAN: "Here", in this article, in other words? A. Yes.

Q MR. RILEY: Now, in the same work, the Encyclopedia Britannica, in Volume 19, page 275, is it stated:

"Natural gas, the name given to the inflammable gas occurring in petroliferous formations. It consists mainly of hydrocarbons of the paraffin series."

A Yes.
Q And ih that same work, the Encyclopedia Britannica,

did you look at the 1943 edition? A. Yes.
Q Did you find a definition of natural gas in the 1943 edition of the Encyclopedia Britannica? A. Yes.
Q Volume 16, page 163? A. Yes.
Q And did the definition read as follows:

"Natural gas is the name given to the inflammable gas which occurs in porous, subsurface, imperviously capped earth formations. Petroleum is found in many instances with the gas."

A Yes.
Q Did you look at Chambers' Encyclopedia? A. Yes.
Q Were there any editions prior to the 1950 edition in the Library? A. No, just the 1950 edition.
Q What happens to these old works at the library?
A Well, I suppose in some cases they are worn out, and in other cases they try just to get the modern editions, not having very much money to spend on more of these.
Q Now, is Chambers' an American work? A. No, it is Scotch-English.
Q And is it accepted as authoritative? A. Yes.
Q In Volume 10 of Chambers' Encyclopedia, page 616, do you find this language:

"Petroleum is a term which has at times been applied to all dominantly hydrocarbon mineral substances whether solid bitumens and waxes, liquid oil or the hydrocarbon gases. More commonly and probably more correctly its use is restricted to mineral oil, a greenish, brown, black or occasionally almost colourless liquid less dense than water."

A Yes.
Q In the same work is ratural gas defined in Volume 6, page 175, as follows:

"The gas which occurs with crude petroleum and is produced simultaneously when wells are drilled is termed 'natural gas'. It is separated from the crude oil at or near the well in suitable equipment."

A Yes.
Q Now, did you look at the Columbia Encyclopedia,

1935 edition? A. Yes.

Q And is the Columbia Encyclopedia an English or American work? A. Am American, the Columbia University.

Q And is it accepted as authoritative? A. Yes.

Q Do you find a definition in Volume 1 of petroleum at page 138? A. Yes. 1380.

Q 1380? A. Yes.

Q And does the definition read:

> "Petroleum as it issues from the ground is a viscous inflammable liquid varying in both appearance and chemical composition."

A Yes.

Q Did you likewise find in the Columbia Encyclopedia, 1935 edition, Volume 1, page 1380, a definition of natural gas? A. Page 1240.

Q Page 1240? A. Yes.

Q "Natural gas" - does the definition read as follows:

> "Natural gas, a natural mixture of gases found issuing from the ground or obtained from specially driven wells . . . although commonly associated with the production of petroleum, it appears also at a distance from such fields, in sand, sandstone, and limestone deposits."

A Yes.

Q Did you also look at Harmsworth's Universal Encyclopedia, Volume 10, 1932? A. Yes.

Q And is that an English or American publication?

A An English publication.

Q Is it accepted as authoritative? A. All of these are.

Q All of these are? A. Yes.

Q Did you at page 6092 find a definition of petroleum?

A Yes.

Q Did the definition read:

> "Petroleum, term meaning rock oil. Technically it is applied to a number of fluid substances, minerals, obtained from the crust of the earth, varying in character from natural gas and the clear, limpid naphtha of Georgie on the Caspian

"to the heavy Bitumens on the great Trinidad Lake. Commonly it is used for crude mineral oil."

A Yes, sir.
MR. HELMAN: Are we going to get a copy of what you are reading?
MR. RILEY: We can get you one, Mr. Helman.
MR. HELMAN: I would like to have it.
Q MR. RILEY: In addition to the Encyclopedias, did you also look at certain technical dictionaries, being restricted to the ones in the library? A. Yes.
Q Did you look at Kingzett's Chemical Encyclopedia, 1932? A. Yes, sir.
Q Who was Mr. Kingzett? A. He was the founder of the Institute of Chemistry in London, England.
Q The date of the work was 1932? A. Yes.
Q I take it that it was an English publication? A. Yes.
Q And at page 688 do we find a definition of petroleum reading as follows:

"Petroleum (rock or mineral oil) occurs in the miocene rocks of tropical and subtropical countries, and in smaller quantities in older rocks of colder countries. It is a natural, dark-coloured, oil-like deposit of hydrocarbon character, found mainly in rock formations of either the Tertiary or Carboniferous periods."

A Yes, sir.
Q Did you find in the same work natural gas defined at page 389? A. Yes, sir.

Q "Natural gas is a mixture of hydrocarbons associated with petroleum deposits found in many parts of the world."

A Yes.
Q And at page 633 did you find the following: "Oils, see petroleum." A. Yes, sir.
Q Did you look at Hutchinson's Technical and Scientific Encyclopedia? A. Yes.
Q Is that an English or American work? A. That is an English work.
Q Printed when? A. In 1935.

Q Is there a definition of petroleum in Volume 4 on page 1921? A. Yes.
Q And does the definition read:

"Petroleum - the word 'petroleum' literally means 'rock oil' and petroleum is a natural mineral substance, and its allied products are natural gas and natural asphalt. Crude petroleum is obtained by a process of drilling to the strata in which the oil is retained."

A Yes.
Q Do you find a definition of natural gas in Volume 3 of the same work at page 1816? A. Yes.
Q Do you find:

"Natural gas, the name given to the gases which exude from some oil-bearing strata, both from natural gas wells, and along with oil from oil wells, and 'gushers'."

A Yes.
Q Do you find crude petroleum defined in Volume 1 at page 559, as "Crude Petroleum - see Petroleum"?
A Yes.
Q Do you find oil defined in Volume 3, at page 1860?
A Yes.

Q "Oils - There are three main classes of oils; essential oils; volatile products, mainly hydrocarbons, occurring naturally in certain plants; mineral oils; also consisting of hydrocarbons, in this group are included oils from petroleum, shale, coal, etc."

A Yes.
Q Did you look at Van Nostrand's Scientific Encyclopedia, 1938? A. Yes.
Q Is that an English or an American work? A. American.
Q Do we find this:

"Petroleum and its associated natural gases are mixtures of hydrocarbons, or mixtures of many chemical compounds consisting chiefly of the elements carbon and hydrogen which have been derived from buried organic matter.

"Practically speaking, the product of oil wells may range all the way from natural gas, through natural gasoline and petroleum to asphalt and paraffin."

A Yes.
Q Do you find crude oil defined at page 328 as: "Crude Oil - Petroleum; hydrocarbons." A. Yes, sir.
Q Do you find oil defined at page 784 as: "Oil - Volatile oils; Fixed oils; Paints; Hydrocarbons, Lubrication and Lubricants"? A. Yes.
Q Did you look at Chambers' Technical Dictionary, 1940? A. Yes.
Q Is that an English or American work? A. English work.
Q Did you find a definition of petroleum at page 631?
A Yes, sir.

Q "Petroleum, crude mineral hydrocarbon oils obtained from natural oil wells in many parts of the world."

A Yes.
Q And did you find a definition of natural gas at page 570 reading as follows:

"Natural gas, the term includes gases generated during volcanic activity and gaseous hydrocarbons distilled under natural conditions from the mineral oils stored in porous strata. The latter types of gas naturally occur in oil-producing localities the world over."

A Yes.
Q Do you find a definition of crude oil at page 212?
A Yes.
Q "Crude Oil - see Petroleum"? A. Yes.
Q Do you find oils defined at page 590 as follows: "Oils - (chem)" - what does that mean? A. Chemical.
Q Chemical? A. Yes.

Q "A group of neutral liquids comprising three main classes: . . . (2) Mineral oils derived from petroleum, coal, shale, etc., consisting of hydrocarbons."

A Yes.

Q Did you look at Crispin's Dictionary of Technical Terms published in 1942? A. Yes.
Q Is that an English or American work? A. That is an American work.
Q And who is the author? A. Frederic S. Crispin, a Civil Engineer.
Q Frederic S. Crispin, a Civil Engineer? A. Yes.
Q Do you find a definition of petroleum at page 251?
A Yes.
Q "Petroleum, a natural oil taken from the earth used extensively for heating and lighting"? A. Yes.
Q Do you find natural gas defined at page 229? A. Yes.
Q "Natural gas is formed in the earth, particularly in oil regions in enormous quantities"? A. Yes, sir.
Q Do you find oil defined at page 92? A. Yes.
Q "Crude oil, petroleum in its natural state as it comes from the earth." A. Yes.
Q Do you find oil defined at page 236 as follows:

> "Oil (chem). A greasy or unctuous liquid of animal, vegetable or mineral origin; in addition to its use as a lubricant, oil has a very wide use in the industries."

A Yes.
Q Now, did you look at Newmark, Illustrated Technical Dictionary, 1944? A. Yes.
Q Is that an English or American work? A. American.
Q And do we find petroleum defined at page 220?
A Yes, sir.
Q "Petroleum, a mixture of inflammable hydrocarbons, the origin of which is not definitely known"? A. Yes.
Q Do you find natural gas defined at page 201? A. Yes.
Q Is it defined as follows:

> "Natural gas occurs in underground pockets, and is often encountered in the drilling of oil wells."

A Yes.
Q Now, I want to go back to one other, to bring it to the attention of the Court, and that is Collier's Encyclopedia. A. I haven't got it here.
Q It is at page 4, towards the bottom of the page, my friend Mr. Prothero points out. A. Oh, I am sorry, I have it.

Q Now, at page - this is the 1950 edition, is it, that you looked at? A. Yes, sir, Collier's, did you say?
Q Yes, Collier's. A. I seem to have missed it for the moment.
Q I think it is at the bottom of page 4. A. Oh, yes, I am sorry.
Q Did you look at Collier's Encyclopedia? A. Yes.
Q What edition? A. 1950.
Q Did you have a chance to look at any earlier edition?
A Of Collier's?
Q Yes? A. No, I did not, sir.
Q Are there any in the library, any earlier editions?
A Not that I know of.
Q Well, anyway, it is the 1950 edition. And the article on petroleum was written by whom? A. Professor Lester C. Uren, Professor of Petroleum Engineering, Chairman of the Division of Mineral Technology, University of California.
Q We have heard about Mr. Uren in this particular action. Did you find a definition of petroleum at page 607?
A Yes.
Q Is petroleum there defined as:

> "Literally rock oil; is a naturally occurring mixture of hydrocarbons used as fuel and as a raw material for many chemicals."

A Yes.
Q And again, at page 621:

> "Petroleum is a mixture of various hydrocarbon compounds, some are gases, some are liquids and some are solids, but the liquid hydrocarbons predominate and the gaseous and solid compounds are in solution in the liquids."

A Yes.
Q Did you look at the article on fuels? A. Yes.
Q Volume 8, page 479? A. Yes.
Q That was not by the Professor of Petroleum Engineering, Mr. Uren? A. No, it was by another gentleman.
Q Do you find this in Volume 8, at page 479:

> "Each of the three mineral fuels, coal, petroleum, and natural gas can be converted into the form of the other by adjusting the ratio of carbon to hydrogen."

A Yes.
Q Thank you, Dr. Fisher.
THE COURT: Any questions of this witness?
MR. RILEY: I am sorry, I forgot one thing.
THE COURT: All right.
Q MR. RILEY: Now, did you search through the Canada Year Books? A. Yes, I did.
Q From what years to what years? When did you start your search? A. 1905 to 1917, and then 1920, 1925, 1930, 1935, and 1948 and 1949.
Q Well, you inspected the volumes between 1905 and 1917? A. Yes.
Q And then you inspected 1920? A. Yes.
Q Then the volume for 1925, and each five years thereafter? A. Yes.
Q Down to 1945? A. Yes.
Q What did you find? A. I found that from different pages, on different pages, different tables that are there given, that there is a differentiation made in the mineral products of Canada. For example, on page, of the Year Book of 1905, page 112, Table 41,

"Mineral products of Canada, quantity and value, 1901."

There is under the heading, there are different headings, "Produce of petroleum", under that heading it gives illuminating oil, lubricating oil, benzine and naphtha, gas and fuel oils and tar, paraffin wax and candles, natural gas. And throughout the different ones, sir, there is always, in the mineral production of Canada, the mineral products of Canada, there is given natural gas and petroleum.
Q Well now, are they combined under mineral products, the natural gas and petroleum? A. No.
Q Have you a list of what you found on the various pages of the works of reference? A. Yes, and I have pages and tables here for those years.
MR. RILEY: Well, perhaps, sir, I could hand the list in and give a copy to my friends rather than take the time of the Court to read it. There are a number of volumes.
THE COURT: Any objection?
MR. NOLAN: None at all, my lord.

THE COURT: Mr. Helman?
MR. HELMAN: No, sir.
THE COURT: All right. It will be handed in and marked as an exhibit now.
MR. RILEY: Yes, my lord, if I may.
THE COURT: Exhibit 49.

EXTRACTS FROM CANADA YEAR BOOKS PUT IN AND MARKED EXHIBIT 49.

Q MR. RILEY: Just one other question. Is the Canada Year Book known as an authoritative work? A. It is published in the Bureau of Statistics, and, I believe, under the Statistical Act of the Ministry of Trade and Commerce, and it contains accounts of production and values of the various industries, as well as education, and many of the other things.
Q Is it accepted as authoritative? A. Yes.
Q Is it referred to frequently? A. Constantly, sir.
THE COURT: I suppose, Mr. Nolan, you do not mind waiting until tomorrow morning to cross-examine?
MR. NOLAN: Not at all, my lord.
THE COURT: I suppose you can come back again in the morning, Dr. Fisher? A. Yes, sir.
THE COURT: And I expect all counsel are ready and willing, at 9:30 tomorrow morning?
MR. STEER: Yes, my lord. I will have to look after these three young men who were late today, or two of them.
MR. HELMAN: Could I ask the witness if she has an extra copy of that list she was reading to us, so that I can look it over tonight?
MR. RILEY: We will obtain one for you.
MR. HELMAN: When?
MR. RILEY: How soon would you like it delivered?
MR. HELMAN: I am not asking you how soon you can have it delivered, but I would like to have it available.
MR. RILEY: I think there is one in my office, Mr. Helman.
MR. HELMAN: Thank you very much.
THE COURT: Well, it is now 5:00 P.M. and we will adjourn until 9:30 tomorrow morning.

Morning Session,
November 21st, 1950

THE COURT: Gentlemen, before we commence this morning I wish to dispose of the application of W.D.C.Mackenzie and the defendant Imperial Oil Limited made on the 16th instant for an order that the Notice to Witness, dated the 9th day of November, 1950, directed to W.D.C. Mackenzie, insofar as its requirements for the production of documents is concerned, is improper, invalid, null and void, and does not have to be complied with on the grounds set out in the Notice of Motion. That motion is dismissed.

The Notice to W.D.C. Mackenzie, however, is directed to be amended by making Paragraph (a) thereof to read:

> "(a) Specimens of forms of all different kinds of agreements, leases and licenses passing between the defendants, Canadian Pacific Railway Company and Imperial Oil Limited relating in any way to rights in Alberta to petroleum, natural gas and related hydrocarbons or any of them, bargained, sold, granted, leased, assigned or conveyed by the defendant Canadian Pacific Railway Company to Imperial Oil Limited in Alberta from 1890 to 1918 inclusive."

but otherwise the Notice is to remain the same as in the copy served.

OLIVE MARGARET FISHER (recalled) already sworn, testified as follows:

MR. NOLAN: My Lord, I was going to ask Dr. Fisher one or two questions, if I might.

THE COURT: Yes.

CROSS-EXAMINATION BY MR. NOLAN:

Q Dr. Fisher, I understand that your investigation was confined to the library in Calgary?

A To the public library. I also looked in the Vocation Library on the North Hill, and I

endeavoured to get from other people some books of reference.

Q Now, in your evidence yesterday you mentioned Encylopedia Americana? A. Yes.

Q A work with which I am not familiar, and I can not quite remember what the year was of the edition which you were quoting from. What edition was that, Dr. Fisher? A. We have first here the 1904-1905, the edition copyrighted 1904-5.

Q Have you a later one than that? A. Yes. I was just going to say. The 1924 edition.

Q And is that the last edition you consulted of that work? A. The last of that work that I have here.

Q You did not come across any later editions in your investigation? A. You mean of the Americana?

Q Yes, of the Americana? A. No, I do not think so, Mr. Nolan.

Q Well, is there one?

MR. RILEY: No, there is not one.

Q MR. NOLAN: Dr. Fisher, you said yesterday that libraries tried to keep modern editions. Do you remember saying that? A. Yes, I do remember saying it. I am quite sure that they would keep as many authoritative editions as would be possible, but if modern ones came out they would try to get them too.

Q Why would they try to get the modern editions?

A So that - well, in the first place, either editions cease to be published -

Q Yes? A. In some instances.

Q They are out of print, as we say? A. Out of print.

Q Yes? A. And in the second instance, if there is further research they would wish to make it as modern as possible.

Q Are you saying to me that the meaning of words as contained in these dictionaries changes from time to time? A. Not basically, sir.

Q But they do change? A. There are connotations which sometimes make a difference in the usage of the word, but basically they do not change from their root meaning.

Q So that the use of the word may change from time to time? A. Not basically, but there may be modifications made.

Q Because of the use of the word made by the people?
A That is true.
Q Yes. And that is the reason, I take it, that libraries endeavour to obtain the modern, latest revised editions of dictionaries? A. Yes, but they will maintain the older forms because they are still basically correct.
Q Well, you will go so far with me as to say that the meaning does change with time, in some instances, and particularly in an industry such as petroleum where there are advances in technique?
A That would change in the scientific way, sir, and production, - I mean, it would change in a scientific way and particularization, but it would not change basically in the common use.
Q Well, don't you think that it would affect the common use if the dictionary meaning is changed?
A There is a lagging behind, of course, in the common use, and dictionaries will try to maintain the common use, except in scientific relationships where there may be need to be a particularization.
Q And where the common use lags behind the scientific definition? A. Both will be given in all probability, except in more scientific works, which is a particularization.
Q Is what you are saying to me now true to some extent in encyclopedias? A. I said yesterday the encyclopedia would be an enlargement of a dictionary definition in many instances.
Q Of course, there are definitions, as we know, in encyclopedias? A. Yes.
Q But they are more elaborate than in a dictionary?
A Yes. That was shown yesterday when Mr. Riley gave some of them.
Q And in some instances whole articles are written on a word and what it means? A. Yes.
Q And its connotations? A. Yes.
Q Then, so far as the technical dictionaries are concerned, to which you made reference, you would, of course, agree with me that there are changes there as the technique changes and as science advances? A. Yes. Again though, I was interested in the common meaning of the word, as far as I could discover it.
Q Yes. That is what you were asked to do?
A Yes, that is what I was asked to do.

Q Thank you very much.

CROSS-EXAMINATION BY MR. HELMAN:

Q Mr. Riley handed me yesterday a copy, Dr. Fisher, apparently of a document that he had been reading to you, and which I think was prepared by you. Taking the pages with regard to the extracts from dictionaries and encyclopedias, did he read them all and put them all into evidence, or were there some left? I was not following it very closely.

MR. RILEY: Everything was read, and both sides presented. There is nothing one-sided about this.

MR. HELMAN: I was just wondering about it. You do not mind me asking the witness?

A They are contained on these sheets which I have here, and they were all read, sir.

Q Everything was read that is in this? A. Yes.

Q And different authorities are entitled to have more weight paid to them than other authorities?

A I would grant that, sir.

Q And one of the most important authorities to which the greatest weight should be paid is probably the Encyclopedia Britannica, an authority to which the greatest weight should be attached?

A That is one, yes.

Q And you gave an extract from the 1911 edition of the Encyclopedia Britannica? A. Yes.

MR. HELMAN: My Lord, I do not want to cumber up the record. The Encyclopedia Britannica is in the Court House library, the 1911 edition, and I imagine Your Lordship can just as well look at the article there as having me put this book in in evidence. An extract was made from it. I think the whole article under the heading: "Petroleum", is of interest in addition to the passage that my friend picked out, because Your Lordship will see that under the heading of "Petroleum" there is also a considerable passage dealing with natural gas in the 1911 edition of the Encyclopedia Britannica, and I found that, My Lord, in looking at the eleventh edition in the Court House library here, Volume 21, which was the volume which the witness cited to us in Court yesterday.

Q You gave us some references, Dr. Fisher - oh, by

the way, before I leave the Encyclopedia Britannica, 1911 edition, you can tell from the encyclopedia by the initials at the end who the author of a particular article is, that is right, isn't it, Dr. Fisher? A. Yes.

Q And this one has the initials "B.R." at the end of it, did you notice that? A. I did not notice that, sir.

Q Well, anyhow, you take the "B.R." and you look in the front of the encyclopedia, don't you, and you find out who "B.R." is; and when you look into the front of the 11th edition to see who "B.R." is, you find it is Sir Boverton Redwood, D.Sc., F.R.S. (Edin.), F.I.C., Assoc. Inst. C.E., M. Inst.M.E., he has a lot of titles, and his various positions are set out there. A. Yes.

Q Will you just read to us who Sir Boverton Redwood is so that we will have it on the record for future reference?

A "Adviser on Petroleum to the Admiralty, Home Office, India Office, Corporation of London, and Port of London Authority. President of the Society of Chemical Industry. Member of the Council of the Chemical Society. Member of Council of Institute of Chemistry. Author of 'Cantor' Lectures on Petroleum; Petroleum and its Products; Chemical Technology; etc."

Q So that by looking at the initials at the end of the article on petroleum in this 11th edition we see that it is that man whose description you have just read to us who is the author of the article on petroleum? A. Yes.

Q That is right. A. Yes.

Q I just want to have you look with me for a moment at the reference in Colliers Encyclopedia, Dr. Fisher, because I think some of the passages were improperly identified by you as to who the author of them was.

MR. RILEY: Page 4, Mr. Helman, the bottom of page 4.

Q MR. HELMAN: Now, if you will just look at this Colliers Encyclopedia you will see that you gave us a quotation about the meaning of the word "natural gas" here at page 618. A. 621?

Q No, 618. A. Yes, 618, that is right.

Q It says:

"Natural gas is the lightest petroleum product."

A Yes, that is the one I had down for page 621.
Q Now, there was some suggestion here that that pprticular passage was written by Professor Uren, but if you will look carefully it is the initials "G.E.", not Uren, for that part? A. Yes, "G.E."
Q And "G.E.", if we go to the front, is Gustav Egloff, do you see that? A. Yes.
Q And he is given as being the Director of Research with regard to oil products, and then it gives his various titles, and amongst those there is a degree of Doctor of Science. I just wanted to make that correction. Then the next part that you had in connection with this, I have some notes on this. It is the passage at page 621 where you gave the general definition,

> "Petroleum is a mixture of various hydrocarbon compounds, some are gases, some are liquids and some are solids, but the liquid hydrocarbons predominate and the gaseous and solid compounds are in solution in the liquids."

That part was written by Professor Uren, as you stated, then following that statement there is another passage that I wanted to show to you at page 629. A. I do not think, sir, I quoted from 629.
Q You did not quote, but I want you to do it for me. There is a heading here, page 629, of the same article called: "Pipe Lines", and will you just read this, the first sentence there?
A "Pipe lines, in petroleum practice, are facilities for the transportation of crude and refined oils, and natural gas."
Q And that particular portion of Colliers Encyclopedia under the heading of "Petroleum" is written by a man named "C.S.M.", that is right?
A I can not tell you.
Q You will note it there, do you see it?
A I see. All right, I did not check it.
Q And when you look at "C.S.M." here, we find it is Charles S. Morgan? A. Yes.
Q A.B., Ph.D., Chief Research Specialist, do you see that there? A. Yes. That is not in my submission.
Q No, that is not in your list? A. No.
Q That is right? A. Yes.
MR. HELMAN: Now contained in this article in Colliers Magazine, in Colliers Encyclopedia,

I will get it wrong, is a chart which we find on page 616, and I would like to put that in as an exhibit. I would like to have the whole article put in as an exhibit, My Lord, because I think it is of some importance. I was going to suggest if my friends have to return it to the library that I be permitted to put in a photostatic copy of this article on petroleum.

MR. RILEY: Well, we will have to return it, Mr. Helman.

MR. HELMAN: Yes, I know the difficulties that exist in regard to that, and if Your Lordship will permit we will take this encyclopedia from the library and have a photostatic copy of the whole article on petroleum put in as an exhibit, so that the original book will remain for the purposes of the library.

THE COURT: And would you like me to have it marked as Exhibit 50?

MR. HELMAN: Yes, and I will give it to Your Lordship later when we have prepared it.

THE COURT: All right.

MR. HELMAN: At the moment I wish to direct Your Lordship to the table that is contained on page 616 of this article which is headed "Products for Home and Industry from Petroleum," and then in brackets, "(crude oil and natural gas)", and then the whole set of them is set out, sir, with natural gas, refinery gas, light distillates, medium distillates and so on in extenso.

THE COURT: Exhibit No. 50.

PHOTOSTATIC COPY OF ARTICLE IN QUESTION MARKED EXHIBIT NO. 50.

Q MR. HELMAN: Now, when you were reading from Chambers' Encyclopedia, the 1950 edition, Volume 10, you gave us - A. Just one minute until I identify it, please.

Q It is on page 3, I think, at the bottom there.

A Yes, I have it.

Q You will see the passage that you gave, where you said, where it was cited:

"Petroleum is a term which has at times been applied to all dominantly hydrocarbon mineral substances whether solid bitumens and waxes, liquid oil or the hydrocarbon gases. More commonly and probably more correctly its use

is restricted to mineral oil, a greenish, brown, black or occasionally almost colourless liquid less dense than water."

Will you just, please, read for the record the sentence which immediately follows the passage which you have there?

A "The three groups of substances are, however, closely related, freely forming a gradation or series from gases through liquids to solids with a corresponding increase in the ratio of carbon to hydrogen, the two chief, and sometimes only, elements present."

Q Now, you were telling my learned friend, Mr. Nolan, something about the original root of words, and I was going to suggest to you, Doctor, that very often the original root in common usage in the word is changed, and I was going to take for you as an example the word "nephew". Now, you know the root of the word "nephew"? A. I can not say that I know that.

Q Well now, I have looked that up, and I find that "nephew" comes from the word "nepos", meaning a grandchild in Latin, and you see how thw word, instead of it being a grandchild in English is called nephew. You observe the distinction there?

A Yes.

Q And what I am suggesting to you is that very often the roots of words are not a sound basis for finding out the present meaning of a word in common usage. A. I would say that the root has to be considered, sir, and there are certain variations, but you go back to the original and trace it through.

Q You go back and trace it through, but the variations do exist, in fact, and words have passed from their original roots to other meanings?

A Yes.

Q Do you know the derivation of the word "linen"?

A Well, I have read it, but at the moment I could not quote it.

Q Well, it comes from the word -

MR. RILEY: Now, sir, we are having Mr. Helman give a lot of evidence here. The witness said she did not know about "nephew" and she does not know about "linen". She said she did not know the derivation.

MR. HELMAN: Well, I am going to suggest

to her what it is and have a discussion with her.
THE COURT: Go ahead.
Q MR. HELMAN: The word "linen" comes from the word "linum", meaning flax, and in common usage when you speak of linen, that a person has left their linens to so-and-so, it does not mean that it is confined to flax, does it?
A No.
Q The substance made out of falx? A. It might not all be from that origin.
Q That is right. And you ordinarily speak of cotton sheets and so on as linens? A. Yes.
Q The word "money", for instance, have you looked up its derivation? A. Not recently, sir, and I do not think I could give a detailed analysis of it.
Q Well, the word "money", for instance, comes from "moneta", meaning a coin in the Latin?
A Yes.
Q And in common usage it includes a good many other things besides coin, doesn't it? A. Yes.
Q And the whole of the New English dictionary which you quoted from is made up of various, of a definition given to a word and then various usages given from time to time to the word as we pass through English literature? A. Yes.
Q And virtually there are hundreds of illustrations of almost every word that we can think of showing how it changes from time to time in usage?
A Yes. But, sir, there is a common use that one can find from standardized works, and I think that that would be what we would be concerned with today.
Q Now, I am just asking you about the Oxford English dictionary, we can go through it and it gives you the meanings from day to day, that is the great purpose of it, the different usage of the word, doesn't it? A. Yes, quite so.
Q It will take a word and it will show you how Chaucer used it, and then it will show you how it was used by Shakespeare, and then how others used it, and then we come down and we find how Milton used it, and they all used it differently. In short, it shows that language is a living thing, and that the usages of words are constantly changing? A. Yes, I confess that, sir.
Q And when you take a dictionary, the author of it has to draw a line somewhere between what he is

going to put into it in the sense of what is the common word, and leave out other things, because you can not get everything in a dictionary, that is true, isn't it, Witness? A. Quite.

Q And scientific, technical, slang, dialectic and foreign words, unless they have completely passed into common use, are not contained in dictionaries?

A Dictionaries give, as I say, the more popular usage of the word, and tracing its origin, naturally.

Q So that it lags behind considerably with scientific and technical usages? A. Yes. But I was not concerned, sir, with scientific or technical words in the particularized sense.

Q Yes, I know you were not concerned with it, but I am trying to get you to concern yourself with it now here with me, and what I am saying is that the investigation you undertook with regard to the usages was an investigation into dictionaries in which the scientific and technical meaning of a word may not be the usage that you found in the dictionary? A. I would say, sir, that, as I have reiterated several times, that those dictionaries would carry it through to its more specific form as far as that specialization is concerned.

Q But it lags behind in scientific and technical words, now, will you say that, that dictionaries do? A. I would say that there is a lagging behind in our usage of words behind the scientific word.

Q Now, what do you mean by that? Will you just explain that a little more definitely to us?

A Well, to me it seems that it is clear, that there always is an interpretation which is given by specialists.

Q Yes? A. And granting that they may come ahead of the ordinary language, yet we have to be concerned with the meaning of the language as it is given in dictionaries.

Q Now, have you in your research found that dictionaries have been carrying wrong meanings forward for a considerable amount of time? A. Well, I would not say wrong meanings. I would say that the meanings have to be checked, and if there is a preponderance of definitions on one side or the other you would check very carefully to find out what are the authoritative dictionaries for that

purpose.

Q I am suggesting to you - I am talking about the dictionaries themselves? A. Yes.

Q That there are found in dictionaries words which have been discovered after there is an investigation made into it that the wrong meaning has been contained in the dictionary? A. I would not say the wrong meaning, sir. I would say a meaning which was probably popular at a certain time and used with a certain meaning. I think that that could be borne out in your own discussion of the history of language and words.

Q Yes, but what I am saying is, that dictionaries are like other documents prepared by human beings, they are very often wrong, too? A. I am not quite so sure of the wrong, I think that there could be an investigation, and I think that some might be more authoritative than others.

Q Well, then, let us use the word "inaccurate" then. You know that, for instance, in Dr. Johnson's dictionary there were found a great many inaccurate definitions that he gave that have been subsequently corrected? A. But they would be in common parlance at the time and, therefore, would be worthy of a place in the dictionary.

Q And he might have got the wrong common parlance?

A But still it was one that he knew.

Q But all I am driving at, Doctor, is that there have been and there are words that are not correctly defined in a dictionary? A. I think that has to be modified into saying that it may be partly correct, sir, and that there would have to be further investigation in other authorities so that you would regard it as quite authoritative. You would not confine yourself to one dictionary. You would go to others.

Q I am talking about one dictionary now. Let us confine ourselves now to one dictionary. We have a dictionary and we find in it a word that they have given a particular definition to, and I am suggesting to you, Witness, that that definition may turn out to be inaccurate when it is checked by other people, and when they are bringing out a new dictionary they will change the definition that was contained in the other dictionary?

A They will modify it.

Q Or change it completely? A. It might be in

certain connotations that they will be changed.
Q Or change it completely, Witness? Just answer that.
MR. STEER: Give Dr. Fisher an example.
MR. HELMAN: I beg your pardon.
A I would be more likely to say that it would be modified and it might be an obsolete form or something of that sort, and then it would be modified in the new dictionary.
Q It might become obsolete in one usage and they put in a new usage, not obsolete? A. Yes. Sometimes you find a dictionary has a certain meaning in 1697 and by 1764 it might change.
Q That is right. All I am trying to get is that the language is a living thing with a constant fluctuation of meaning? A. Yes, I grant you that.
Q All right, thank you.
MR. RILEY: Sir, I have no further questions, but I have a request. My friend has asked permission, and been granted permission by the Court, to put the article in in photostatic form from Colliers Encyclopedia, 1950. I make a like request, sir, for the Encyclopedia Americana of 1904-5. It is not available in the library, and I would like to photostat the article and put it in as an exhibit.
THE COURT: If you think it is of any value to you, and I presume you do when you ask that that be done, it will be marked Exhibit 51.

PHOTOSTATIC COPY OF ARTICLE IN QUESTION MARKED EXHIBIT NO. 51.

MR. RILEY: Thanks, My Lord. Thanks, Doctor Fisher.

ARTHUR W. NAUSS recalled, already sworn, examined by Mr. Riley, testified as follows:

Q Dr. Nauss, you are still under oath?
A Yes.
Q You were asked to bring a sample specimen core from which oil and natural gas are produced in Leduc. Have you got specimens with you? A. Yes, I have.
Q I mean, have you with you? A. I have two pieces

of a core from the oil reservoir of the D3 in Leduc.

Q Are they both the same? A. They are both the same. They are both similar. They both came from the same well but a few feet apart.

Q From the same well but a few feet apart?

A Yes, in the D3 zone.

Q I see. Now, what is this substance that you have got in your possession? A. It is a substance called dolomite, that is a type of limestone containing magnesium.

Q That is a rock? A. Yes, that is a rock.

Q And where do we find oil in this rock? A. You can observe pores in the rock, small pores, and those pores make up approximately ten percent of the rock.

MR. RILEY: I tender the two specimens, My Lord, as one Exhibit.

THE COURT: Exhibit 52.

TWO SPECIMEN CORE SAMPLES MARKED EXHIBIT NO. 52.

MR. RILEY: Just answer my friend.

CROSS-EXAMINATION BY MR. NOLAN:

Q Dr. Nauss, what is a core? A. A core is a piece of rock that has been taken from a well by a coring procedure. There is a tool that cuts all around the edge of this piece of rock and leaves the central part undisturbed.

Q And does it come up in segments such as you have produced here today? A. It may come up in long pieces, as long as 15 feet long, but due to the fact that these rocks are almost invariably fractured, and they break up of their own accord into pieces sometimes this short.

Q And sometimes they break up to such an extent that all you have are the cuttings? A. In such a case you have been unsuccessful in your coring operation.

Q Yes, but you have got cuttings? A. There are certain circumstances under which you will only have cuttings in the core drill. That is very rare. This is a diamond core and usually you get close to 100% recovery in a diamond core. That is a very efficient method of coring.

Q What is the purpose of extracting these cores, Dr. Nauss? A. So that you can determine the nature of the reservoir rocks. So that you can, for one thing, determine the percentage of pore space and also determine the percentage of connate water.
Q Just a minute, please, Doctor. The percentage of pore spaces? A. Pore space.
Q Core space? A. Pore space.
Q Well, that is, porosity in a scientific way?
A Yes, determine the porosity the scientific way.
Q I understand you. And what else did you say it showed, Dr. Nauss? A. You determine these things by making measurements of them in the laboratory, and you also determine the percentage of that porosity which is filled with water.
Q Yes? A. Having made those measurements you can determine how much oil there is in each cubic foot of this rock.
Q Now, you mentioned connate water. What is connate water? A. Connate water is that water which is present in the reservoir along with oil. Connate water is invariably present in oil or gas reservoirs, together with the oil.
Q Does it play any part in the recovery of the oil?
A No, it is a deterrent rather than playing any part.
Q Is it mixed with the oil? A. No, it is not. It is absorbed on the surface of the pores. That means that the molecules of water are so close to the edges of the pores that the intermolecular forces have attracted them to the edge of the pores permanently.
Q And does it prevent full production of the well?
A Well, it does not prevent production in any way, no. It cuts down the amount of oil that is driven under there and decreases the amount of permeability which would otherwise be present.
Q Is there any way that you can take a core such as Exhibit number 52 and determine the presence of oil at that particular horizon? A. Yes, you can.
Q How do you do that? A. You take the core and put it in a container and heat it up to drive off the hydrocarbons.
Q Yes? A. Or you can. That is one way of doing it. You can also immerse it in a solvent that it will dissolve the oil out of the pores.
Q Is there any other way? A. There are other

ways to determine how much oil is present.
Q Yes? A. You can put it under a lamp and look at it, you can look at it by putting it under a fluoroscope.
Q There are two things that a core might tell you. By one method you can get or might get a quantitative analysis, is that so? A. Yes, by several methods.
Q By several methods? A. Yes.
Q And by other methods, by what you call the fluoroscope, the fluoroscope method by that you might determine the presence of oil? A. Yes.
Q Is that a better way of putting it? A. Yes.
Q What is a fluoroscope method? A. The fluoroscope method, or the fluoroscope is an instrument that directs ultra-violet rays right onto the core.
Q Yes? A. And oil fluoresces under ultra-violet light. That is, it gives off a light of its own.
Q A sheen? A. Yes, you might call it a sheen.
Q And that is done in a dark room or done in daylight?
A In a fluoroscope is a chamber in which you cut off all outside light or daylight.
Q I see. A. You look at it through a hole.
Q Yes? A. You look at it through a hole.
Q Oh, I see, sort of peepshow effect? A. Yes.
Q What well did these cores come from, Dr. Nauss?
A I do not recall the number of this well that this came from.
Q You do not remember the number of the well?
A No.
Q They came from the Leduc Field? A. Yes, they came from the Leduc Field.
Q You cannot tell me the depth? A. I can tell you the approximate depth. It is about 5200 feet.
Q That is because of your knowledge of horizons?
A Yes.
Q And that is a dolomite formation? A. Yes, that is right.
Q Thank you, Doctor.

CROSS-EXAMINATION BY MR. HELMAN:
Q You were not present when those cores were taken, Doctor?
A No, one of our engineers was.
Q And it is a common scientific practice for you to rely on cores that have been produced by the

technical staff working under you?
A Well, they are taken out of a core box which is quite adequately marked.
Q Yes. I am just saying that that is a common practice in looking at cores, you go to a core box, and you find what has been taken out? A. You find what has been taken out?
Q You find the core in the core box and you present it here for evidence; you do not have to take it yourself? A. One man cannot possibly look at all the cores that have been taken in Alberta, that would make it quite crowded around all the wells while they are coring.
Q And this particular one, you did not do that?
A No, I was not present when this was done.
Q I am not questioning the use being made of it. In fact, I am just saying that that is a proper way of doing it? A. Yes, I would rely on other people as much as I do on myself.
Q Thank you.

MR. RILEY: I should have asked this before, I should have asked it in chief, but perhaps with my friends' permission I can do so now.

RE-DIRECT EXAMINATION BY MR. RILEY:
Q The gas cap gas, does it come from similar rocks?
A Yes, it comes from an identical type of rock.

MR. STEER: Thanks, Dr. Nauss. I will call Mr. Garrett.

JULIAN GARRETT, having been first duly sworn, examined by Mr. Steer, testified as follows:
Q What is your present occupation, Mr. Garrett?
A Natural Gas Consultant.
Q And how long have you carried on that business?
A Since March 1st, 1948.
Q Are you a registered professional engineer in Alberta? A. Yes sir.
Q And prior to March of 1948 what was your position?
A I was Vice-President of North-Western Utilities Limited, Edmonton, Alberta.
Q And that is a company that supplies the natural gas to the inhabitants of Edmonton and its vicinity?
A Yes sir.

Q Have you any connection with the Canadian Western Natural Gas Company? A. Canadian Western Natural Gas Company Limited is an affiliate of North-Western Utilities and I was at one time a Director of that company.
Q And that company supplies to Calgary and its inhabitants natural gas? A. Yes.
Q For heating and industrial purposes? A. Yes.
Q How long were you the Vice-President and did I understand you to say General Manager? A. You asked me what position I occupied.
Q At March, 1948? A. Just prior to March 1st, 1948.
Q Yes? A. I was then Vice-President, but the year before that a General Manager had been appointed to report to me as Vice-President.
Q I see. A. And prior to that I was Vice-President and General Manager.
Q From what date? A. Well, in the two offices I think from 1946, but I had been appointed Manager in 1928 and General Manager in 1934.
Q And when was your first association, when did your first association with Northwestern Utilities take place?
A July 1st, 1943.
Q And in what aspect of the business were you engaged at that time? A. I was manager of the Land Department and, subsequently, Manager of the Land Claims Department, Land and Claims Department.
Q Yes. And in your capacity as Manager of the Land Department, did you have anything to do with the acquiring by Northwestern Utilities Limited of supplies of natural gas? A. I can not say. I only occupied that position for a very short time because I became Secretary-Treasurer in January, 1924, and from July 1st to January, 1924 I came into contact with the leases which had been assigned to Northwestern Utilities by Northern Alberta Natural Gas Development Company Limited.
Q That was the predecessor company that was taken over by the Northwestern Utilities Limited? A. Yes.
Q From your experience, as you have told us, will you tell the Court what to you throughout that experience was the import of the word "petroleum"?
MR. NOLAN: Just excuse me a moment. I make the same objection that I made to Your Lordship before. This is another attempt to obtain another

opinion from another witness, and I submit that that cannot be done in the face of Section 10 of The Alberta Evidence Act. My friend Mr. Steer has said that all he is asking the witness to do is to state a fact. The question is, what, to you, was the import of this word, which, in my humble submission, is purely a matter of opinion and is not to be asked of this witness.

THE COURT: When you ask the witness, or when you use the word "import", Mr. Steer, are you asking the witness what does the term "natural gas" mean?

MR. STEER: Yes, My Lord.

THE COURT: To the witness?

MR. STEER: To the witness, yes, My Lord; that is all I am asking. And I will put it that way, I will say to Mr. Garrett, if I may, from your experience what does the word "petroleum" mean to you?

MR. NOLAN: My Lord, I object to that for the reason or for the same reason that I have put forward. What this word means, My Lord, is for the Court to determine, and I submit that the witness can not usurp the function of the Court, and that to ask this witness what he thinks this word means furthers this case in no way. My friend has been telling us that he is attempting to get at the vernacular. You do not get at the vernacular, according to the authorities that I cited to you, by asking a witness such as Mr. Garrett what his opinion is as to the meaning of the word.

MR. STEER: Well, if Your Lordship wants to hear further argument on it, all right, but I think I have made my position quite clear. The authorities show that what in the vernacular of men in the business of mining, businessmen and commercial men is the meaning of this word, and it is simply a question of fact, and I am asking Mr. Garrett to tell the Court, as a matter of fact, what the use of the word "petroleum" conveys to his mind.

THE COURT: I will hear the answer.

MR. HELMAN: My Lord, may I make my objection.

THE COURT: Yes.

MR. HELMAN: I listened to Mr. Steer's position in connection with his interpretation of the cases, and I would like to present to Your Lordship my view

with regard to these cases at this stage. The cases that he has cited are all cases in which it has been sought to determine whether a particular substance is a mine or a mineral which is in the reservation of mines and minerals, the Courts have said that the expression "mines and minerals" enclosesa large and complex class of things, in order to find out whether a thing is a mine or a mineral you proceed to see what it was in the vernacular of certain types of people, three classes of people that have been mentioned by my learned friend. But that is not this case, My Lord. We have here a title in which there is used the word "petroleum", "all petroleum", and what we are asking Your Lordship to do is to determine what a particular substance in fact is. These cases have no application to determine what a substance is. Suppose the reservation, My Lord, was a reservation of radium. Would we be going into the question of what radium was or meant in 1906 or what radium means today? We would simply have to determine whether a particular substance is or is not radium. Here we have a substance which is petroleum, and we have to determine what that substance is. The vernacular of mining men, businessmen, or commercial men can not change, in fact, what is scientifically a particular substance. And that is particularly true, My Lord, when you look at the Land Titles Act, because here in the Land Titles Act we have titles one beside the other, all of them having reservations of petroleum. My friend put them in yesterday. Now, is Your Lordship going to say that in one title issued in 1906 the word "petroleum" meant one thing, in another title issued in 1918 it meant another thing, and in another title issued in 1950 it means a third thing? That would be a complete breakdown, My Lord, of our system. What Your Lordship has here to determine is a question, a simple question, what does the substance "petroleum" embrace, and its vernacular has nothing to do with it.

I gave Your Lordship an example of radium. I suppose at one time there were large masses of ore which were not recognized scientifically to contain radium, but as science advanced it discovered that pitchblende contains radium. Now,

we have a reservation made before there was scientific knowledge of the fact that a certain ore contained radium. Surely, the investigation is a simple one? The investigation is, what is radium? The investigation before Your Lordship is, what is petroleum. These vernacular cases dealing with mines and minerals, My Lord, I submit are not in point. We are here dealing with a contest of titles. There have been set out merely in the Statement of Claim, if Your Lordship will look at it, one question; there has been set out merely that they own a certain substance and we own a certain substance, and the inquiry, My Lord, is, what is that substance?

THE COURT: All right, I will hear your answer.

MR. STEER: Perhaps the Reporter will read the question.

BY THE REPORTER: "From your experience, as you have told us, will you tell the Court what to you throughout that experience was the import of the word 'petroleum'?"

A It means a liquid oil that is found in the rocks of the earth.

Q MR. STEER: Does it or does it not include the substance known as "natural gas"? A. No.

Q Thank you.

CROSS-EXAMINATION BY MR. NOLAN:

Q Now, Mr. Garrett, you say that petroleum means to you a liquid oil as found in the rocks of the earth and does not include natural gas?

A Yes, sir.

Q You have been in Court during the hearing of this case, haven't you, Mr. Garrett? A. I was here on Thursday and Friday.

Q On Thursday and Friday? A. Yes.

Q Well, if you were here on Friday perhaps you heard my discussion with Dr. Nauss about oil and gas in the reservoir? A. Yes, sir.

Q What, in your opinion, is the dividing line between oil and gas in the reservoir? A. Well, I would say that the gas may occur in the reservoir in solution with the oil, or it may be in the gas cap.

Q Yes. And it may be that by changes in pressure

and temperature the liquid in the reservoir may become gaseous, and what is gaseous in the reservoir may become liquid? A. Yes.

Q So that there is no dividing line in the reservoir between them, unless you take an arbitrary measurement of pressure and temperature? A. That is right, but I maintain that natural gas is a separate substance even though it may be in solution with the oil.

Q All right. Now, tell me, what is natural gas?

A Natural gas formed in nature composed of paraffin hydrocarbons.

Q What is petroleum or oil, oil? A. It is liquid oil.

Q Is it not of the paraffin family composed of hydrocarbons? A. It is composed of hydrocarbons.

Q And of the paraffin family? A. Certain oils, yes.

Q Yes. So they have a common origin, have they not, Mr. Garrett? A. I think they have a common origin, yes.

Q Now, perhaps you will go this far with me, and you have been in this court room long enough to know that we are advocating one usage of the word and the plaintiff is advocating another usage of the word? A. Yes.

Q There were two usages? There were two usages of that word known to you? A. No.

Q Are you telling me - A. Not until I heard of this case.

Q Oh. Well then, if I asked you for a word that would comprise both oil and natural gas, just one word, what word would you use? A. I could not assign any word to it because I think they are both separate substances.

Q Well, if I assigned the word "petroleum" to both of those substances, would you agree that that was proper terminology? A. No, I would not.

Q You will not agree with me that there is a scientific meaning and that that scientific meaning included all the hydrocarbons occurring in nature, whether gaseous, liquid or solid? A. No. I have been in the natural gas business for over 27 years. I am a member of the American Gas Association, the Natural Gas and Petroleum Association of Canada, the Canadian Gas Association, and the Pacific Coast Gas Association, and I have never

in all my experience until this case arose heard of natural gas being construed as meaning "petroleum".

Q Have you seen any of the meanings in the Encyclopedias or scientific journals or publications which gave petroleum its scientific and all-inclusive meaning? A. I have not looked in a dictionary, Mr. Nolan. I did look in the Americana which has been referred to by a previous witness, and in that all I could find was that natural gas was associated with oil.

Q Oh, yes. And that is common knowledge, isn't it? Did you look in the Encyclopedia Britannica in the 1911 edition? A. No.

Q You heard it read here, did you? A. Part of it read, yes.

Q And do you agree with what it said? A. Not entirely.

Q But in your reading, Mr. Garrett, and you have, of course, been reading in a technical sense in technical books, haven't you seen evidence in those books of the word "petroleum" being used in two ways, as a broad generic term, and in a more restricted or narrower meaning? A. No, I haven't seen it.

Q You haven't seen anything like that? A. No, sir.

Q In the reading you have done? A. No.

Q Well, when you were at the University was that taught to you? A. Well, I did not study natural gas in the University. I was there from 1900 to 1904 and there were not very many courses in natural gas or petroleum in those days.

Q Were there any courses in petroleum in those days?

A Yes.

Q Well, that is interesting. Perhaps they told you a little about natural gas in those courses on petroleum, did they? A. I do not know.

Q You do not remember?

MR. STEER: He said, "I do not know".

Q MR. NOLAN: Oh, I am sorry. A. Yes, I said that I do not know.

Q I was going to ask you this, Mr. Garrett, are you a member of the A.A.P.G., that is, the American Association of Petroleum Geologists? A. No, I am not.

Q Are you a member of the American Institute of

of Mining and Metallurgical Engineers? A. No.
Q You do not belong to either of them? A. No.
Q Did you mention to me in one of your answers to my question that you looked at the Encyclopedia Americana? A. Yes.
Q What edition did you look at? A. I would not be sure. It was an edition which I bought probably in about the year 1911.
Q There have been editions since then, Mr. Garrett?
A I believe so.
Q Thank you very much.

CROSS-EXAMINATION BY MR. HELMAN:

Q Mr. Garrett, was Mr. Eugene Coste connected with any of your companies? A. He was connected with the Western Canadian, the Canadian Western Natural Gas, Light, Heat & Power Company Limited, but that was before I had any connection with that company.
Q But he had been with one of the companies that you subsequently became connected with? A. Yes, sir.
Q And what position did he occupy with the company that you became connected with? A. I would not be sure. I think he was the Managing Director.
Q Managing Director? A. Yes. I do not know. He might have been president, for all I know.
Q Now, I want to read you some passages from the evidence of Mr. Coste, which I have obtained, that he gave in the Farquharson case, and I want to see whether or not you agree with what he said about the word "petroleum".
MR. STEER: My Lord, may I say this. My friend proposes to read a typewritten manuscript purporting to be what Mr. Coste said.
MR. HELMAN: It is a certified copy of the abstract from the Privy Council records, Mr. Steer, and I think I am entitled to put it to the witness.
THE COURT: All Mr. Helman is going to do is read this to the witness and ask the witness, "Do you agree with that?", am I not right?
MR. HELMAN: That is right, My Lord.
THE COURT: What objection could there be to that?
MR. STEER: I suppose it is the same thing, My Lord, as reading from a recognized text book,

I presume.
THE COURT: Would it make any difference if Mr. Helman says: "Dr. John Allen said this. Do you agree with it?"
MR. STEER: Well, so long as -
THE COURT: What would be wrong with putting it to the witness?
MR. STEER: So long as it is understood, My Lord, that the Court does not accept the statement as evidence of the fact that Dr. John Allen made a statement.
THE COURT: I do not think that the Court would say he did or he did not.
MR. STEER: Yes, My Lord.
THE COURT: Mr. Helman says he did.
MR. STEER: Yes, My Lord.
THE COURT: And we will say that he said it.
MR. STEER: Yes, My Lord.
THE COURT: It only brings out Mr. Coste's views, that is all, as I see it.
MR. STEER: Yes.
MR. HELMAN: My Lord, this book that I am reading from is certified by the Registrar of the Privy Council under the seal of the Privy Council as having been some of Eugene Coste's evidence in the Farquharson case.
MR. STEER: All I have to say, My Lord, is that if my friend proposes to put in what was given in evidence in the Farquharson case, then he must tender it in due course, and we will then take our position with regard to it, but in the meantime I have no objection to my learned friend putting to this witness what it is said that Mr. Coste said and ask him whether or not he agrees with it.
THE COURT: Well, that is all he is doing now.
MR. HELMAN: It is a very official looking document, My Lord, with a green ribbon on it and the seal of the Privy Council.
MR. STEER: I am unimpressed.
MR. HELMAN: You do not like green ribbon?
MR. NOLAN: I do.
THE COURT: On the 17th of March.
MR. HELMAN: I may, just before I read this to you, ask you, you say that Mr. Coste - just let me get it clear. What was his connection with the company that you subsequently became connected with?

A He was an executive of the company. I do not remember his exact occupation.
Q And did he remain with the company after you came to work with it or one of its subsidiaries?
A I never worked for the company. I became a director of the company after Mr. Yorath succeeded Mr. Coste.
Q Let us not get into the inter-play of various subsidiary companies. You were associated with companies that Mr. Coste was associated with?
A I was associated with the company, I think, after Mr. Coste was no longer connected with it.
Q Well, you know that Mr. Coste was the founder of the Calgary Gas Company? A. I understand so.
Q Now, I am going to read this question that was put to Mr. Coste and his reply, and he was asked:

"Q There is no one word for natural gas, is there, as for petroleum?"

A Pardon me, would you read that again?
Q I will read it slowly.

"Q There is no one word for natural gas, is there, as for petroleum? They call it natural gas, there is no other name?"

And the answer of Mr. Coste to that question is:

" It is one form of petroleum, it is included under the word 'petroleum' also."

Now, do you agree with that statement? A. No, I certainly do not.
Q Then again I want to read you another question -
MR. RILEY: Nor did the Judicial Committee.
MR. HELMAN: They were not dealing with petroleum fortunately.
Q He was asked this question and again I am reading from the transcript:

"Q This is a definition of your own, Mr. Coste, taken from a paper of yours read before the Canadian Mining Institute. I have no doubt you recognize it."

And then there are quotation marks:

"The petroleum series includes all the natural hydrocarbons, with the exception of marsh gas above mentioned. These petroleums grade from natural gases into fluid oil or petroleum proper, into fluid maltha and viscous or solid bitumen or asphalt in their many varieties."

And that is the end of the quotation.

"Q That is a correct statement? A. Yes."

And then another question: "Q. And further on you say: 'A good definition of the nature of petroleum is the one of Mabberly, as follows:'" And this is still the quotation, but it is a quotation within the quotation:

"'Petroleum from whatever source, is one and the same substance, capable of a simple definition, a mixture in variable proportions of a few series of hydrocarbons, the product of any particular field differing from that of any other field only in the proportion of these series and the numbers of the series.' Mabberly referred, I believe, in the above definition, only to the crude oil or petroleum, but it applies equally well to natural gas, to maltha and to viscous or to brittle solid asphalt, and it may be said, therefore, that all the numbers of the great petroleum series, as here understood and defined, are mixtures of different hydrocarbons in greater or less variety. A. That is right."

And then his lordship said: "Q. You consider that a correct definition? A. That is right." Now, do you agree with that definition as given by Mr. Coste? A. No.

Q Or the quotation from Mabberly that we have referred to? A. No.

Q MR. STEER: What was your answer, Mr. Garrett? A. No.

Q MR. HELMAN: And was not Mr. Coste recognized at that time as one of the leading geologists in this part of the world? A. I believe he was.

MR. STEER: That is all, Mr. Garrett, thank you.

THE COURT: Next?

MR. STEER: My lord, I, yesterday put in a couple of exhibits having in mind the production of further evidence with respect to them. I now find that that other evidence is not available and

with your lordship's permission, and to avoid any possible confusion on the record, I would like to withdraw the exhibits.
THE COURT: Any objections?
MR. NOLAN: No, my lord.
MR. STEER: They have to do with a title in the name of the Canadian Pacific Railway Company and anpther title in the name of the Royalite Oil Company.
MR.NOLAN: Well, if it is that exhibit I do object to its withdrawal, because I think we will have something to say about that exhibit later on.
THE COURT: I was going to suggest, what difference does it make?
MR. STEER: It does not make any difference; if my learned friend wants it in, it is quite all right.
THE COURT: It has been put in, it has been marked, and I guess you had better leave it.
MR. STEER: Yes, my lord.
MR.MITCHELL: May we get the number of that, Mr. Steer?
MR. NOLAN: 43A.
MR. STEER: I would like to call now, my lord, Soren Peterson.

SOREN CHRISTIAN PETERSON, having been first duly sworn, testified as follows:
MR. STEER: Before I examine Mr. Peterson, my lord,I should like to tender a certified copy of title 45 K 78, covering Section 28, Township 16, Range 13, West of the 4th Meridian, dated the 29th day of January, 1932.
THE COURT: Exhibit 53.

CERTIFIED COPY CERTIFICATE OF TITLE NUMBER 45 K 78 MARKED EXHIBIT 53.

MR. HELMAN: May I see that?
MR. STEER: Yes.
MR. NOLAN: I think Mr.Steer was good enough to say yesterday that my objection would

apply to the documents and I understand it still applies and will continue to apply, Mr. Steer?
MR. STEER: Yes.

DIRECT EXAMINATION BY MR. STEER:
Q Your occupation, Mr. Peterson? A. Farmer.
Q And where do you live? A. Tilley.
Q And I am showing you here a document and ask you whether or not that is your signature? A. Yes, that is mine.
Q And it is executed also by? A. Mr. de la Vergne and Mahoney, Brooks, and the C.P.R.
Q Executed by the Canadian Pacific Railway Company?
A Yes.
MR. STEER: May I tender that, my lord?
THE COURT: Exhibit 54.

GAS LEASE, CANADIAN PACIFIC RAILWAY COMPANY TO SOREN PETERSON MARKED EXHIBIT 54.

MR. STEER: This, my lord, is a document headed "Gas Lease". It is dated the 21st day of July. 1949.

" CANADIAN PACIFIC RAILWAY, hereinafter called the 'Lessor', being registered or entitled as owner, subject, however, to such encumbrances, liens, and interests as are notified by memorandum underwritten of the natural gas in, upon or under,- Legal Subdivision Sixteen (16) of Section Twenty-eight (28), in Township Sixteen (16), Range Thirteen (13) West of the Fourth Meridian, containing approximately forty (40) acres more or less,

DOES HEREBY LEASE to SOREN PETERSON, of Tilley, in the Province of Alberta, hereinafter called the 'Lessee', all natural gas (hereinafter referred to as 'the leased substance') which may be found within, upon or under the leased area for the sole purpose of drilling and operating for, producing, removing and using the same for the domestic and farming purposes of the Lessee only on the lands owned or occupied by the Lessee, and in so far as the Lessor has the right so to grant and for that purpose to enter upon, use and occupy the same land or so much

thereof to such an extent as may be necessary for the effectual working of the leased substance;

TO BE HELD BY HIM, the said Lessee, as tenant for the space of Ten (10) years from the 1st day of April, 1949, and so long thereafter as the leased substance is producible from the leased area, at a yearly rental of One Hundred Dollars ($100.00) per annum payable half-yearly in advance on the 1st day of April and October in each year of the said term, the first year's rental having been paid on or before the execution of this lease."

Then I should like to draw your lordship's attention particularly to paragraph 7 of the lease, which is to this effect:-

"7. Should the Lessee in the course of his drilling operations for natural gas on the leased area develop a vlow of petroleum he shall forthwith take all necessary steps to conserve the flow of petroleum, and, in so far as possible, prevent the wastage of same, and shall forthwith notify the Lessor and this Lease shall forthwith come to an end and the Lesses shall surrender the said Lease to the Lessor."

Q Now, having got that document, Mr. Peterson, from the Canadian Pacific Railway Company, what did you do? A. Well, proceeded to drill and obtain natural gas.

Q You drilled and got natural gas? A. Yes.

Q When did you drill? A. Well, we had a permit before to drill that.

Q You started drilling before you got permission?

MR. NOLAN: I am sorry, we cannot hear what the witness is saying.

THE COURT: Would you speak up a little louder so the man in the back corner can hear you?

A We proceeded to drill here before we had obtained the actual permit, because the driller, he had to finish another job before he was expected to, and that permit and the papers wasn't come through at that time yet.

Q MR. STEER: Well, you started to drill then, did you? A. Yes.

Q And then you got your lease, is that right? A.Yes.
Q And then you finished your well, did you? A. Yes.
Q And what did you get? A. Natural gas.
Q What did you do with the natural gas? A. Used it for farm purposes, heating.
Q And are you still doing so? A. Yes.
Q Did you get any flow of petroleum? A. No.
Q That is all, thank you.

MR. NOLAN: I have no questions, thank you, my lord.

THE COURT: Mr. Helman?

MR. HELMAN: No, no questions.

THE COURT: Any other questions of Mr. Peterson? Thank you, very much, Mr. Peterson.

RALPH WEBSTER, having been first duly sworn, testified as follows:

MR. STEER: My lord, there is a mistake in the issue of this certified copy of title, and I should like to have it corrected. I think I will have to ask leave to put in another certificate of title, a certified copy of the certificate.

MR. NOLAN: Is it a mistake in the description, Mr. Steer?

MR. STEER: Yes, a mistake in the description.

MR. NOLAN: What is it about?

MR. STEER: I will explain it to my learned friend, my lord. This is a lease of a similar character from the Canadian Pacific Railway to Webster covering Legal Subdivision 15 of Section 35. Now, this certified copy of the title I have is the whole of Section 36, but under the Mineral Certificate under Section 189-A that the owner as to natural gas is Ralph Webster.

MR. NOLAN: I think there has been only a mistake made in the certified copy, my lord, in which they have used the wrong figures, the figure 36 instead of 35. I have no objection to that being substituted, my lord, at my friend's convenience, rather than recalling any officer of the Land Titles Office.

MR. STEER: Very good. And perhaps your lordship would reserve a number for this title.

The number is 45 K 84, and I will ask my friend, Mr. Fisher, if he will get the correction made and then later file this certified copy.
THE COURT: And I will reserve a number for it now?
MR. STEER: Yes, my lord.
THE COURT: All right, it will be Exhibit 55.
MR. STEER: Yes, my lord.

CERTIFIED COPY CERTIFICATE OF TITLE NUMBER 45 K 84 MARKED EXHIBIT 55.

DIRECT EXAMINATION BY MR. STEER:

Q You have been sworn, Mr. Webster? A. Yes.
Q And you are a farmer living at Tilley? A. Yes, sir.
Q And this document which I show you was executed by you? A. Yes.
Q And executed also by the Canadian Pacific Railway Company? A. Yes.
MR. STEER: Now, that is a document, my lord, in exactly the same form as the preceding one, and I need not read any portion of it to your lordship, I think.
THE COURT: And you want it marked?
MR. STEER: Yes, my lord.

GAS LEASE CANADIAN PACIFIC RAILWAY COMPANY TO RALPH WEBSTER MARKED EXHIBIT 56.

Q MR. STEER: You did go ahead and drill for natural gas on that land? A. Yes.
Q Did you get natural gas? A. Yes.
Q And are you using it? A. Yes.
Q And have you discovered any petroleum? A. No.
Q That is all, thank you, unless there are some questions.
MR. NOLAN: I have no questions, thank you, my lord.
MR. HELMAN: No questions.
THE COURT: All right, thank you, Mr. Webster.

INGEMAN SORENSON, having been first duly sworn, examined by Mr. Steer, testified as follows:-

Q You are a farmer at Tilley, Mr.Sorenson? A. Yes.

MR. STEER: Could I tehder this title, my lord, a certified copy of title Number 71 Y 171.

THE COURT: 71 Y 171?

MR. STEER: Yes, 71 Y 171, covering, among others, the whole of Section 5 - 17 - 34 - 4, no, the whole of Section 5 - 17 - 13 - 4.

THE COURT: Exhibit 57.

CERTIFIED COPY OF TITLE NUMBER 71 Y 171 MARKED EXHIBIT 57.

Q MR. STEER: And this document which I show you is executed by you, is it? A. Yes.

Q And also by A. N. Skanerup? A. Skanerup, yes.

Q Skanerup? A. Yes.

Q And Anderson? A. Yes.

Q Vigo Anderson, is that the way you say it? A. Yes.

Q Vigo? A. Yes.

Q And Peter Flatla? A. Yes.

Q And by the Canadian Pacific Railway Company? A.Yes.

MR. HELMAN. I am rising with respect to this last question. I just want to point out the form in which he is asking the question. He is saying it was executed by the Canadian Pacific Railway Company.

THE COURT: Well, the only thing is this, Mr. Helman, that the witness says it was. I presume he is telling the truth.

MR. STEER: This, my lord, is a lease in similar form to the preceding ones, and it is to three persons, this witness.... A. Pardon me, it is four.

Q Four? A. Yes.

Q Peter Flatla? A. Yes.

Q That is his signature there, is it? A. Yes.

Q There is no doubt about that? A. Yes, that is his signature.

Q That is Peter Flatla's sitnature? A. Yes.

MR. STEER: And it gives them the right to proceed to drill in the same terms as in the preceding leases, my lord. May I now tender that as an exhibit?

THE COURT: Exhibit 58.

GAS LEASE, CANADIAN PACIFIC RAILWAY COMPANY TO SORENSON, FLATLA, ANDERSON AND SKANERUP MARKED EXHIBIT 58.

Q MR. STEER: Did you proceed to drill pursuant to that document? A. Yes.
Q All four of you? A. Yes.
Q And did you get four wells? A. No, just one.
Q Oh, I see. The four of you drilled one well?
A Yes.
Q And what did you get? A. Natural gas.
Q Did you get any flowing petroleum? A. No.
Q Thank you.
MR. NOLAN: I have no questions, thank you, my lord.
THE COURT: No questions, Mr. Helman?
MR. HELMAN. No questions.
MR. STEER: That is all, thank you, Mr. Sorenson.

IVONE BURN, having been first duly sworn, examined by Mr. Riley, testified as follows:-

Q Mr. Burn, you are here pursuant to a subpoena?
A That is correct.
Q You formerly worked for Imperial Oil? A. Yes.
Q Now, sir, what is your present position, and with whom are you employed? A. I am landman for the Canadian Delhi Oil Limited.
Q And what is a landman? A. He is a man who goes out into the country obtaining leases of mineral rights, surface rights, pipeline rights-of-way, and things of that nature.
Q And prior to your association with Canadian Delhi, who were you employed by? A. Pacific Petroleums.
Q Was Pacific Petroleums actively engaged in the search for petroleum and natural gas in the Province of Alberta? A. Yes.
Q In what capacity were you employed by them?
A Landman.
Q And prior to that who were you employed by?
A Imperial Oil.
Q And in what capacity, sir? A. I was landman with them for approximately 8 years.

Q Landman with them for approximately 8 years?
A Yes.
Q What year did you go with Imperial Oil Limited?
A 1929.
Q Now, in those days there were various subsidiary companies, I believe, of Imperial operating in the search for petroleum and natural gas in Alberta?
A Yes.
Q Dalhousie Oil Company Limited? A. Yes, that is one of them.
Q Can you name some others? A. Royalite, Northwest Company....

MR. HELMAN: My lord, I want to rise to object to the form and the way the case is going. The problem that is involved for your lordship's determination is, what is the meaning of the word "petroleum". Now, my friend is constantly using the words "petroleum" and "natural gas" to witnesses as if it was a term, the meaning of which was fixed. Now, I suggest that in order that we have no difficulty about it, and in order that witnesses be not led into making an answer to something that my friend use the expression "oil and gas", and forget about the word "petroleum", because that is what the lawsuit is about, otherwise I must object to his leading the witness. He will have to ask the question and get the reply.

MR. RILEY: Well, there was no design about it, sir. I was particularly careful the other day with Dr. Nauss to use the word "liquid" so as to stay away from petroleum or oil. However, the questions I have been putting are merely introductory and I shall avoid it in future.

MR. HELMAN: Thank you.

Q MR. RILEY: Now, sir, have you with you a specimen form of Imperial Oil Limited lease?
A Yes, I have.
Q As used today? A. I do not know whether it is the last one. It is one that I happened to have in my files.
Q Used as late as when? A. I would say about '48 anyway.

MR. HOLAN: My lord, before it is adduced, I wish to objeet. I take the position that whatever form of lease was used by Imperial Oil now or in the past has nothing to do with the form of conveyance that has passed the title to the petroleum

from the Crown to the C.P.R., and down to Imperial Oil. I have no doubt we have many transactions with many people, but, as I have consistently argued and objected, they have nothing to do with this particular transaction, and I have always taken the position in this case that we are concerned only with the transactions that took place with respect to the northeast quarter of Section 19. Now, it is quite obvious at the moment what my friend is going to do is to endeavour to introduce some sort of form of lease used at some time by Imperial Oil with somebody else that is not a party to this action, and I submit that such evidence is not admissible and is not within the confines of the issue in this case.

THE COURT: Go ahead, Mr. Riley.

Q MR. RILEY: Mr. Burn, sir, when did you leave the employ of Imperial Oil? A. In the Fall of 1948.

Q And what knowledge have you of the use by Imperial Oil Limited of a printed form of petroleum and natural gas lease, and the reason I am asking about it in that language is that that is the language of the document produced by you? A. Well, in the course of my employment there, myself and members of the staff acquired such leases from the owners of the mineral rights.

Q Now, when did Imperial commence to use a printed form of lease? A. In 1947.

Q And prior thereto was there a mimeographed form used?

A There were mimeographed forms used, yes.

Q Have you a specimen copy with you? A. Yes, there is one there.

Q Now, the document first produced, is it recognized by you as a specimen form of the form used by Imperial? A. It is.

MR. RILEY: I tender that, my lord.

SPECIMEN FORM, PETROLEUM AND NATURAL GAS LEASE USED BY IMPERIAL OIL MARKED EXHIBIT 59.

Q MR. RILEY: And the mimeographed copy, I think it is, is that recognized by you as a specimen of the mimeographed form used by Imperial?

A It is.

MR. NOLAN: I make the same objection, if I may, my lord, please.

THE COURT: Yes. Exhibit 60.

MIMEOGRAPHED FORM OF LEASE USEDBY IMPERIAL OIL LIMITED MARKED EXHIBIT 60.

Q MR. RILEY: Now, sir, looking at Exhibit 60, the document is headed "Lease", and it reads: "I of , in the Province of Alberta, (hereinafter called 'The Lessor'), being registered as owner, subject, however, to such encumbrances, liens and interests as are notified by memorandum underwritten of the petroleum and natural gas and related hydrocarbons except coal and valuable stone within, upon and under the following lands....." The document commences in that fashion. Did the words "related hydrocarbons", were they necessary to be used while you were with the Land Department of Imperial Oil? A. I believe they were.

Q About what year, sir? A. It would be about 1941 or '42 when we first used a form like that.

Q Under what circumstances, if you can tell me?

A I believe those words were inserted as the result of having.....

MR. NOLAN: This, I think, my lord, is getting close to opinion evidence again. I am sorry to object so often, but I must, if I feel it my duty so to do.

THE COURT: I do not know that the answer can be of very much probative value in any event. The witness simply says "I believe", and was about to go on. He has not given any foundation for his belief. I do not know where he got the notion and I do not know that it persuades me with regard to anything at all. I would think it did not.

MR. RILEY: Very well, sir, I won't pursue it then.

Q Now, is there now what is known as the Alberta Landmen's Association, or some such name? A. Yes, there is.

Q Tell me about that Association, sir? A. That is a group of men in a similar occupation to my own who meet occasionally to discuss matters relating to land work.

Q Well, when you say a similar occupation to your own, and I understand you to mean landmen of other companies? A. That is correct.

Q And are you a member of the Association, or is it your company? A. No, I am personally.
Q Is Imperial a member, or have they a member?
A Yes, they have.
Q And has the C.P.R. a member? A. I am not sure. I believe the r men are associate members. The active members of the Association have to be actively engaged in land work.
Q Are there any companies, major companies, engaged in the search for oil, as my friend, Mr.Helman, puts it, in this Province that are not members of that Association? A. I really could not answer that question. I do not think there are.
Q Does the Association prepare a form of lease which is in common usage?
NR.HELMAN: My lord, surely we are getting very far afield with regard to this evidence, and I submit that it cannot be possibly relevant to this lawsuit as to what some group of men drew up with regard to a form of lease.
THE COURT: What have you to say in reply to that, Mr.Riley?
MR. RILEY: My lord, may I put it this way? You are vitally interested, as we all are, in this case, in the meaning of the word "petroleum", and you are interested in it with regard to the meaning given to it in the land world and in the commercial world, and you are interested, too, in the usage of the word in this Province. Now, those engaged in the business of searching for oil have an association called the Alberta Landmen's Association who prepared a document. Now, surely that is some evidence of the usage here of the word? It is not a case of me bringing in other transactions; I am bringing in a specimen form to show the usage of the word.
THE COURT: Well, perhaps if you would go far enough to ask the witness what use is made of this form and lay a proper foundation, and then if the form contains anything that is of value in ascertaining what the meaning of any word in it that you wish to direct attention to, then that would be all right, but at the moment I think the objection is a sound one.
Q MR. RILEY: What use is made, sir, of the form? You say these are prepared by the Alberta Landmen's Association? What are they used for?

A They are used for acquiring leases of mineral rights.
Q And by mineral rights is petroleum included?
A The lease states "petroleum, natural gas and related hydrocarbons".
Q How long has the form been used? A. I think it has been in use approximately one year, as near as I can remember.
Q Currently being used? A. I would believe so.
MR. RILEY: I suggest, my lord, it is admissible.
THE COURT: Yes, you can put it in now as an exhibit. Exhibit Number 61.

SPECIMEN FORM OF LEASE IN QUESTION MARKED EXHIBIT 61.

MR. RILEY: The lease, sir, is a document headed "Petroleum and Natural Gas Lease and Grant", and in the left-hand corner are the words "Alberta Landmen's Associatiion- Form 1."
Q Now, sir, in the experience which you have told us about as a landman, you have seen or have you seen the printed forms of other companies? A. Yes, I have.
Q Can you tell me whether or not there is any substantial difference between those forms and the last exhibit, Exhibit 61?
MR. HEIMAN: I must object to that evidence, my lord. It is pure hearsay. He is asking the witness if he has seen them used by other companies.
MR. RILEY: All right.
MR. HEIMAN: We are getting very far afield.
THE COURT: If you ask him if he knows the form, if he can identify it, and if he knows the contents, I see no objection to those questions.
Q MR. RILEY: Do you know the forms of the other oil companies, the printed forms? A. Yes.
MR. HEIMAN: My lord, I just wish to make my objection clear. This is purely hearsay evidence. And not only that, but we are getting the best evidence, we are not getting the best evidence, I mean. The best evidence is the forms used by the other companies. If my learned friend wants to put that in, surely he cannot ask the witness in the box to say that he knows the forms of other companies unless he has exhausted the subject and there is some reason

why he cannot get those forms and produce them in the Court.
THE COURT: I expected that he was goimg to do that.
Q MR. RILEY: You have some other forms with you, sir? A. Yes, I have.
Q What is the first form you have? A. I have one here that was used by Pacific Petroleums.
Q How do you know that form was used by Pacific Petro-
10 leums? A. Because I was in the employ of the Company and used it for them.
MR. RILEY: Right. I tender that, my lord, as Exhibit 62.

SPECIMEN FORM OF LEASE OF PACIFIC PETROLEUMS MARKED EXHIBIT 62.

MR. RILEY: This form starts "Petroleum
20 and Natural Gas Lease".
Q What is the next form you have with you? A. I have one here by the Canadian Pacific Railway Company.
Q How do you know that to be the form of lease of the Canadian Pacific Railway Company? A. It is one I have also seen used.
Q You have seen it used? A. Yes.
MR.HELMAN: Just how casual is that? How can a witness see the use of the document? That is a new expression to me, in any event.
30 MR. RILEY. Well....
THE COURT: Have you anything further to ask?
Q MR.RILEY: In what connection have you seenit used, sir? A. As a form of lease, completed lease.
Q How frequently? A. I have not seen very many of them in the last couple of years.
Q But you have seen it as a form that has been used?
A Yes.
40 MR. RILEY: I suggest, sir, it is admissible for what it is worth.
THE COURT: Under what circumstances did he see it, whether he knows anything about it, or whether the fact that he has seen it used is of any value?
Q MR. RILEY: Under what circumstances, sir, have you seen the lease used? A. In the

circumstances of a company receiving such a lease from the Canadian Pacific Railway Company.

Q And by a company what do you mean, a company engaged in what? A. In the oil business.

THE COURT: Subject to the objection, I am going to let it in. I am going to let it in largely on this ground, that if it is proven to be a form used by the Canadian Pacific Railway it is of some value in arriving at the meaning of the term "petroleum", and that is one of the, at least, one of the issues in this case.

MR. HELMAN: My lord,.....

THE COURT: This case demonstrates very clearly that a lawsuit is not a football game that is covered by certain rules and must be governed by them. The object of holding a court is to do justice to parties and if by refusing to accept all the evidence except that evidence which is brought in by definite rules, justice cannot be done, then the court is not performing its function. There are, in some cases, and this is one, in which there are continuous objections, and if the Court listened to those continuous objections an injustice would be done. I dismissed both of the applications that were made here last Thursday morning and I dismissed them on the ground that I was convinced that if I allowed those applications I could not possibly do justice to the parties and I could not possibly interpret these words that have arisen in this action correctly. That is why they were dismissed. I propose, notwithstanding the objections, if I believe that by letting in certain forms and from having the opportunity of reading those forms I am going to do justice to the parties and be better enabled to interpret the words that I have to interpret, then I intend to let them in, notwithstanding the numerous objections and the attempts that are being made to keep them out.

MR. RILEY: I tender that, my lord, as Exhibit 63.

SPECIMEN FORM OF C.P.R. LEASE MARKED EXHIBIT 63.

MR. RILEY: Just answer my friends, Mr. Burn.

CROSS-EXAMINATION BY MR. NOLAN:

Q Might I see Exhibits 61, 62 and 63, the form of lease? Exhibit 62 is dated the 4th of January, 1949, is it not? Would you mind looking at that? That is the date of the form? A. That is right.

Q There is no date on the form, Exhibit 61, being the form you refer to as being used by the Alberta Landmen's Association, is there? There is no date on that, but it is of recent origin, is it not? A. Yes, it is. Yes, I would say recent, within the last year.

Q I am looking now at Exhibit 63, Mr. Burn, which was the Canadian Pacific Railway Company form of lease of petroleum rights to which reference has been made. Do you know when that form came into existence, because it bears no date? A. Not actually, I do not.

Q Well, when did you first see this form? A. I have probably had that form for quite some time, a matter of three or four years.

Q But you do not know when it came into existence?

A No, I do not.

Q Thank you.

THE COURT: Any other questions?

MR. HEIMAN. No.

THE COURT: If there are no other questions, you are finished, Mr. Burn, thank you very much.

MR. STEER: My lord, with the exception of the evidence of Mr. Munro and Mr. Mackenzie, the officers of the two defendant Companies, who were directed to produce documents, that concludes the plaintiff's case, but I do not wish to close it, of course, until after we have had an opportunity of taking a look at those documents. I understand that my learned friends are agreeable. I am not quite sure of this, but there has been a discussion of our getting together and looking at the documents and, perhaps, tendering them without the necessity of calling evidence, and I would like an opportunity of discussing that question with my learned friends, if it meets with your lordship's approval.

TJE COURT: And would you be able to do that between now and 2 o'clock?

MR. STEER: Oh, yes, my lord.

THE COURT: Or half past one?

MR. NOLAN: It was understood by my learned

friends that the morning would be taken up by their evidence, as the arrangement was that Mr. Mackenzie would come here at half past twelve with the documents, and they would be looked at during the luncheon interval, but I think it would save time by having Mr. Mackenzie come earlier.

MR. RILEY: He is here now.

MR.NOLAN: If it can be done earlier, we can resume earlier.

THE COURT: Probably we had better adjourn until two o'clock.

MR.HELMAN: Mr. Munro has been working for some time and has tabulated the various reservations with regard to the leases by the Canadian Pacific Railway Company, and we have them in very convenient form here, and I would be very glad to show them to my friend and have him look at them and see if they comply with his requirements. As a matter of fact, I will hand it to him right now, and he can then look at it, and we will know that he has got it.

MR. STEER: Thank you,Mr.Helman. My lord, among the documents to be produced are inter-office correspondence with regard to these reservations, which might be, if it exists, as your lordship can see, very important evidence, and I would like to ask my learned friend whether a search has been made for that and with what result?

MR.HELMAN. As far as I know, my lord, there is no inter-office correspondence excepting such as may have taken place between solicitors acting for the C.P.R., which are not relevant and which are not admissible here.

MR. STEER: Do I understand that the correspondence is, for example, between the solicitor at Calgary and the solicitor in Montreal, or the head office of the company, with regard to these forms? Because under those circumstances, in my respectful submission, there is no privilege.

MR.HELMAN: Well, the solicitors' files have not been searched, because I considered them privileged.

THE COURT: Well, probably you had better discuss that between yourselves during the noon hour.

MR. STEER: Yes, my lord.

THE COURT: I do not think I can do anything about it at the moment. We will stand adjourned until 2 o'clock.

Afternoon Session,
November 21, 1950.

MR. STEER: My lord, subject to your lordship's approval, my friends and I have agreed, and my colleagues, that certain documents are to be put in evidence without the necessity of calling witnesses, and that there has been full compliance with your lordship's Order, with the exception of the production of certain inter-office correspondence between the Calgary office of Canadian Pacific Railway Company and its head office. It is said that the only correspondence that exists is between the solicitor at Calgary and the solicitor at Montreal. That situation is a little different from the ordinary situation in that I believe it will not be disputed that the solicitor in Calgary and the solicitor in Montreal are paid officials of the Canadian Pacific Railway Company, and whatever the rule may be as to professional privilege with regard to the ordinary situation, where there is clearly the relationship of solicitor and client, in my submission that rule does not apply in the case of inter-office correspondence between paid employees of the Canadian Pacific Railway Company, notwithstanding the fact that such paid employees may be solicitors. I quite appreciate that there may be a difficult question of law involved, but I am asking for the production of the documents.

MR. HELMAN: My lord, I thought my friend and I had agreed upon the documents that were to be produced, and I am taken by surprise that he is still reserving any problem in connection with these documents. It is quite clear, I submit, that the rule with regard to the position of a solicitor, whether employed by a company or not, who is giving advice to that company, is that the privilege obtains, because, otherwise, a company would be deprived of the opportunity of having the benefit of a solicitor's opinion merely for the reason that instead of going to see him part time, it has him full time. The rule is quite clear, my lord, with regard to matters of this kind. There is a judgment which your lordship will find in 2 Western Weekly Reports, at page 1010. It is a judgment in the case of Stapley v. Canadian Pacific Railway Company, which is a judgment of our Appellate Division and which deals with

precisely this problem. It is a judgment of Mr. Justice Walsh, concurred in by Chief Justice Harvey, Mr. Justice Stuart and Mr. Justice Simmons, and I think I can summarize it best by reading to your lordship what the headnote says. It says:

> "Letters and papers and copies thereof which have passed between a railway company's legal advisers and its servants, officers or agents in respect to matter in question in an action against the company for damages for personal injuries and intended for the purposes of the company's defence are prvileged from inspection."

And, again, my lord, that same case was followed by Mr. Justice Ford in the case of Maygard v. Canadian Pacific Railway Company, which is to be found in 1929 2W.W.R.

THE COURT: 1929?

MR. HELMAN: 1929, my lord. Volume 2, Western Weekly Reports.

THE COURT: Page?

MR. HELMAN: At page 27. And the headnote summarizes the judgment of Mr. Justice Ford. I will find the precise passage. It says:

> "The privilege is the client's and is between solicitor and client, as here between the C.P.R. and Mr. George A. Walker, K. C., its Alberta solicitor."

And the case holds that that communication was not admissible. And the same rule is true, my lord, whether there is any litigation pending or not. Your lordship will find it dealt with in 13 Halsbury. I am sorry I cannot get the reference for your lordship because it is not in the library, nor is it in the Judges' Library, nor is it in this room. We cannot seem to locate it. Have you got 13 Halsbury, Mr. Steer?

MR. STEER: No, I have not. I have Phipson here.

MR. HELMAN: The rule is quite clear. Whether or not there is litigation pending at the moment is a matter which makes no difference. It is a well-established rule of law understanding, my lord, and is a privilege which a court will not readily

break down, and never has sought to do so; a privilege of the confidential information which a lawyer gives to his client with regard to a matter in respect to which there has been an interchange of ideas between a lawyer and his client is the highest and most secret type of privilege known to English law. And I submit to your lordship that such documents are not producible. They are privileged. They are privileged communications and they are not in the possession, in any event, of the witness who has been subpoenaed, and I submit to your lordship that the witness should not be compelled to produce them and I would strongly submit, my lord, that there is absolutely no difference between whether he is paid and acts for the C.P.R., and, of course, in the judgment of Mr. Justice Ford, that was dealt with here, in Maygard v. the C.P.R., and at that time Mr. George Walker was a paid solicitor, and there is no difference, there is no distinction that can be made between a paid solicitor, merely because he gives all his time to the company's affairs, and one who is consulted from time to time in connection with the matter. I submit that in the clearest way that this evidence is not admissible, and that your lordship should not break down a privilege which has been respected, and always is respected, as between a lawyer and his client.

MR. STEER: The only ground on which I could suggest that there is any distinction is the one that my learned friend has just referred to, and with your lordship's permission, I would like an opportunity to look at that judgment of Mr. Justice Ford, which appears to say that in litigation at any rate, communications between a solicitor and his employer are privileged, and to have an opportunity of making up my mind whether I will pursue the question further. If your lordship would simply reserve the question and permit us to speak to it at a later date, I would ask you to do that.

THE COURT: All right, I will permit you to speak to it.

MR. NOLAN: My lord, with regard to Imperial Oil Limited and your lordship's judgment today with regard to the witness Mackenzie, it has been suggested to me that if I would produce the documents in, as nearly as I can, chronological order, and entitle them as best I can, and then hand them to my friends, who have already seen them, for

whatever use they wish to make of them, that that perhaps might facilitate the proceedings, and my friends agreed to that procedure, my lord.

May I first then, sir, produce what I may call the Lethbridge Area lease. That formal lease, my lord, is multigraphed, a multigraphed form, undated, and of course it has no Form number. I wonder if my friends would like to comment on it before I go on to the next. That, perhaps, might be more convenient.

MR. STEER: Yes.
THE COURT: Do you want to put it in?
MR. STEER: Yes, my lord.
THE COURT: Exhibit 64.
MR. NOLAN: These, of course, are subject to the objection that I have been constantly making, that they are irrelevant and inadmissible.

IMPERIAL OIL LIMITED LETHBRIDGE AREA LEASE MARKED EXHIBIT 64.

MR. STEER: Now, my lord, I doubt whether I will take the time to refer to these as we go along. I think if they are drawn to your lordship's attention, perhaps in argument that might be sufficient. I would like to call your lordship's attention, with regard to this document, that it is a lease, and the date of it we do not know.
MR. NOLAN: No, we have not the date.
MR. STEER: And it is leasing unto the lessee all the petroleum and natural gas and related hydrocarbons owned by the lessor.
THE COURT: And these are being put in a group as though they were produced by whom?
MR. STEER: By Mr. Mackenzie, my lord.
MR. NOLAN: Mr. W. D. C. Mackenzie, my lord, to whom the notice to produce as a witness was addressed.
THE COURT: All right.
MR. NOLAN: And of course they are being put in by the plaintiff.
MR. STEER: Oh, yes.
MR. NOLAN: The second one, my lord, is another multigraphed copy of what we call our De Winton area lease, and it is an actual lease, because we have

to produce one to show the form used in that area, and it is dated the 13th day of December, 1943.

MR. STEER: Leasing all the petroleum and natural gas and related hydrocarbons other than coal and valuable stone.

THE COURT: Exhibit 65.

IMPERIAL OIL DE WINTON AREA LEASE MARKED EXHIBIT 65.

MR. NOLAN: Then, my lord, I produce a multigraphed copy of the form of lease used in the Leduc area. It is not on a printed form and it is not dated, and is a blank specimen for the Leduc area.

MR. STEER: This, of course, can be said to date from subsequent to the discovery of oil in Leduc?

MR. NOLAN: No. Wait a minute. It is an older form that was adopted for use in the Leduc area when that area became productive.

THE COURT: Exhibit 66.

SPECIMEN FORM IMPERIAL OIL LEDUC AREA LEASE MARKED EXHIBIT 66.

MR. STEER: That leases all petroleum, natural gas and related hydrocarbons, my lord.

MR. NOLAN: Then I produce, my lord, as directed, a printed or standard form of lease of petroleum and natural gas, being standard Form 23619 Rev. (5m-6-47.) The title being "Petroleum and Natural Gas Lease."

MR. STEER: It also is a lease of all the petroleum and natural gas and related hydrocarbons, my lord.

THE COURT: Exhibit 67.

SPECIMEN FORM IMPERIAL OIL PETROLEUM AND NATURAL GAS LEASE MARKED EXHIBIT 67.

MR. NOLAN: Then there is a Petroleum and Natural Gas Lease, printed on Form 23619 Alberta (5m-8-48), with Imperial Oil being the lessee in that case.

MR. STEER: I would take it that that "-48" would refer to the date on which this document was printed.
MR. NOLAN: Yes.
MR. STEER: That is right?
MR. NOLAN: Yes.
MR. STEER: This, again, leases all the petroleum and natural gas and related hydrocarbons, my lord.
THE COURT: Exhibit number 68.

SPECIMEN FORM IMPERIAL OIL PETROLEUM AND NATURAL GAS LEASE MARKED EXHIBIT 68.

MR. NOLAN: Then I produce a printed form, my lord, of a petroleum and Natural Gas Lease, being Form 23626-Alberta (2M-9-48), followed by the word "Prepaid", and that means to say that the rentals under that lease are all prepaid and not paid from year to year, as is ordinarily the case.
MR. STEER: Leasing all the petroleum and natural gas and related hydrocarbons, my lord.
THE COURT: Exhibit number 69.

SPECIMEN FORM IMPERIAL OIL PETROLEUM AND NATURAL GAS LEASE MARKED EXHIBIT 69.

MR. NOLAN: I produce, my lord, a printed form of Petroleum and Natural Gas Lease, being Form 23619-Alberta (4m-11-49).
MR. STEER: Again leasing all the petroleum and natural gas and related hydrocarbons, my lord.
THE COURT: Exhibit 70.

SPECIMEN FORM IMPERIAL OIL PETROLEUM AND NATURAL GAS LEASE MARKED EXHIBIT 70.

MR. NOLAN: And then, my lord, I was directed to produce other documents that we might have related to petroleum, petroleum products, natural gas and natural gas products, being leases or licenses or agreements, and I have now a number of miscellaneous documents, the first being a multi-

graphed Crown land assignment not now in use, but something that I am bound to produce under your lordship's direction.

MR. STEER: This appears to be a grant from the Crown and the right and privilege to drill for, remove and dispose of the petroleum and natural gas within and under certain lands.

MR. NOLAN: I think you will find that it is an assignment of a grant from the Crown.

MR. STEER: Oh, yes. I think we won't put that in.

MR. NOLAN: As you wish. I produce now, my lord, the form of assignment of lease used by Imperial Oil Limited.

MR. STEER: No, I won't put that in.

MR. NOLAN: I now produce a form of farmout agreement used by Imperial Oil Limited on a multigraphed form with no form number.

MR. STEER: This, my lord, as I understand it, and my friend will correct me if I am wrong, is an assignment of a lease of petroleum and natural gas rights held by the Imperial Oil Limited from the Crown, assigned to an assignee for the purpose of having the assignee comply with the drilling requirements of the lease.

MR. NOLAN: No.

MR. STEER: No?

MR. NOLAN: No. This is what we call a "farmout" agreement, and the form that is used on the acreage in the Leduc area whereby we farm out on the proven lands to somebody else who takes the risk of drilling and bringing something into production.

MR. STEER: Perhaps I ought to read it, my lord.

> "WHEREAS Imperial is the holder of a certain Petroleum and Natural Gas Lease (hereinafter called 'the Lease') from" . . .

Now, there is a blank following the word "from". Now, you say that is not the Crown?

MR. NOLAN: Not necessarily.

MR. STEER: But it might be the Crown or it might be somebody else?

MR. NOLAN: That is right.

MR. STEER: From the Crown or some other

person,

"dated the day of A. D. 19 , for the term of years, to be computed from the day of A.D. 19 , renewable as therein provided and comprising the petroleum and natural gas rights in all and singular the following lands, namely:

(hereinafter referred to as the 'demised rights'): and

WHEREAS the Farmee . . ."

That is the other party to the agreement,

". . . has agreed with Imperial to undertake the drilling of a well for petroleum and natural gas on Legal Subdivision

within the time and subject to the terms and conditions hereinafter set forth in consideration for which Imperial is prepared to sublet to the Farmee the demised rights insofar as and to the extent only that the same relate to and comprise all that portion of"

leaving a blank for the description of the lands. I will tender that, my lord.

THE COURT: Exhibit 71.

SPECIMEN FORM IMPERIAL OIL "FARMOUT" AGREEMENT MARKED EXHIBIT 71.

MR. NOLAN: The next, my lord, I may describe as an option to acquire a lease, being a multigraphed form that we used, and this is undated.

MR. STEER: The optionor has agreed to grant to Imperial the exclusive right to acquire a lease of all the petroleum and natural gas and related hydrocarbons, except coal and valuable stone, within, upon or under the said lands."

THE COURT: Exhibit number 72.

SPECIMEN FORM IMPERIAL OIL OPTION TO ACQUIRE A LEASE MARKED EXHIBIT 72.

MR. NOLAN: Then, my lord, I produce what I would describe as a freehold sub-lease, which is on a multigraphed form. That is an instance where we obtained the petroleum and natural gas rights from a freehold owner.

MR. STEER: Oh, yes. The operative clause, my lord, reads as follows:

> "Now therefore this indenture witnesseth that in consideration of the sum of One Dollar ($1.00) paid to the Sub-Lessor by the Sub-Lessee. . . " -

Imperial being the sub-lessor -

> "the receipt whereof is hereby acknowledged, and in consideration of the royalties and the oil payment hereinafter reserved and the covenants of the Sub-Lessee hereinafter contained subject to the provisoes, restrictions, conditions and stipulations hereinafter expressed or implied and the reservations, exceptions, conditions and stipulations reserved, contained or implied in the original grant from the Crown as shown on the existing Certificate of Title of the said lands or registered or affecting the said lands, the Sub-Lessor DOTH HEREBY SUBLET unto the Sub-Lessee all the petroleum and natural gas and related hydrocarbons, (hereinafter referred to as 'the leased substances'). . ."

I tender that, my lord.

THE COURT: Exhibit 73.

SPECIMEN FORM IMPERIAL OIL FREEHOLD SUB-LEASE MARKED EXHIBIT 73.

MR. NOLAN: Then I produce a mimeographed form of a Crown sub-lease, the previous one being a "freehold" sub-lease and this being a "Crown" sub-lease.

MR. STEER: Yes. The Imperial Oil Limited being the sub-lessor.

> "Now therefore this indenture witnesseth that in consideration of the sum of One Dollar ($1.00) paid to the Sub-Lessor by the Sub-Lessee, the

"receipt whereof is hereby acknowledged, and in consideration of all the rents and royalties and the oil payment hereinafter reserved and subject to the conditions, covenants, provisoes, restrictions and stipulations hereinafter expressed and contained, the Sub-Lessor doth hereby sub-let unto the sub-lessee insofar as it has the right to grant the same the exclusive right and privilege to drill for petroleum and natural gas within or upon the said lands" etc.

I tender that.

THE COURT: Exhibit 74.

SPECIMEN FORM IMPERIAL OIL CROWN SUB-LEASE MARKED EXHIBIT 74.

MR. NOLAN: Then, my lord, we were in some doubt that our printed Easement form, being Form 22501 Alberta (5M-10-48), as to whether that came within the scope of the words "relating to petroleum, petroleum products, natural gas and natural gas products," or whether it is only in respect of an interest in land, and the sort of document that we draw up when we are entering into a pipe line arrangement, but I produce it, my lord, if my friend desires to use it.

MR. STEER: Yes, I would just tender this, my lord.

THE COURT: Exhibit 75.

SPECIMEN FORM IMPERIAL OIL EASEMENT FORM MARKED EXHIBIT 75.

MR. STEER: It is a grant of a right-of-way for the laying down, construction, operation, maintenance, inspection, removal, replacement, reconstruction and repair of a pipe line or lines, together with all such stations, structures, drips, valves, fittings, meters and other equipment and appurtenances as may be necessary or convenient in connection therewith for the carriage, conveyance, transportation and handling of petroleum or petroleum products, water and/or gas through or by means of

the same, together with the right of ingress and egress for all purposes incidental to the grant, . . . " etc.

MR. NOLAN: Now, my lord, I was asked to produce Letters Patent of the defendant, Imperial Oil Limited. I regret to say there has been some delay in their transmission. Actually they are on their way and will be here tomorrow, and, my lord, I have arranged with my friend that they be given a tentative number and that the Letters Patent be filed under that number, if that is agreeable to your lordship.

THE COURT: Exhibit 76.

LETTERS PATENT OF IMPERIAL OIL LIMITED MARKED EXHIBIT 76.

MR. HELMAN: My lord, in connection with the summons to, or in order to attend to Mr. Munro, we have supplied my friends with a vast number of documents, and we have complied in every conceivable way with regard to the demand. We have every form of document that has been used. And Mr. Munro provided, my lord, a summary of the reservations in contracts so far as he was able to obtain any as used from the years 1890 to 1918 inclusive, which was what he was required to do in the summons, and I would like to give that to my learned friend. I think he already has a copy of it.

MR. STEER: Yes, I have a copy of it.

MR. HELMAN: And perhaps it might be of some value to your lordship, and then Mr. Mitchell has the various forms of agreements and the various forms of transfers and the various forms of leases. I think they are all here.

MR. MITCHELL: Mr. Steer has those now.

MR. HELMAN: Probably they can get them back and show the fullest type of production we have made in connection with the matter.

THE COURT: Do you want to look them over then, Mr. Steer?

MR. HELMAN: My friend saw them all during the noon hour.

MR. STEER: Yes, that is right. I was proposing, my lord, to put them in, and I was proposing to put them in along with the two lists which Mr. Munro

has so carefully prepared for us. That, it seems to me, would be the most expeditious way of dealing with the matter, but if my friend wants to produce them, or wants to put them in, it is quite satisfactory to me.

MR. HELMAN: I have no objection to you doing it, Mr. Steer. Are you going to do it?

MR. STEER: I was proposing to do so.

MR. HELMAN: That is just fine. You go ahead and do it and we will listen.

MR. STEER: Before I leave the Imperial Oil documents, it is understood, I take it, between my learned friends for the Imperial Oil Limited and myself that the documents that have been put in are or have been in common use by Imperial Oil Limited.

MR. NOLAN: In use, yes, and some of them used more extensively than others, as is, of course, obvious on their face.

MR. HELMAN: I do not like to make this objection every time, but I am doing it merely for the record, my lord, in view of your lordship's ruling already but I am taking the objection that these are inadmissible.

MR. STEER: I thought we had an understanding as to that.

MR. HELMAN: You mean that we did not have to repeat it?

MR. STEER: Yes. Now, I am putting in first, my lord, what is produced to me as a form of natural gas lease from the Canadian Pacific Railway Company to blank,

> "Do hereby lease to of all the natural gas which may be found within, upon or under the said land for the sole purpose of drilling and operating for the same, and for that purpose to enter upon, use and occupy the said land or so much thereof. . " etc.

I will put that in, my lord, as of approximately, I understand, 1914 or 1915, as the date when the document was prepared and used to some extent by the railway company.

MR. MITCHELL: Approximately around that date.

MR. STEER: And attached to it are the Regulations, my lord.

THE COURT: Exhibit 77.

SPECIMEN FORM C.P.R. LEASE OF GAS RIGHTS, TOGETHER WITH ATTACHED REGULATIONS NOW MARKED EXHIBIT 77.

MR. STEER: Then I next tender, my lord, a Petroleum Reservation "for the purpose of locating or determining the existence of petroleum structures within, upon or under said lands, of which petroleum, including natural gas, the railway company is the owner, said lands being -"
Now, my learned friend Mr. Mitchell tells me that this is the form in use in 1950.
MR. MITCHELL: That is correct.
MR. STEER: And that he will produce one of the old forms. The only difference between this and the old form is that instead of reading "petroleum including natural gas" the old form reads "petroleum and natural gas".
MR. MITCHELL: That is correct.
MR. STEER: That is correct?
MR. MITCHELL: Yes.
MR. STEER: I tender that.
THE COURT: Exhibit 78.

SPECIMEN FORM C.P.R PETROLEUM RESERVATION MARKED EXHIBIT 78.

MR. STEER: Then I produce, my lord, an agreement of the 4th of February, 1947, between Canadian Pacific Railway Company and Imperial Oil Limited, under which rights were reserved by the Canadian Pacific Railway Company to the Imperial Oil Limited.
MR. MITCHELL: That is the latest agreement, continuing the old agreement, amending and continuing the original agreement.
MR. STEER: The original agreement being also produced and dated the 1st of January, 1942. May I tender those as one exhibit, my lord.
THE COURT: Exhibit 79.

TWO AGREEMENTS BETWEEN C.P.R. AND IMPERIAL OIL LIMITED MARKED EXHIBIT 79.

MR. STEER: The next document that is produced is a set of Canadian Pacific Railway regulations for the disposal of petroleum rights, the property of the Canadian Pacific Railway Company in the Provinces of Manitoba, Saskatchewan, Alberta and British Columbia, which I think perhaps are out of date and probably we need not file, I am sorry, my lord. There is attached to this Master agreement, Exhibit 79, a form of lease which will come into play in the course of the operation of the agreement.

There are produced now, my lord, eight different forms of leases used from time to time by the Canadian Pacific Railway with respect to petroleum and natural gas.

MR. MITCHELL: That is correct.

MR. STEER: And a summary has been provided by Mr. Munro and Mr. Mitchell, and with your lordship's permission, I would attach the summary to the eight different forms and ask your lordship to file them as one exhibit.

THE COURT: Exhibit 80.

EIGHT FORMS PETROLEUM AND NATURAL GAS LEASES OF CANADIAN PACIFIC RAILWAY, TOGETHER WITH SUMMARY, MARKED EXHIBIT 80.

MR. HELMAN: My lord, Mr. Steer inadvertently, no doubt, in referring to this last summary, said that it was the summary of leases respecting petroleum and natural gas, but that is not entirely accurate because the first one is a lease of petroleum rights and the last one on there, your lordship will see, is respecting mines and minerals. I think the intermediate ones, however, are petroleum and natural gas.

MR. MITCHELL: Actually, Mr. Steer, one of those leases is called a "Petroleum Lease" and does not include the words "Natural Gas" on the form itself.

MR. STEER: Perhaps I should say petroleum and/or natural gas.

MR. MITCHELL: Yes, and/or.

MR. STEER: That would meet the situation, and I would ask, my lord, that this set

of Regulations, dating as from 1914, as I understand it . . .
MR. MITCHELL: That is correct.
MR. STEER: That is correct, Mr. Mitchell?
MR. MITCHELL: Yes.
MR. STEER: Regulations for the disposal of petroleum rights, the property of the Canadian Pacific Railway Company, in the Provinces of Manitoba, Saskatchewan, Alberta and British Columbia. I would ask to put those in.
THE COURT: Exhibit 81.

REGULATIONS IN QUESTION MARKED EXHIBIT 81.

MR. STEER: Now, could we have your Agreement, Mr. Mitchell?
MR. MITCHELL: Well, Mr. Steer, in that connection, I would like to point out to yourself and his lordship that we have gone through our contract forms since 1890 and up to 1918, as you will have noticed from the list we have here, and I do not know whether his lordship has a copy of this list or not . . .
MR. STEER: I propose to file one.
MR. MITCHELL: And we have a copy of the contract for each of those years and, as you will notice from the list, the form is repeated from year to year and changes only occur every so many years. For instance, we start with 1890 with the reservation in the contract of all coal and valuable stone, all coal or valuable stone, and it is not until 1901 that a change occurs, and I have here attached ten of the contracts for the years 1890 to 1900 which have identical reservations "all coal or valuable stone" and I do not see any necessity to put the ten of them in. I think one would do.
MR. STEER: Oh, yes.
MR. MITCHELL: Unless Mr. Steer wants them all in, I can see no purpose in putting them all in.
MR. STEER: I think one will be sufficient.
MR. MITCHELL: That, my lord, will involve separating these documents by years.
THE COURT: Why not put them all in? They are all attached.
MR. MITCHELL: They are all attached and there is a list to go in with them.

THE COURT: They can go in with that explanation.

MR. STEER: Yes, my lord. I will attach the summary and ask to have those marked, my lord.

THE COURT: Exhibit 82.

A NUMBER OF C.P.R. CONTRACT FORMS, TOGETHER WITH ATTACHED SUMMARY, MARKED EXHIBIT 82.

MR. STEER: My lord, what my friend has done is to take these documents and take the years from 1890 to 1918, and he has given us an individual contract in each of those years, and in the next column he gives the contract Form number and the date printed, the date that the form was printed, and the next column he has given us the reservation in the contract. . .

MR. MITCHELL: May I interrupt just a moment? It does not show the date that the form was printed. It shows the date that the form was used and the form number.

MR. STEER: The heading says "Contract Form No. and date printed."

MR. MITCHELL: I see. I do not understand it. Just a moment. Oh, yes, that is correct. That is the date, those are the dates that the forms in question were printed. I am sorry, Mr. Steer. I did not realize that Mr. Munro had gone to that much trouble.

MR. STEER: Well, then, in the next column is set out the reservations in the contract, and in the next column is the transfer form number, that is to say, the number of the transfer form that was issued in compliance with the contract; and then in the next column is set out the reservation in the transfer, but in most cases there has been no record of that, which, I think, is a matter of no importance. The agreement is here. And in the last column is a column headed "Searched in Land Titles office." What is the significance of that, Mr. Mitchell?

MR. MITCHELL: To check the form of reservation in the transfer.

MR. STEER: I see.

MR. MITCHELL: Are you ready for the transfers, Mr. Steer?

MR. STEER: Yes.
MR. MITCHELL: The same remarks apply with regard to the transfers, my lord. These transfers have been prepared year by year, and I have got copies of all of the forms of transfers that have been used pursuant to the contracts that are shown on the list attached to the contracts, and I have extra copies of those, and I will separate one copy, and we will have it marked. There happens to be four copies attached and I will separate them right now.
MR. STEER: Perhaps Mr. Mitchell will do it right now?
MR. MITCHELL: It won't take me long to separate these. There is no use of putting in extra copies.
MR. STEER: Now, what these are, Mr. Mitchell, they are transfers of forms or forms of transfer, I mean, that are referred to in the preceding exhibit.
MR. MITCHELL: That is correct, Mr. Steer.
MR. STEER: Could I tender those, my lord?
THE COURT: Exhibit 83.

SPECIMEN FORMS OF TRANSFER FROM CANADIAN PACIFIC RAILWAY COMPANY MARKED EXHIBIT 83.

MR. HELMAN: When your lordship is reading the summary, you may be curious as to the word "male" appearing under the heading "Contract Form number and date printed", and that apparently was a form that was used for contracts, for persons of the masculine gender. There is only one female one appearing on page 2, and that is for someone of the feminine gender.
MR. STEER: I thought it referred to persons of the female sex. That completes the plaintiff's case, my lord.
MR. HELMAN: When I was referring you to the authorities previously on the question of privilege, there was one that I could not find at the moment I was talking, and I was wondering if I could give it to your lordship now.
THE COURT: Yes.
MR. HELMAN: It is in 13 Halsbury, 2nd Edition, at page 725. And the passage there is,

"Confidential communications, whether oral or written, passing between a client and his legal advisers, i.e., solicitor or counsel, and whether made directly or indirectly through an agent of either, are, if made for the purpose of obtaining or giving legal advice, privileged from disclosure; neither the client nor the legal adviser can be compelled to disclose such communications. The communications to be privileged must have been made to or by the legal adviser in his professional capacity, and while the relation of client and legal adviser subsisted, but it is immaterial whether such communications were or were not made when litigation was pending or contemplated."

THE COURT: Thank you. Are you ready, Mr. Nolan?

MR. NOLAN: Yes.

D E F E N C E

MR. NOLAN: May it please your lordship: In opening the Defence by Imperial Oil Limited it seemed to me that I should advert just for a few minutes to the evidence that has already been adduced in this case, and to the evidence which we propose to bring before your lordship, together with a short statement of our contentions and how we hope to establish them in your lordship's court.

It will be remembered from Mr. Steer's opening that we were told that the action was instituted on the 16th of November, 1949, by the plaintiff Micheal Borys claiming a judgment declaring that he was the owner of the natural gas within, upon and under the northeast quarter of Section 19, Township 50, Range 26, West of the 4th Meridian. There has been placed in evidence, my lord, Exhibit 5, which is a Certificate of Title number 165-N-120, which shows that the plaintiff Micheal Borys is shown in the records of the Land Titles Office for the North Alberta Land Registration District as being the owner of an estate in fee simple of and in the northeast quarter of Section 19, Township 50, Range 26, West of the 4th Meridian, reserving thereout all coal, petroleum and valuable stone. And for your lordship's convenience I repeat that that is to be found in Exhibit 5.

We will contend, my lord, that that sttement or allegation contained in paragraph 2 of the Statement of Claim, in which the plaintiff alleges that he is the owner of all mines and minerals except gold, silver, coal and petroleum and valuable stone, is not a correct statement of his ownership.

In Exhibit 1, the defendant, the C.P.R., by patent from the Crown, acquired the northeast quarter of the said Section 19 without any reservation as to gold and silver. It will be contended that the C.P.R. is now, and at all times material has been, the owner of an estate in fee simple of all coal, petroleum and valuable stone, within, upon or under the said northeast quarter of Section 19. And,

my lord, that patent from the Crown is to be found in Exhibit 1 in the case.

Exhibit No. 8, which has been put in, shows that the C.P.R., by virtue of title number 2687-C.P.R. issued by the Registrar of the Land Titles office on September 2nd, 1900, was then and is still registered as owner of all coal, petroleum and valuable stone within, upon or under the said northeast quarter of Section 19. Exhibit number 2 in the case, my lord, discloses that on the 13th of September, 1906, at a time when the C.P.R. was the registered owner of the northeast quarter of 19 without any reservation or exceptance made a written contract with Simon Borys to sell to him for $1280, payable by instalments, the said northeast quarter of Section 19, subject to "the rights-of-way and other exceptions hereinafter contained."

Now, in that land contract, my lord, Simon Borys, the purchaser, agreed as follows:

> "That he will within one year from the date hereof settle with his family upon the said land"

and "break up at least one sixteenth of the said land" or "erect a substantial fence around the said land to the satisfaction. . . of the Company; provided, however, that if the Purchaser is already resident upon adjacent land such actual settlement upon the said land will be dispensed with by the Company."

And "That he will furnish the . . . Company with satisfactory proof of such settlement and breaking or fencing within one year from the date hereof."

I have paraphrased that, my lord, but I think that is, in substance, what Mr. Borys agreed.

In the same contract, my lord, the C.P.R. agreed that if the purchaser,

Mr. Simon Borys, should pay

> "the several sums of money aforesaid punctually at the several times above fixed and shall in like manner strictly and literally perform all and singular the aforesaid conditions, then he, his heirs or assigns approved as hereinafter provided, upon request .... and the surrender of this Contract, shall be entitled to a Deed or Patent conveying the said premises in fee simple.... but subject to the reservations, limitations, provisoes and conditions expressed in the original grant from the Crown and reserving all coal, petroleum and valuable stone on or under the said land".

Your lordship has seen in Exhibit Number 12, and the certified copy which is to be found in Exhibit Number 3, a transfer executed by the C.P.R. on the 17th day of January, 1918, to Mr. Simon Borys, of the Northeast Quarter of Section 19, reserving unto the Canadian Pacific Railway Company, their successors and assigns, all coal, petroleum and valuable stone which may be found to exist within, upon, or under the said land. And that transfer, my lord, was registered on the 19th of November, 1920, in the Land Titles Office, as shown by the two exhibits I have mentioned, 3 and 12.

Now, on that date, my lord, on the 19th of November, 1920, Simon Borys was recorded under Certificate of Title Number 243-M-50 as being registered as the owner of an estate in fee simple of the Northeast Quarter of Section 19 containing 159 acres, more or less, and reserving unto the Canadian Pacific Railway Company, all coal, petroleum, and valuable stone, which is shown by Exhibit 4 in the case.

At that time, my lord, the C.P.R. Certificate of Title Number C.P.R.-2687, Exhibit 8, that Certificate of Title was cancelled as to the Northeast Quarter of Section 19, excepting, however, unto the C.P.R. a reservation of all coal, petroleum and valuable stone.

It has been disclosed in

evidence, my lord, by Exhibit 13, that on the 16th day of July, 1923, Simon Borys executed a transfer under the Land Titles Act of the said Northeast Quarter of Section 19, reserving unto the C.P.R. all coal, petroleum and valuable stone, in favour of his wife, Ahafia Borys, and on the 19th of July, in that same year, 1923, that transfer was registered in the Land Titles Office, and on that date Ahafia Borys was recorded in Certificate of Title Number 7-C-58 as being registered as the owner of the North-east Quarter of 19, reserving unto the C.P.R. all coal, petroleum and valuable stone.

On the 13th of January, 1926, a new Certificate of Title Number 160V-62 was registered showing Simon Borys, Roman Kogiol and John Sawula, trustees of the Russian Orthodox Church, to be the registered owners of .50 acres of the Northeast quarter of Section 19, reserving thereout all coal, petroleum and valuable stone. I am not aware that there is any exhibit in yet which discloses that certificate of title.

Now, Exhibit 14 shows that on the 27th of November, 1947, Simon and John Borys, the executors of the estate of Ahafia Borys, executed a transfer of 158.50 acres, more or less, of the said Northeast Quarter of Section 19, "subject to the conditions, stipulations, exceptions and reservations contained in the existing Certificate of Title", and the transfer was in favour of Micheal Borys, present plaintiff in this action.

And then, my lord, Exhibit 8 discloses that on the 21st of September, 1949, the C.P.R., being registered as owner of the petroleum within, upon or under the Northeast Quarter of Section 19, as it is described in the Certificate of Title registered in the Land Titles Office as Number C.P.R. 2687, leased to Imperial Oil Limited the petroleum which may be found within, upon or under the said lands and the right to work, win and carry away the same.

The evidence also discloses that on the 12th of October, 1949, Mineral Certificate Number 719MM was issued by the Registrar of the Land

Titles Office for the North Alberta Land Registration District pursuant to Section 189(a) of the Land Titles Act, Chapter 205, Revised Statutes of Alberta, 1942, as amended, and that Certificate is disclosed in and bound with Exhibit 6, and was marked by your lordship yesterday as Exhibit 6A, when Mr. Thom, the Registrar of the North Alberta Lamd Registration District was in the box.

And then, my lord, on December 15th, 1949, as shown by Exhibit 6, Imperial Oil Limited registered its said lease in the Land Titles Office for the North Alberta Land Registration District as Number 7446-HJ.

The plaintiff contends that the term "petroleum", as set forth in Paragraph 7 of his Statement of Claim, which I paraphrase, does not embrace or include natural gas, and that the said natural gas is, in fact, a separate substance from petroleum; and in his Statement of Claim, Clause (a) of the Prayer for Relief, he asks for a judgment declaring that the plaintiff is the owner of the natural gas within, upon or under the said lands, that is to say, the Northeast Quarter of Section 19.

The contention of Imperial Oil Limited, the Defendant whom I represent, is that natural gas within, upon or under the lands is embraced within the reservation of the word "petroleum", as is set out in Paragraph 5 of the Statement of Defence of the Defendant Imperial Oil. And the Defendant Imperial Oil further contends that by virtue of a lease from the C.P.R. it has the right to work, win and carry away petroleum in all of its forms of occurrence, including its gaseous phase or so-called natural gas which may be found within, upon, or under the said lands, as alleged in Paragraph 8 of the Statement of Defence. And, alternatively, Imperial Oil says if it has not the right to work, win and carry away the natural gas which may be found within, upon or under the lands, then it has the right to work, win and carry away

(1) the natural gas occurring in the same reservoir with the petroleum in its liquid phase;

(2) the natural gas that may be contained

in solution in the petroleum in its liquid phase;

Or

(3) without compensation to the plaintiff to remove, appropriate, convert, use and dispose of such natural gas or any other substances as may be necessary or incidental to work, win or carry away the petroleum in its liquid phase which may be found within, upon or under the said lands, as alleged in Paragraphs 9, 10 and 11 of the Statement of Defence.

The Imperial Oil, in its Counterclaim, my lord, asks for four things:

(a) A Judgment declaring that the Plaintiff by Counterclaim, Imperial Oil Limited, has the right to work, win and carry away petroleum in any or all of its forms, including its gaseous phase or so-called natural gas, which may be found within, upon or under the said lands;

(b) A Judgment declaring that the Plaintiff by Counterclaim, Imperial Oil Limited, has the right, without compensation to the Defendant by Counterclaim, to remove, appropriate, convert, use and dispose of such natural gas as may be necessary or incidental to work, win or carry away the petroleum within, upon or under the said lands;

(c) In the alternative, a Judgment declaring that if the Plaintiff by Counterclaim, Imperial Oil Limited, has not the right to work, win and carry away the natural gas, it has the right to work, win and carry away the natural gas occurring in the same reservoir with the petroleum in its liquid phase within, upon or under the said lands;

and

(d) In the further alternative a Judgment declaring that if the plaintiff by Counterclaim, Imperial Oil Limited, has not the right to work, win and carry away the natural gas, it has the right to work, win and carry away the natural gas contained in solution in the petroleum in

its liquid phase within, upon or under the said lands.

And then, my lord, it will be adduced in evidence, and we will contend, that petroleum in its widest sense embraces all the hydrocarbons whether they are gaseous, liquid or solid occurring in nature. We will endeavour to establish to the satisfaction of the Court that it is generally accepted that oil and gas are of a common origin, that they are both hydrocarbons, and that they originate from the same source bed. We will contend, my lord, and will prove, that petroleum is a mixture of naturally occurring hydrocarbons, hydrocarbon compounds, and may be in the solid, liquid or gaseous state. We will prove that these phases of petroleum are transmutable, one into the other, by the application of changes in temperature and pressure.

We will show by evidence the impracticability or impossibility of producing oil without gas, and it will be shown by evidence as to

(a) the types of commercial oil and gas fields;

(b) the solubility of petroleum gases and solids in petroleum liquids;

(c) free gas;

(d) the principles of recovering oil;

(e) gas produced from oil wells;

and (f) conflicts in interests that can arise from separate ownership in oil and gas in the same land and reservoir.

We will contend, my lord, that all coal, petroleum and valuable stone, being the reservation to the C.P.R., in other words means the petroleum in the Northeast Quarter of Section 19 in its widest and most comprehensive sense and was reserved to and was owned by the C.P.R. and leased to Imperial Oil. We will contend that the term "all petroleum" describing the C.P.R.'s

estate and interest in the land, and also describing what is excluded from the Borys title, is a generic term and should be construed in a wide and not restricted to the specific sense. In other words, that the term "all petroleum" includes the whole family of hydrocarbons known to science and not merely the liquid members of the family.

We will endeavour to show, my lord, that the term "all petroleum" describing the portion or interests in the parcel of land which is reserved out of the plaintiff's title, and that also describes what land interest or estate in the parcel belongs to the C.P.R., is a scientific or technical term, and we will bring forth evidence to establish that, we hope, to your lordship's satisfaction.

We will contend, my lord, that the rule of interpretation as to technical or scientific words when used in a document, must be given their technical or scientific meaning unless there be something in the context of the documents themselves to show that they were to be used in a popular or secondary sense.

We will prove, my lord, that the term "all petroleum" is a scientific or technical one, and we will call witnesses who, by their testimony, will refer to eminent and well-known writers on the subject.

And then, my lord, finally we will contend that the construction of the words "all petroleum" put forward by the plaintiff, namely, that it does not include natural gas, leads to an absurdity because oil and liquid petroleum are so intermixed with natural gas, the gaseous petroleum in the land or the reservoir, that the one cannot be recovered without the other. Expert evidence will be adduced to prove that fact, and in argument authorities will be cited to support that contention.

Now, my lord, I think that is sufficient because Mr. Steer made a very full opening, and what I have been trying to do in the last

few minutes was to tie together the evidence that has been put in and to give your lordship an outline of the evidence that we will adduce in support of our contention. May I call Mr. Gustafson, of Imperial Oil?

THE COURT: Do you want to say anything at this moment, Mr. Helman?

MR. HELMAN: No, my lord. Any remarks I have to make I will make after Imperial has completed its case.

JOHN DAVID GUSTAFSON, having been first duly sworn, examined by Mr. Nolan, testified as follows:

Q What is your full name, Mr. Gustafson? A. John David Gustafson.

Q It is Gustafson? A. Yes.

Q G-u-s-t-a-f-s-o-n? A. That is correct.

Q And what is your present employment? A. I am employed as Division Engineer for Imperial Oil Limited in the Western Division, Producing Department.

MR. NOLAN: I think I should have said to your lordship, and for my friends' benefit too, that I intend to call this witness to talk about what has been learned by the experience in drilling in the Leduc field, what has been done and what is done in obtaining production, what is done with the production when it has been obtained. It is all factual evidence, but we felt it would be of assistance to the Court in giving it a background of this petroleum industry.

Q You are the Divisional Engineer with Imperial Oil Limited in Calgary? A. Yes, sir.

Q And you have held that position a little over three years? A. That is correct.

Q You are a graduate in Engineering? A. Yes, sir.

Q Petroleum Engineering? A. No, Mining Engineering.

Q From what university? A. Ohio State University.

Q Now, in your capacity as Division Engineer, do you know anything about the drilling and production operations in the Leduc field? A. For the past three years, or a little longer, I have had charge of all the engineering in connection with Imperial's drilling development and production in the Leduc field.

MR. NOLAN: Now, my lord, we propose, with your permission, to produce certain charts to which the witness will make reference. I have provided an easel upon which I propose to hang the exhibit chart, which is a large chart or map. I propose also to provide your lordship and my learned friends with a smaller, convenient copy of those charts. We thought that it would be of assistance if we could do it that way. It will take a moment, my lord, to put these up here.

Q Will you produce for me Figure 1, Mr. Gustafson?

A Yes.

MR. NOLAN: My lord, I am afraid it is not very clear from wherever one may be in your lordship's court, because to make a map that can be seen at a distance of 15 feet, it is very difficult to do, but the smaller ones, my lord, which are exact copies of those, I think you will find useful.

Q You have produced, Mr. Gustafson, what is known as Figure 1? A. Yes. This is a map of the Leduc-Woodbend Oil field, showing the status of development as of March 1st, 1950. By symbols the map shows locations of producing oil wells, drilling oil wells, as of that date, and dry holes which have been drilled in the area.

Q And this map was made under your supervision? A. It was.

MR. NOLAN: May I have the map hanging on the easel marked as an exhibit, My lord.

THE COURT: Exhibit 84.

MAP OF LEDUC-WOODBEND OIL FIELD MARKED EXHIBIT 84.

Q MR. NOLAN: Well, now, Mr. Gustafson, there is a legend down in the lower left-hand corner of Exhibit 84, is there not? A. Yes. The legend shows the symbols for the improvements which will be made in the area, the various classes of roads, and includes a short shaded line. The shaded line goes around the developed portion of the Leduc-Woodbend oil field, and indicates the outlines of the conservation area as established by the Alberta Conservation Board as of March 1st, 1950.

Q When you say "the shaded line", you mean that hatched line? A. The heavy, hatched line around the developed part of the field.

Q Around the developed part of the field? A. Yes.
Q And that runs from the top of Exhibit 84 to the bottom of Exhibit 84, doesn't it? A. That is correct.
Q Where would you say the oil field is located generally? A. Generally, about 20 miles southwest of the City of Edmonton. It lies within Townships 49, 50 and 51, Ranges 25, 26 and 27, West of the 4th Meridian.
Q Well, now, where on this map, Exhibit 84, is the northeast quarter of 19,50, 26, West of the 4th?
A The northeast quarter of 19, 50, 26, West of the 4th is shown on this map outlined in red.
Q Yes. Now, I notice from this map that there are certain diagonal black lines. What are they intended to indicate? And I observe also that they have letters at their extremities. In other words, they have A and B, C and D, and E and F. A. That is correct. These diagonal black lines indicate the geographic location, or plan of geologic cross-sections, which were prepared under my direction, and which were prepared to show the actual formation encountered in drilling the wells, which are connected by the diagonal black lines.
Q Are you saying to me in another way that those lines connected up wells on which you have the actual formation data? A. Yes, sir.
Q And where is AB to be found? A. AB is a line running diagonally from northeast to southwest, B being the northeast end of the line and A the southwest end of the line. AB is the nearest line on the map.
Q. Perhaps I can help you. It is the lower diagonal line, beginning at the lower left-hand corner of Exhibit 84 and proceeding up to East Leduc No. 2 in a northeasterly direction? A. That is correct.
Q It begins at Texas-McColl Calmar No. 1, does it?
A Yes, sir, in the lower left-hand corner, and extends up to East Leduc No. 2.
Q East Leduc No. 2? A. Yes.
Q Well, that is the line AB. Now, where is the line CD?
A The line CD is the shorter line which intersects or crosses the line AB, and it extends from just north of the North Saskatchewan River shown on the map marked C, southward across the line AB and to the point marked D, which is at Leduc Consolidated Well No. 2.

MR. NOLAN: I might say, my lord, that there will be much more said about these geological cross-sections. I am simply drawing your attention now to them on Exhibit 84 so that we may know and recognize them when we come back to them later.

Q Now, you have not told me about EF, another diagonal line running from the southwest to the northeast? A. Yes, sir. It is a diagonal line, and this diagonal line is the one which crosses the northeast quarter of section 19, 50, 26 West of the 4th.

Q Which is Mr. Borys' quarter section? A. Yes, sir.

Q And that is the line EF? A. Yes, sir.

Q And you have data obtained from the actual formation encountered on drilling wells on that cross-section?

A Yes.

Q Now, is there anything else you think should be said about this exhibit 84, or is that a sufficient explanation? A. I have nothing else to say about the map. It is simply a map showing principally the location of wells in Leduc-Woodbend field.

Q Well, then, Mr. Gustafson, let us go to what you call your Figure 2. Will you produce Figure 2 for me, please? A. Yes, sir.

Q Was Figure 2 prepared under your direction, Mr. Gustafson? A. Yes. Figure 2 is a generalized geological section illustrating the rock strata encountered in the Leduc-Woodbend area in drilling Imperial wells there. It shows the typical geological column, in other words, the rock strata encountered.

Q In drilling wells in that area? A. Yes.

Q What wells? A. In drilling principally Imperial wells.

Q Imperial wells? A. Yes.

MR. NOLAN: May we have Figure 2, my lord, marked, if you will, please?

THE COURT: Exhibit 85.

GENERALIZED GEOLOGICAL SECTION OF LEDUC-WOODBEND FIELD MARKED EXHIBIT 85.

Q MR. NOLAN: Now, Mr. Gustafson, what is a "geologic column", before we look at the figure?

A It is a diagram which shows the occurrence or position in geological time of the rock formations encountered in drilling oil wells. In this case, in drilling oil wells in the Leduc-Woodbend field.

Q Yes? A. It indicates the general lithology of the rock strata encountered, or character of the rocks, and it also, on the left-hand side of the chart, shows the names of the geologic formations and periods.

Q Well, now, let us just look at that exhibit for a moment. On the left-hand side I see, at the top of the column, on Exhibit 85, the word "era". What is an era? A. That is a very broad or long unit of geologic time and is simply a classification for classification of the rock strata in the earth's crust by age.

Q By age? A. Yes.

Q And under that you have - let me go on. What is a "period", being the head of the next column? A. It is a subdivision of the era.

Q Well, it is a shorter period of time? A. A sub-division of geologic time.

Q And there are divisions of geologic time within an era? A. Yes.

Q And what is a "formation", being your third heading?

A "Formation" is a subdivision of the period, usually into major rock types.

Q Yes? A. Again there was a period of geologic time within the period, of course.

Q And what is "member"? A. "Member" is a term for individual rock strata, a sub-division of "formation" where such a sub-division is helpful to the geologists.

Q And now on your 5th column, or the heading, there is "Elevations Sea level Datum", what does that mean? A. That is, the depths given on this chart are referred to as "sea level datum" and not "depth sub-surface".

Q So that if I say "+ 2000" as your first elevation, does that mean above sea level? A. That means 2000 feet above sea level.

Q And you go down to + 1500, + 1000, + 500, to sea level, and then on down below sea level until you get down to - 3000 feet? A. Yes.

Q Below sea level? A. Yes.

Q Going to the right I observe your last column is entitled "Lithology". You used that word a moment ago. What does it mean? A. "Lithology" is, strictly speaking, the science which treats or deals with the character of the rock found in the earth's crust. In this case, the term is used at the head

of this column on the right to show that the column and the description opposite it describes the type of rock encountered.

Q Now, let us go back to "era", being the heading for your first column, and tell me why you have Cenozoic, Mesozoic and Palaeozoic under that heading "Era"?

A Those are the geologic eras encountered in drilling oil wells at Leduc, as deep as oil wells have been drilled there at the present time, with the Cenozoic at the top being the most recent in geologic time.

Q And it is fairly thinner in point of geologic time?

A Yes, sir.

Q It is thin, is it? It is a very shorter period?

A Yes, very short in geologic time.

Q That is what I mean. And then under the Period, you have the word "Quaternary", what does that mean?

A That is the name we have for the most recent time in geologic time, during the period in time when the uppermost strata had been deposited, the latest deposit.

Q And under that you have the Upper and Lower Cretaceous and the Upper Devonian? A. Yes.

Q What are they? A. They are the names given by geologists to the periods which are represented by the rock strata encountered in drilling at Leduc.

Q And going to the next heading, being "Formation", we have Edmonton, Belly River, Lea Park, Colorado, Blairmore, Wabamun (D1), Winterburn and Woodbend?

A Yes. They are the names of the rock formations which are used by geologists in describing the strata encountered in drilling at Leduc.

Q Now, under the heading "Member", I see you have no description until you get down to "Viking", which is about 1250 feet, 1250 feet below sea level? A. That is correct. To the best of my knowledge, no members of the formations above the lower part of the Colorado have been named.

Q And then the next name is "Basal Quartz Sand" at about 1800 feet below sea level? A. Yes, that is the name given to sand occurring in the basal part of the Lower Cretaceous.

Q And then I notice between the 2500 and 3000 foot levels you have the D2 or Nisku, that is a well-known formation, is it? A. Yes, it is the uppermost of the two main oil-producing horizons at Leduc.

Q And then you have a green shale separating the D2 or Nisku from the D3 or Leduc? A. Yes. The Ireton

member or Green Shale, is the formation of Woodbend, is the uppermost of the Woodbend formation, which is immediately underlain by the Leduc or D3 member, which is the most prolific producing horizon and the deepest producing horizon in the Leduc-Woodbend field.

Q It is approximately 2900 feet below sea level? A. It is approximately 2900 feet below sea level, yes.

Q Under your heading of "Lithology" you describe the character of the formations that are encountered? A. In a general way, yes.

Q By calling them by the names that are usually given to them, I suppose? A. By differentiating between sandstone, shale, siltstone, limestone, dolomite and anhydrite, and also indicating the locations of coal horizons.

Q Now, looking at the shaded column on the left-hand side of the broader column headed "Lithology", I notice that you have a lot of dots and dashes, and perhaps you will explain to his lordship by particular reference to the colours that you have used, and the differences in the shading, by particular reference to your legend at the foot of Exhibit 85? A. The dots and dashes are symbols used by geologists to indicate the different character of rocks found in the geological column. The key to those symbols is given at the bottom of the chart. Sandstone is represented by small dots; siltstone by very short dashes; shale by longer dashed lines; limestone by a sort of block diagram; dolomite by a block diagram with the lines diagonal; and then anhydrite by a heavier shaded series of lines crossing one another, and then coal is indicated by the very dark symbol tnat resembles rather an arrowhead. The red colour is used to indicate the location of those horizons at Leduc-Woodbend where gas has been encountered. Green is used to indicate the horizons where oil with solution gas is encountered. The green cross-hatch, the green shaded area, indicates the formation where oil has been encountered, but where, to the best of my knowledge, oil is not being produced commercially up to this time.

Q Yes. Well, now, let us go back up to the top of the column, if we may, Mr. Gustafson, and beginning with the uppermost, that is the youngest formation, perhaps you will tell me what has been found by way of petroleum occurrences? And then go down.

First of all, there is some coal, isn't there, at about. . . A. There are two coal occurrences indicated here. One in the Edmonton formation and one in the Belly River formation. For the most part these formations consist of inter-bedded sands and shales. The first petroleum encountered is at the base of the Belly River formation where gas has been found in drilling wells at Leduc.

MR. RILEY: Now, I wonder if he should use those words in that way when we were stopped.

MR. NOLAN: It is just a matter of custom and usage.

MR. RILEY: That he has recently learned.

Q MR. NOLAN: What does the red star indicate, Mr. Gustafson? A. It indicates that gas has been encountered at that horizon at Leduc-Woodbend.

Q And that is 500 feet above sea level? A. Yes, it is 500 feet above sea level.

Q And then perhaps you will go down through the shale until you get to the Viking? A. Yes.

Q In the Viking sand, that is near the base of the Colorado formation? A. Yes.

Q What was found? A. Both gas and oil have been found in the Viking at Leduc Woodbend. There have been very distinct oil shows but I do not believe that oil is being produced commercially from the Viking.

Q Oil is not being produced commercially from the Viking? A. There have been very distinct oil shows, but I do not think that oil is being produced commercially from the Viking.

Q Do you have any core samples from that sand? A. Yes, I think there are two here from the Viking sand, as obtained from drilling Imperial Leduc No. 9.

MR. NOLAN: Perhaps those could be marked as exhibits, my lord, please?

THE COURT: Yes.

MR. NOLAN: They are two core samples from the Viking sand and obtained by coring in Imperial Leduc No. 9. A. That is right. The first is from a depth of approximately 3636 feet, and the second from a depth of approximately 3637 feet.

THE COURT: Exhibit 86. Do you want the two marked together, Mr. Nolan?

MR. NOLAN: I think not, my lord. If they could be marked separately.

THE COURT: Exhibit 86, which is that?

MR. NOLAN: Exhibit 86, my lord, is the one from the depth of 3636 feet.

CORE SAMPLE FROM IMPERIAL LEDUC NO. 9 MARKED EXHIBIT 86.

MR. NOLAN: And the next one, my lord, would be the one from an approximate depth of 3637 feet.

THE COURT: Exhibit 87.

CORE SAMPLE FROM IMPERIAL LEDUC NO. 9 MARKED EXHIBIT 87.

MR. STEER: Is that below the surface?

MR. NOLAN: Yes.

A No, the 3636 feet is sub-surface.

Q What is the other? A. The same, except 3637 feet. So that the depth of these core samples are depths below the surface.

Q That is all Mr. Steer asked. In both of these Viking sands is oil produced in commercial quantities in the Leduc-Woodbend area? A. I do not know of any well that produces commercially from the Viking at Leduc, but Imperial has drilled wells where oil has been found, and one of these was in Imperial-Leduc No. 9, from which those cores were obtained.

Q But you say Imperial has drilled wells in the Viking sand where oil has been obtained? A. That is correct.

Q Where? A. One is Imperial Leduc No. 9, the well from which these core samples were obtained. On a direct examination on a drill stem test of the Viking horizon there was oil recovered in the drill pipe. If I might refer to a note, I could give his lordship some details on the test, if he would care to have it?

MR. NOLAN: Is there any objection to that?

MR. STEER: To what?

MR. NOLAN: To a note which he has with some details on it?

MR. STEER: I suppose he can refresh his memory from it, if it is proper material upon which he may refresh his memory.

Q MR. NOLAN: What is the material? When was it made? What is the material you wish to

refresh your memory from? A. Oh, some notes I have on well records, drilling records of various wells that we might want to refer to.

Q Did you make the notes? A. Yes, sir.

Q When did you make them? A. Oh, some of them two and three weeks ago, some of them last week.

MR. STEER: At the time the wells were drilled?

Q MR. NOLAN: Not at the time the wells were drilled? A. They are from records that we made at the time the well was drilled. I can produce those records on them. We have them.

Q I do not think that is necessary. I do not think my learned friend is objecting.

MR. STEER: What is intended to be proved?

Q MR. NOLAN: What were you goint to prove by these notes? You were going to give more detail, is that right? A. Just more detail on the drill stem test.

Q In the Viking sand? A. Yes, in the Viking sand at Imperial Leduc No. 9.

Q Yes?

MR. STEER: That is all right.

Q MR. NOLAN: Perhaps you will give us that more detailed information, will you, please?

A The drill stem test to which I referred was taken at Imperial Leduc No. 9 on January 29th, 1948. It was taken from 3624 to 3638 feet sub-surface. The test was for one hour. Gas production was obtained at an approximate rate of 3500 cubic feet per day. Fluid recovered from the drill pipe was 90 feet of mud and 310 feet of oil.

Q Yes. Now, is there any other area in which there has been any oil produced commercially from the Viking sand? A. Oil was produced from the Viking sand in the St. Joseph field, which is east of Leduc-Woodbend.

Q What is the name of the field? A. St. Joseph field.

Q Are you sure? It is Joseph Lake, isn't it?

A Joseph Lake field.

Q Joseph Lake field? A. Yes.

Q Were you going to say anything more? A. I know of no other field where the Viking produced commercially.

Q Do you know of any other field in which the Viking

has produced oil? A. Has produced some oil in the Viking-Kinsella field. Oil shows were obtained in drilling in Viking-Kinsella in a number of wells.

Q Yes? A. I think the particular wells are probably named in the Conservation Board schedule "Wells Drilled in Alberta."

Q Yes. Well, from your own records and the experience of your own company, can you tell me anything about your own wells drilled in the Imperial-Kinsella area? I mean, in the Viking-Kinsella area? Before I go on to that, perhaps I could produce the Schedule of the Wells Drilled for Oil and Gas to 1949, which is a publication of the Petroleum and Natural Gas Conservation Board. Is that the document to which you have made reference? A. Yes.

MR. NOLAN: That perhaps could be marked, my lord, as being a record of the wells drilled for oil and gas to date.

MR. STEER: How is it relevant?

MR. NOLAN: Well, it shows the experience as to whether or not oil and gas has been encountered in what we call the Viking sand, and there is all the information contained in it with respect to the drilling in that sand, not just by Imperial Oil, but by referring to a publication such as this you get what other companies have encountered and found according to the reports to the Board.

MR. STEER: I am bound to say, sir, that I cannot see the relevance with regard to the meaning of the word "petroleum" in this case.

MR. NOLAN: Well, my lord, I won't press it.

THE COURT: If you think it is of any value to the Court, I am going to let it in.

MR. NOLAN: My lord . . .

THE COURT: I have been doing so and I intend to do so.

MR. NOLAN: My lord, for that limited purpose of showing what the Board's information was as to what was encountered in the Viking sand, so that I ask to have it marked for that purpose, my lord.

THE COURT: It will be marked Exhibit 88.

SCHEDULE OF WELLS DRILLED FOR OIL AND GAS TO 1949 MARKED EXHIBIT 88.

Q MR. NOLAN: Now, can you tell me something about a well known as Imperial-Kinsella No. 14?
A If I may refer to the Schedule of Wells Drilled? I do not like to trust my memory for details.
Q Well, then, perhaps if the witness would be permitted to look at Exhibit 88? A. I find Imperial-Kinsella 14 listed here in the Schedule of Wells Drilled in the Viking-Kinsella area.
Q Yes. If I may read from the report here. It is from 2023 . . .
THE COURT: Probably you had better tell us what page you are reading from, and then somebody else later on can find it if they want to.
A It is on page 261, my lord.
Q All right, page 261. Go ahead. A. "Test at 2002 to 2024 showed good gas flow, but carried water. Test 2023 to 2039 showed 400 feet of oil, 32°API
MR. NOLAN:
Q Now, in the Basal Quartz Sand member of the Blairmore formation, has there been any oil or gas encountered there in the Leduc-Woodbend field? A. Yes, both oil and gas is found in the Basal Quartz Sand, and there are some wells which produce commercially from that sand.
Q Yes, and then going on down below to the Wabamun (D1), I notice you have another indication of gas in your column on Exhibit 85, will you tell me about that, please? A. The gas has been found in some wells in the upper part of the Wabamun or the D1 formation. Oil has also been encountered in the same formation, but, to the best of my knowledge, no oil is produced commercially from this horizon.
Q Well, now, what about the Nisku or D2 formation?
A The Nisku or D2 formation is one of the two main producing horizons at Leduc-Woodbend. In there oil is encountered as shown by the green colour in the column.
Q That is oil with solution gas, is it? A. Yes, sir.
Q And will you go down now to the Leduc D3 which is at the bottom? A. In the Leduc or D3 member of the Woodbend formation, gas is encountered in the form of free gas as a gas cap overlying the oil with solution gas zone in the formation.
Q I think that is clear. Now, have you any gas samples from the gas cap zone in this area? Core samples, I beg your pardon? A. Yes, I think there are two here.

Q From what well? A. These are taken from Imperial Leduc No. 8, one sample from a sub-surface depth of 5204 feet and another from a sub-surface depth of 5231 feet.

MR. NOLAN: I would ask to have them marked as one exhibit, my lord, as it would be convenient to have it done that way.

THE COURT: Exhibit 89.

TWO CORE SAMPLES FROM IMPERIAL LEDUC NO. 8 MARKED EXHIBIT 89.

Q MR. NOLAN: Now, have you any core samples from the D3 horizon? A. Yes, we have one core sample here from the oil zone of Leduc or D3 member. It is a sample from Imperial Leduc No.280 taken at a depth of about 5390 feet.

MR. NOLAN: May I have that marked, my lord, please?

THE COURT: Exhibit 90.

CORE SAMPLE FROM IMPERIAL LEDUC NO. 280 MARKED EXHIBIT 90.

Q MR. NOLAN: Is there anything else that you wanted to say and that I have not asked you about Exhibit 85? A. I believe not, sir.

Q Well, then, will you produce Figure 3? A. Yes, sir.

Q Now, what is Figure 3? A. Figure 3 is a general northeast-southwest cross-section of the Leduc Woodbend field, which was prepared under my direction to show the formations encountered in drilling the wells which are connected by the line AB and which was referred to in Figure 1.

Q Call it Exhibit 84, will you, please? A. Yes, in Exhibit 84.

MR. NOLAN: Perhaps that could be marked now, my lord, if you please?

THE COURT: Exhibit 91.

GENERAL NORTHEAST-SOUTHWEST CROSS-SECTION OF LEDUC-WOODBEND FIELD MARKED EXHIBIT 91.

MR. NOLAN: Your lordship will recall that on Exhibit 84 there was a line AB which we call a diagonal cross-section. It is the line that runs through from the Texas-McColl Calmar down on the lower left-hand corner up to East Leduc No. 2 in a northeasterly direction. The long diagonal line. And what we propose now, my lord, is to show what we have encountered and found in drilling wells on that cross-section.

Q Is that so, Mr. Gustafson? A. Yes, that is correct.

Q Well, then, will you take Exhibit 91 and explain to his lordship what it is and what it is intended to convey to this court? A. This geologic cross-section along the line A to B in Exhibit 84 indicates the position and thickness of the formations which were encountered in drilling the wells named, and across the top of the chart, the wells along the cross-section, the heavy black vertical lines indicate the relative position of these wells on the cross-section.

Q Let me be quite clear: These wells that you have named at the top of Exhibit 91, are those wells to be found on that diagonal cross-section AB on Exhibit 84? A. That is correct.

Q Please go on. A. The horizontal lines. . .

Q Oh, by the way, that is explained, is it not, by the key to the cross-section which is shown in the lower right-hand corner of Exhibit 91? A. Yes, the key is placed there for ready reference and to indicate the approximate geographic location of this cross-section.

Q Yes, all right? A. I think I was explaining that the heavy vertical. . .

Q . . . heavy vertical lines, what do they indicate?

A Indicate the relative position of the wells which are connected by the line AB.

Q Yes, you mean the distance one from the other?

A The relative position in section. Yes, the distance.

Q Yes? A. Between the wells.

Q That is the relative location of the wells which are connected by the line AB in Exhibit 84? A. That is correct.

Q All right. Now, what are these horizontal lines?

A The horizontal lines indicate the points of contact between the various formations, the main rock strata encountered in drilling these wells.

Q Yes? A. The lines are not quite horizontal. The slope of the lines indicate the type of formations along this cross-section, and the top of the formations.

Q Yes? Well, would it or would it not show the geological structure along the section AB? A. Yes. You might say it shows the geologic structure along this section, but it is not, of course, a complete picture of the geologic structure.

Q And what are these symbols, the dots, dashes and cross-hatches, what do they indicate? A. Again, the symbols are shown and the legend on the right of the chart indicates the various types of rock encountered.

Q Sandstone, siltstone? A. In the legend, beginning from the top, sandstone, represented by the dots; siltstone, by the very short dashes; shale, by the longer dashed lines; limestone, by the block diagram; dolomite in a similar way but with the lines, diagonal lines with the blocks; and anhydrite again would be the heavy shaded or crossed lines.

Q And what do the colours indicate? A. The red indicates the location of gas occurrences in wells along this cross-section; the green indicates, as shown in the legend, where oil with solution gas is found in these wells; the blue indicates where salt water is encountered.

Q Yes. Now, I observe you have amongst the wells enumerated at the top Imperial Leduc No. 1 about the middle of Exhibit 91. A. Yes, sir, this was the Leduc discovery well of the Leduc-Woodbend field.

Q Yes. Well, taking that well as an example, can you tell me what was encountered in drilling it by reference to Exhibit 91, according to the records of your company? A. Yes, sir. In drilling Imperial-Leduc No. 1, the possible producing horizons were carefully tested by the drill stem test method and gas was found first in the Viking sand.

Q Just a moment. By the drill stem test method?

A Yes.

Q What is that? That is not a core? This is another form of well testing? A. No, a drill stem test is one of the most positive types of tests which can be used to indicate production possibilities in a well as it is being drilled. A drill stem test is made by isolating the zone to be tested by means of an expanding packer which goes up against the walls of the formation and then opening a valve in this packer, and it permits any fluid in the formation

to flow into the drill pipe. Sometimes the flow will be returned at the surface. Sometimes in a test of this kind fluid rises part way up in the drill pipe and is recovered at the surface when the packer and drill pipe is pulled from the well, so that the operator has a chance to measure the amount of production from any formation which is obtained in a specified or a specific length of time that the valve of this drill stem test packer is allowed to remain open.

Q And that is considered as a pretty good type of test, or is it not? A. It is usually considered to be the most accurate or most indicative type of production test known, next to actually placing a well on production.

Q All right. Let us look at Imperial Leduc No. 1. What was encountered? A. The first occurrence, as shown here on the chart, was the gas encountered in the Viking sand. Then in the Basal Quartz sand. . .

Q Wait a minute, - shown on the left-hand of Exhibit 91 are the members or horizons, is that a fair way to put it? Members or formations? A. Well, we will say in the Viking member is the first occurrence of gas.

Q And that shows in the pink area? A. Yes, the geologic nomenclature is given on the left-hand side of the chart.

Q So that we go down then to the Blairmore where we find nothing at all? A. Yes.

Q Until we get down to the Basal Quartz Sand, and what do we encounter there? A. Testing in this member, in this Basal Quartz sand, gas was encountered. There was a thin zone where oil was produced and below the oil some water was encountered in testing this well.

Q As shown on Exhibit 91? A. Yes, sir.

Q And then when you got down to the D1 or Wabamun formation? A. Gas was found in the upper part of the D1 formation in drilling Imperial Leduc No. 1.

Q And then in the D2? A. In the D2 member of the Winterburn formation oil with solution gas was found, and it was this discovery which started the development at Leduc.

Q All right. Now, will you look at Imperial Leduc No.42, that is the well adjoining Imperial Leduc No. 1 on Exhibit 91? A. Imperial Leduc No. 42 was drilled to produce from the D3 member of the Woodbend formation. The well penetrated a relatively big gas cap section.

Q That is that broad pink section? A. The broad pink zone. It was drilled on down into the oil zone of the D3 and completed as an oil well.
Q The oil zone of D3 being green in colour, that is right, isn't it? A. Yes, sir.
Q And then below that the well did not go? A. That was as far as it was drilled, or as deep as it was drilled? A. That is correct.
Q Now, I suppose these fixed wells are not all the wells on this line AB, this cross-section AB are they?
A They are all the wells which are connected by the line AB, but they do not, they are not all the wells which are in the immediate vicinity of the line.
Q Yes? A. The line passes close by some wells which are not included on this chart.
Q Oh, I see. But they are wells on which you have actual information, are they? A. Yes.
Q Well, now, is there anything else that occurs to you on Exhibit 91 before we leave it? We have the geologic formations on the left; we have the elevations above and below sea level; we have the various kinds of formations that are encountered, and an indication where there is gas, oil with solution gas, and water, as indicated by the colours, pink, green and blue?
A I might mention that the word "nil" appears in several places on this chart.
Q It appears in the Leduc No. 1? A. Yes. It appears in the Imperial Leduc 65 in the Viking sand, and again in Imperial Leduc No. 1 in about the middle of the Blairmore formation. The word "nil" is simply used to indicate that a drill stem test was taken at that point but that no fluid was found to recover.
Q Well, now, perhaps you will produce for me what you call your Figure 4. Have you Figure 4 before you?
A Yes.
Q Figure 4 - I beg your pardon, it is Figure 5. A. No.
Q No, I am wrong, it is Figure 4? A. Yes, Figure 4.

THE COURT: Now, do you want that marked?
MR. NOLAN: If you will, please.
THE COURT: Exhibit No. 92.
MR. NOLAN: Thank you, my lord.

FIGURE 4 MARKED EXHIBIT 92.

THE COURT: I think before we start that we will take a little rest. It is ten after four We will take 15 minutes and we will resume at exactly 4.25.

(Hearing resumed after short adjournement.)

THE COURT: All right, Mr. Nolan.
MR.NOLAN: I was discussing Exhibit 92, my lord, and I will continue to do so, if I may.

JOHN DAVID GUSTAFSON, continued examination by Mr. Nolan:

Q Exhibit 92, being your Figure 4, is the general cross-section C.D. of the Leduc-Woodbend Field?
A That is correct.
Q So that if I look back at Exhibit 84, being a map of the Leduc-Woodbend oil field, showing its development to March 1st, 1950, I could find the line charted there, the cross-section C-D that is right, is it?
A Yes, that is correct.
Q Now, on the cross-section C-D there are certain wells set out at the top of this Exhibit 92, Mammoth Capital 4, Globe Leduc West 3, Imperial Leduc 119, Imperial Leduc 108, Imperial Leduc 22 and Leduc Consolidated 2? A. Yes.
Q And the chart is made up in exactly the same way as its predecessor, Exhibit 91? A. That is correct.
Q So that we have the geological formation, we have the geological period formation and member on the left? A. Yes.
Q We have a description in our legend of the various sandstones, siltstones, shale, limestones, dolomite and anhydrite through which these wells have progressed, and we show the gas, the oil with solution gas, and the water by the colours pink, green and blue?
A Yes.
Q Well, now, perhaps you will tell me on this Figure 4, Exhibit 92, what the heavy vertical lines indicate?
A Again, as in the immediately preceding exhibit, the heavy vertical lines indicate relative positions of the wells which are connected by the line C-D, and which are shown in the key in the lower right-hand corner of the chart.
Q Yes? A. And it is through these, through the locations of these wells, that this cross-section is constructed.
Q Yes. And what are these approximately horizontal lines on Exhibit 92? A. These approximately horizontal lines indicate the points of contact between the formations encountered in drilling these wells.
Q Yes? And along this section C-D? A. Along the section C-D.

Q Now, the legend is the same as the legend on Exhibit 91? A. That is correct, with the pink or red colour indicating gas, the green oil with solution gas, and the blue salt water. The character of the rocks encountered is indicated by the legend with the dots again for sandstone, the short dashed lime for siltstone, the longer dashes for shale, the block diagram for limestone, the block diagram with diagonal lines for dolomite, and the cross-hatch shaded block indicating the location of anhydrite.

Q Now, let us take two of the wells in the centre of Exhibit 92, Imperial Leduc 119 and Imperial Leduc 108. What was encountered in those wells according to the reports of your company? A. In drilling into the Nisku or D-2 member of the Winterburn formation in Imperial Leduc 119 and Imperial Leduc 108, some gas was found or encountered above the oil zone as indicated by the small red area. There is a small gas cap, local gas cap, in the upper part of the porous zone in the D-2 member here.

Q Yes? A. Then going on down, the objective horizon in each of the two wells was the D-3 member, the Leduc member of the Woodbend formation. The wells encountered a relatively thick zone of free gas, a gas cap zone overlying the oil zone, and each of the two wells was completed as an oil and gas producing well from theD-3 member.

Q Now, have you anything to say about these contacts between oil and gas and oil and water in these zones which you show as horizontal lines?

A The contact line on this section between gas and the oil zone of the D-2 member is shown as a horizontal line. Likewise, the contact between the oil zone and the underlying water is shown as a horizontal line.

Q Yes? A. This point of contact was determined at Leduc Woodbend by careful testing in quite a large number of wells and the contact between the gas and oil was found to be quite uniform throughout the main part of the producing reservoir.

Q Where was that gas/oil contact established, what depth?

A I would have to look at a note, if I may.

Q Yes, if you have a note? A. On the chart it is indicated at approximately 3000 feet sub-surface. The actual depth is about 3000 feet subsea. The actual depth is about 2982 feet below sea level. The contact between the oil zone and the underlying water

was established in the same manner by careful testing of a number of wells, and was found to be at a depth of 3020 feet below sea level, approximately.

Q Now, Mr.Gustafson, you have prepared what you call your Figure 5? A. Yes.

Q Will you produce that for me, please? A. Yes.

Q Was Figure 5 prepared under your supervision?

A It was.

Q What is it, Mr. Gustafson? A. Figure 5 is a development map of the south part of Leduc Woodbend field, and it shows the wells which tested the Viking member producing possibilities.

Q Yes? A. It shows the wells which had been drilled as of March 1st, 1950.

MR.NOLAN: Perhaps that could be marked, my lord?

THE COURT: Exhibit 92.

DEVELOPMENT MAP OF SOUTH PART OF LEDUC WOODBEND FIELD MARKED EXHIBIT 93.

Q MR.NOLAN: Now, looking at Exhibit 93, I see you call it a development map of the south part of the leduc Woodbend field. What is a development map? A. That is a term used to describe a map which shows the status of field development as of any particular date by indicating the producing wells, wells which as of date of the map were being drilled, and showing the locations of dry holes by the usual symbols used in making oil field maps.

Q Any particular member? A. Yes.

Q And what member are we discussing here in Exhibit 93? A. This is the Viking sandstone of the Cretaceous period.

Q Well, now, just look at your legend for a moment and tell me what it represents? It is in the lower right-hand corner of Exhibit 93? A. The red-coloured circle around the well indicates that the Viking sandstone was tested by the driller and produced gas at a rate of more than 1000 MCF per day, or at a rate of over 1,000,000 cubic feet per day.

Q MCF is 1000 cubic feet? A. MCF is the abbreviat ion for 1000 cubic feet. So that over 1000 MCF means more than 1,000,000 cubic feet per day.

Q Yes? A. The yellow circle around the well indicates that the Viking sand was tested in that

well and produced gas at a rate of below 1,000,000 cubic feet per day. The green colour indicates that the Viking sand yielded oil on drillstem tests. The blue colour indicates that the sand produced salt water. The orange colour at the base of the legend indicates that the sand did not produce any fluid in significant amounts.

Q Now, this is a map of the south part of the Leduc Woodbend field? A. Yes.

Q And what are these diagonal lines running across it, the black lines? A. Again, the diagonal lines marked A-B, C-D, and E-F indicate the geographical location of three geologic cross-sections which were prepared under my supervision.

Q And which were referred to earlier in Exhibit 84, being the map of the Leduc Woodbend Oil Field?

A That is correct.

Q I suppose there is not anything else to be said. As I understand you, it is a map of wells in the Viking sand which shows their producing possibilities according to the leged in the lower right-hand corner?

A Yes, that is correct. And a combination of colours has been used around certain wells, where, for instance, gas was produced and some water was given up on test, or where gas, oil and water had been produced from one well, or where, as, for example, Imperial Leduc Number 9, in the lower right-hand part of the chart, where gas was produced at a rate of less than 1,000,000 cubic feet per day and where the green colour indicates that oil was also produced on test.

Q Now, I observe two things. Some of the wells that you have tested in the Vikihg sand are not on the axis A-B, C-D or E-F? A. That is correct.

Q But they are in the Viking sand? A. Other wells they are wells which tested the Viking sand as they were being drilled to deeper horizons.

Q Now, there is no legend for these other wells where no test was made in the Viking sand, and which are shown as black dots, white circles and otherwise. What legend applies to them? A. The small solid black dots indicates a producing oil well. The circle, small plain circle with a very small dot in the centre, indicates a well which was drilling as of the date of this map, March 1st, 1950. The small circle with the very short dashed line extending from four points on the circle, indicates the location of a well which found no commercial production

and was completed as a dry hole.

Q As a matter of fact, those symbols, or that legend that you have just described, is very nearly the same as on Exhibit 84, being the map of the Leduc Woodbend Field. A. The symbols as they apply to the various classifications of wells here are the same as on Exhibit 84, and are the standard symbols in oil-field map making.

Q Let us go on. Is there anything more you want to say about Exhibit 93? A. I think not, sir.

Q Will you produce Figure 6? A. Yes.

Q This was prepared under your supervision and direction? A. It was.

MR.NOLAN: May it be marked as an exhibit, my lord?

THE COURT: Exhibit 94.

DEVELOPMENT MAP OF SOUTH PART OF LEDUC WOODBEND FIELD MARKED EXHIBIT 94.

Q MR. NOLAN: What is Exhibit 94?

A It is a development map of the south part of the Leduc Woodbend field, showing wells which tested the Basal Quartz Sand producing possibilities as of March 1st, 1950,

Q Yes. How were they tested? A. These tests indicated by the coloured symbols on the map are all by the drillstem test method.

Q Now, the map is the same, and correct me if I am wrong, as Exhibit 93, other than we are talking about another formation or horizon, namely, the Basal Quartz sand? A. That is correct.

Q That is right, is it? A. That is correct.

Q You are discussing here, or we are depicting in this form by way of a map the producing possibilities of the Basal Quartz sand? A. Yes.

Q Now, the legend is the same as it was in Exhibit 93?

A Yes.

Q And I suppose your evidence would be the same as to the combination of colours as you gave us in respect of Exhibit 93? A. Yes.

Q I do not think we need to discuss the legend any more, and there is nothing more to be said about the map. It sets it out in the manner that you have described. Now, what about the production from this Basal Quartz sand, Mr.Gustafson? A. The Basal Quartz sand of

the Lower Cretaceous period produced oil commercially at Leduc Woodbend, and the map here indicates that in a number of wells gas has been encountered where the gas rate was tested at over 1,000,000 cubic feet per day.

Q Yes? A. But I do not know of any Basal Quartz sand wells which are produced as commercial gas wells.

Q Well, now, will you produce for me your Figure 7?

A Yes.

Q Figure 7 was prepared under your direction? A. It was.

MR.NOLAN: May it be marked, my lord, please?

THE COURT: Exhibit 95.

DEVELOPMENT MAP OF SOUTH PART OF LEDUC WOODBEND FIELD MARKED EXHIBIT 95.

Q MR. NOLAN: What is Exhibit 95, Mr. Gustafson? A. It is a development map of the south part of the Leduc Woodbend field showing wells which tested the Wabamun or D-1 formation producing possibilities as of March 1st, 1950, and the wells which are shown as having been tested in this horizon were tested by the drillstem test method.

Q Yes? And it is the same area as Exhibit 94?

A It covers the same area and shows the planned view or geographic location of the lines A-B, C-D, and E-F.

Q What is the difference between Exhibit 93 and 94? Exhibit 93 was the Viking member, wasn't it, and Exhibit 94 was the Basal Quartz sand? A. Yes, I believe that is correct, from Figures 5 and 6.

Q And this one, Exhibit 95, is what? A. It shows the wells where the Wabamun or D-1 formation producing possibilities were tested.

Q Now, tell me, is this the uppermost porous zone encountered in this area in the Devonian? A. Yes, it is. The D-1 is the uppermost porous horizon encountered in the upper Devonian in the Leduc Woodbend area.

Q Has there been production of oil or of gas from this formation? A. To my knowledge there has been no commercial production from the Wabamun or D-1 formation.

Q Now, the legend is the same as on Exhibit 93 and 94?

A It is. The red colour indicate the wells where gas was produced at the rate of more than 1,000,000 cubic feet per day on test; the yellow colour indicates where gas was produced but at a rate of less than

1,000,000 cubic feet per day; the green indicates the wells where oil was encountered; the blue, salt water; and the orange colour wells which were tested in the D-1 formation but which did not yield significant amounts of fluids on the test. The colours are combined around certain wells to indicate that two or sometimes three of the fluids at various rates were found on test.

Q And it is the same areas as in Exhibits 93 and 94, and shows the cross-section lines A-B, C-D and E-F?

A That is correct.

Q Will you produce for me your Figure Number 8?

A Yes, sir.

Q Was Figure Number 8 prepared under your direction?

A It was.

MR. NOLAN: May it be marked, my lord, please?

THE COURT: 96.

DEVELOPMENT MAP OF SOUTH PART OF LEDUC WOODBEND FIELD MARKED EXHIBIT 96.

Q MR. NOLAN: What is it, Mr. Gustafson?

A This is a development map of the south part of the Leduc Woodbend field which shows the Nisku or D-2 member producing area, with the wells which had been drilled in this part of the field as of March 1st, 1950.

Q Yes? Did you say Nisku or D-2 zone, that is right, isn't it? A. It is properly called the Nisku or D-2 member of the Winterburn formation.

Q All right. Now, the legend is? A. The colour legend is: Red indicates where free gas is found above the oil zone; green indicates the producing area of the D-2 where oil is found without any gas cap above the oil; and blue shows where water has been encountered in the D-2 producing horizon.

Q Now, this is the same as Exhibits 93, 94 and 95, except that we have gone down to a lower producing area? A. Not quite, sir.

Q Oh? A. This map shows a little more about the producing area for this horizon.

Q Yes? A. Because it is one of the two main producing horizons at Leduc Woodbend. The green colour on the map, the green area indicates the area where, covers the area where production, commercial produc-

tion, was encountered in the D-2 horizon as of March 1st, 1950.

Q Yes? Production of what? A.. Production of oil.

Q Yes? A. The red, small red areas, show where gas, free gas, exists above the oil?

A Yes. A. But in all cases there is an oil-saturated zone below the gas zone and the porosity of the gas and oil zones is generally connected, so that the two are part of the, or are in the same reservoir.

Q So that what you are saying, in effect, is that the green is under the red where indicated? In other words, the gas is above the oil, which is below it?

A That is correct. It is a planned view of the same sort of thing that is shown in some of the cross-sections which have been referred to.

Q Now, you have used the expression "free gas" in your legend; what do the words "free gas" on this chart mean? A. Free gas, I have used it in preparing this chart as a term to describe the lighter or lower boiling point hydrocarbons which occur in the same reservoir with oil overlying the oil zone in the form of a gas cap.

Q What have you to say as to the porosity between the gas and oil zones? A. It is generally found to be connected, the separation between oil and gas being affected by differences in gravity.

Q Is there anything more that would be of use to say about Exhibit 96? A. I do not believe so, sir.

Q Would you go at once, sir, to your Figure Number 9, please? A. Yes.

Q Was Figure 9 prepared under your direction? A.It was.

MR. NOLAN: Perhaps it could be given a number and I could refer to it, my lord.

THE COURT: Exhibit 97.

DEVELOPMENT MAP OF SOUTH PART OF LEDUC WOODBEND FIELD MARKED EXHIBIT 97.

Q MR.NOLAN: What is Exhibit 97, Mr. Gustafson? A. It is a development map of the south part of Leduc Woodbend field which shows the Leduc or D-3 member producing area with wells drilling and producing as of March 1st, 1950.

Q Now, Exhibit 96 told us about the D-2 producing area?

A Yes.

Q And we are now going down to the D-3 producing area,

are we? A Yes, and this is the same type of map as the previous exhibit, Exhibit 96.
Q It shows the same area of the south part of the Leduc Woodbend field? It shows the same cross-sections?
A Yes, with the coloured areas being in reference to the D-3 producing horizon.
Q Now, your legend is the same as Exhibit 96?
A It is. The red colour indicates the area of the D-3 horizon where free gas is found above the oil zone; the green indicates the area where there is found oil without a gas cap; the blue indicates an area where water is found in the D-3, and, therefore, localities which do not produce oil commercially.
Q I notice that the free gas covers most of this area?
A Yes.
Q What about below that free gas, what have you there?
A Throughout the red area, indicated as free gas area there is oil underlying the gas.
Q I think that is all that need be said about Exhibit 97. There are some diagonal cross-sections there?
A The three diagonal lines refer to the locale, the three cross-sections.
Q Now, will you go, please, to your Figure 10? A. Yes.
Q Was Figure 10 prepared under your direction? A. It was.
MR.NOLAN: May it be marked as an exhibit, my lord?
THE COURT: Exhibit 98.

CROSS-SECTION THROUGH NORTH-EAST QUARTER OF SECTION 19 MARKED EXHIBIT 98.

Q MR.NOLAN: What is Exhibit 98, please?
A This is a northeast-southwest cross-section along the line which was marked E-F in my Figure 1, the general map of the Leduc Woodbend field.
Q Exhibit 84? A. Yes, Exhibit 84.
Q Now, looking at the key in the lower right-hand corner of Exhibit 98, will you tell me what that is?
A Thekey shows the approximate geographic location of this cross-section. It is a planned view of the cross-section. It shows the wells and their approximate locations which are connected the lines E-F.
Q Which run through a shaded portion? A. Yes,
Q And what is the shaded portion? A. This cross-section runs through the northeast quarter section of Section 19, Township 50, Range 26, West of the

4th meridian. In the key this quarter section is indicated by shading or a cross-hatch. The limits of the quarter section are shown in the main diagram, indicated as the limits of the Northeast quarter of 19-50-26-W of the 4th Meridian.

Q Yes.

MR. STEER: Where do you see that? Oh, yes, I have it.

Q MR. NOLAN: The limits are between the two dotted lines. Where was Imperial Leduc Number 250 drilled and where does it show on Exhibit 98?

A Imperial Leduc Number 250 was drilled at the approximate centre of the northeast of quarter section 19-50-26, West of the 4th. On the cross-section this well is the fourth well from the left-hand side of the diagram, and the fourth well from the right-hand side of the diagram.

Q How deep was that well drilled? A. I believe drillin stopped at a depth of about 5850 feet, as shown by the vertical line, which shows the position of the well at that point, and it was in the Ireton member or green shale of the Winterburn, a short distance above the Leduc D-3 producing horizon.

Q And that shows the well that was drilled on the Borys quarter section? A. Yes.

Q Was there free gas obtained in drilling this well?

A Not to my knowledge.

Q What was the objective horizon for this well?

A It was being drilled to test and produce from the D-3 producing horizon of the Woodbend formation.

Q Did you test possible producing horizons above the D-3? A. No, sir.

Q Why didn't you? A. Because in drilling a well such as this in a field under development such as at Leduc Woodbend, it is necessary to test every horizon while it is being drilled, because the possible producing horizons have been tested in other wells in the area. The producing possibilities are known by reason of having drilled a large number of wells, so that it is unnecessary and a waste of time and money to do a great deal of testing in every well drilled other than testing a producing oil objective horizon.

Q Was this well tested and drilled like any other well, or was it not? A. It was drilled as we would have drilled any other well in the Leduc field in that area.

Q Now, I see that the word "nil" appears again on Exhibit 98? A. Yes, opposite the, well, next to Imperial Leduc 250 on the left in this cross-section, Globe Leduc West No. 1, the records show that the Basal Quartz sand was tested and did not indicate production possibilities, and that also there was a test in the D-1 or Wabamun formation.

Q Now, on this Exhibit 98, there are the geological formations in the left-hand columns, are there not?

A Yes.

Q The elevations above and below sea level? A. Yes, giving the names.

Q And the geologic time units? A. Yes, the geologic time units, periods, formations and members.

Q And the legend is the same as on preceding exhibits?

A The colour legend?

Q Is the same? A. Pink indicates free gas above oil; green indicates oil with solution gas; and blue indicates salt water.

Q As is shown in the legend? A. Yes.

Q Now, there is a difference between this exhibit and any other presented by reason of the fact that there is an oblong diagram at the bottom of the chart in Exhibit 98, which has a heading "Natural Scale"; what is that? A. That is a duplicate of the same cross-section but drawn to true or actual scale. In constructing this type of geologic cross-section, it is necessary to exaggerate the vertical scale to promote ease of interpretation and ease of understanding. You will notice that the title, under the title it says "Vertical Scale Exaggerated Nine Times".

Q Yes. A. In other words, the vertical scale is nine times as great as the horizontal scale.

Q The title being at the top of Exhibit 98? A. Yes. And the natural scale at the bottom just indicates the relative amount of exaggeration in making the main cross-section.

Q Yes, I think I understand you.

MR. NOLAN: My lord, that brings me to an end of this type of exhibit. I have a very few more with this witness, but I won't be able to finish conveniently tonight, and perhaps this would be a convenient time, if your lordship is agreeable, to adjourn.

THE COURT: Very well. Now, Mr. Nolan, you know far more about this than I do. This is

Tuesday night, are we going to get through by Saturday night?
MR.NOLAN: Yes, my lord, we are going to try or are going to get through by Friday afternoon, providing always on my learned friends, whether they cross-examine at great length.
THE COURT: Do we need to start at 9.30?
MR:NOLAN: I do not think so, because we have made great progress today, both my friends and myself, I think it is fair to say.
MR. STEER: I would suggest this, my lord, that if it is convenient to your lordship, my suggestion is that we start at 9.30 at least tomorrow, because we did make good progress today, and if we can get along as well tomorrow as we did today, then we will be sure to be through by Friday.
THE COURT: You want to start at 9.30?
MR. STEER: I am suggesting that, but I do not want to impose it on your lordship at all.
THE COURT: I will do whatever counsel wants to do. Is the majority in favour of 9.30?
MR.NOLAN: Yes, my lord, I am.
MR.RILEY: Yes, I am.
THE COURT: Well, then, that is the majority.
MR.NOLAN: Yes, my lord.
MR.HEIMAN: As a minority, I agree.
THE COURT: All right, Court will stand adjourned until 9.30 tomorrow morning.

MORNING SESSION,
November 22nd, 1950.

THE COURT: All right, Mr. Nolan.
MR. NOLAN: Mr. Gustafson, please.

JOHN DAVID GUSTAFSON, recalled, already sworn, continued direct examination by Mr. Nolan, testified as follows:

Q Mr. Gustafson, when his lordship adjourned court yesterday afternoon, I was about to ask you to produce your Figure 11. Will you now please do so.
A I have it here.
Q This is a figure produced and made under your supervision and direction? A. It is.
MR. NOLAN: May I have that marked, my lord?
THE COURT: Exhibit No. 99.

FIGURE SHOWING STAGES IN DRILLING AND COMPLETING TYPICAL LEDUC ZONE (D-3) OIL WELL MARKED EXHIBIT 99.

Q MR. NOLAN: Now, what is Exhibit 99, Mr. Gustafson? A. This is a diagram to illustrate the methods used by Imperial to drill and complete wells in the Leduc-Woodbend field.
Q Yes. And how far down are you going in this particular well? A. This illustration is of a well which is intended to be drilled and produced from the D-3 zone of the Woodbend formation, the deepest producing formation in the Leduc-Woodbend field.
Q What sort of a drilling tool do you use? A. Drilling is done at Leduc-Woodbend by the rotary method.
Q And, quite simply, what is that? A. Rotary drilling is accomplished by rotating a rock cutting bit and removing drill cuttings from the bits by circulating a mud fluid through the drill pipe to which the bit is connected and out through the centre of this bit of the annulus between the walls of the hole and the drill stem or drill pipe, and as drilling progresses more lengths of drill pipe are added to carry the well deeper through the formation.

Q Well, yes. Now, you would drill with a rotary drill drilling to a depth of how many feet before the casing is cemented? A. First, a relatively large diameter hole is drilled to a depth of about 600 feet to carry the hole through the shallow unconsolidated formations. At a depth of about 600 feet, as is indicated on the left of the diagram, steel casing, using 10¾ inch in diameter, is run into the well, and cemented in place. The orange color on the diagram indicates the cement which binds the steel casing to the formations to which the casing is set.

Q Yes? A. Having set the steel casing to a depth of about 600 feet, a smaller diameter hole is then drilled, usually 8¾ inch or 9 inch diameter hole, is drilled on down to a point near the base of the green shale, which is the horizon immediately overlying the objective horizon, or D-3 zone.

Q That is between the Winterburn and Woodbend, is it?

A Yes. At the base of the, it is the uppermost member of the Woodbend formation, the Ireton or green shale member, and the hole is drilled to near the contact between the green shale and the Leduc or D-3 member.

Q Yes? A. At this point a long string of casing is set and cemented into the well, usually of 7 inches diameter. Again, the orange color indicates the approximate amount of cement which is used to bind the 7 inch casing in the borehole, and which serves to seal off any fluids from formations which have been drilled through, and to seal off those fluids or the formations off from the horizons below. The next step is to drill the well down through the 7 inch casing with a still smaller hole, of course, a hole of usually about 6 inch diameter to the objective total depth, which will be at some point in the yellow zone of the D-3. At this point, a protective liner is run into the well from a point some short distance up in the 7 inch casing to the total depth of the well. This liner is usually of a 5 inch diameter. And, again, the 5 inch liner is cemented in place, cemented principally to seal off the gas cap through which the small diameter hole has been drilled to prevent unnecessary production of gas in producing the well, to conserve the gas and the energy of the gas which is contained in the gas cap.

Q Well, now, by reason of this protective liner, I take it you have sealed off the production zone, have you not? A. That is correct. The liner and the cement around it, cement between the liner and the formation seals off the formation, so that the well when the casing is cleaned out to the bottom of the hole, the casing would be dry. It is then necessary to expose the producing formation so that it may be produced, and it is done by gun perforation. A perforating gun is run on a steel cable into the well, and then the formation is explored through the 5 inch liner, as indicated on the right hand drawing, and it goes through the liner and through the cement and exposes the productive formation so that it may be produced. Having opened the producing formation so that oil and gas may come into the well, the next stage is to prepare for production.

Q How is that done? A. That is done, as is indicated in this diagram, by installing a string of tubing, usually of 2⅜ inch diameter, in the well. The tubing is run to the bottom of the well.

Q And that tubing is colored green on the map under the well head controls that are drawn there?

A That is correct, with the green color and the red dots indicating that the production from the well is carried up through the tubing to the surface. The flow is controlled by a series of valves labelled here "Well head controls". From the well head production is carried under pressure, under pressure from the well, to a tank battery in the field.

Q Well, I think that is enough about Exhibit 99. Will you produce for me, please, your Figure 12. A. Yes.

Q Was Figure 12 prepared under your direction and supervision? A. It was.

MR. NOLAN: May it be marked, my lord,

THE COURT: Exhibit 100.

SECTION OF TYPICAL LEDUC-WOODBEND FIELD TANK BATTERY MARKED EXHIBIT 100.

Q MR. NOLAN: Now, as I understand it, Mr. Gustafson, Exhibit 100 shows how the oil and gas is handled in the field after they come from the well, is that right? A. That is right.

Exhibit 100 is a diagram that illustrates a typical case of handling of production at Leduc-Woodbend in the tank battery, the field tank battery.

Q Just before you go on, Mr. Gustafson, down in the lower left hand corner we have the "Well Head" which you showed on the preceding exhibit, Exhibit No. 99?

A Yes, that is correct, the same sort of diagram which indicates the surface controls at the well with the production being carried from the well in an underground pipe line to the tank battery which is illustrated Exhibit 100.

Q Well now, will you trace the progress of oil and gas from the well head? A. First, the well fluid is taken into the vessel which is labelled "Separator". This is a diagram of a well which produces water, the blue colour on the chart indicates water production.

Q Water with oil and gas? A. With oil and gas, and of an operation where the separation of oil and gas is carried out in two steps. The fluid is first taken into the vessel labelled "Separator" which is operated at a pressure of 100 pounds per square inch gauge.

Q Yes? A. Here most of the gas is separated from the well fluid. The gas is taken off the top of this vessel, the amount of gas is metered and it is then taken to a high pressure gas gathering system which carries the gas produced to a gas conservation plant in the field.

Q Now, that is the gas that comes out of the top of the separator, isn't it? A. That is correct.

Q Yes? A. The remaining fluid comes off the lower point in the separator, and it is taken into the next vessel which is labelled "Emulsion Treater".

Q That is the green fluid that is being taken and passes into the Emulsion Treater? A. That is correct.

Q Yes? A. In the Emulsion Treater a further separation of oil and gas takes place and a separation of oil and any water which may be present in the well fluid. This vessel is operated at a pressure of about 10 pounds per square inch gauge. Most of the remaining gas is taken off at this point in this type of operation. The water settles down in the bottom of the vessel and is available for disposal. The gas is carried off from

the top of the vessel and taken into a low pressure gas gathering system, which carries this low pressure gas to the gas conservation plant. The oil is then carried into the Storage Tank, which is operated at approximately atmospheric pressure, zero pounds per square inch gauge, and where the oil is available for transport to market. The small amount of gas remaining at the storage tank is carried from the top of the tank by a vent line to a flare and burned. The pump illustrated in the lower right hand part of the diagram is a pump which carried, which takes the crude oil from the storage tank to a field gathering system operated by a pipe line company, the gathering system being the pipe line system which starts the crude oil on its way to market.

Q Now, just before you leave that, you said the small amount of gas which is left in this storage tank, it looks to me to be a large amount of gas, Mr. Gustafson, because the tank area seems to be increasing as the pressure goes down. A. The larger area shown as containing gas in the storage tank actually contains very much less gas than the smaller areas of the other vessels in this system because of the much lower pressure. In the first vessel, for instance, in the separator, carried at 100 pounds per square inch gauge, some 65 to 75 per cent or more of the gas is removed and because of the higher pressure a much smaller volume is required.

Q Yes? A. Nearly all of the remaining gas is removed at the emulsion treater, the next vessel in this operation, and the amount of gas, the percentage of total gas which is carried into the storage tank is quite small, although the volume is large because of the very low pressure.

Q Because of the reduction in pressure? A. Because of the reduction in pressure.

Q Now, can you tell us anything about percentages of recovery? A. Sir?

Q Percentages of recovery? A. Oh, something of the order of 65 to 75 per cent or more of the gas is taken out in the first stage separator, and nearly all of the remaining gas would be taken out in the emulsion treater in this type of operation, leaving a very small percentage that is to be carried over into the storage tank, the crude oil storage tank.

Q Yes. How much gas is produced with the oil in this

Leduc-Woodbend field? A. In the D-3 zone wells the gas-oil ratio is about 733 cubic feet per barrel, that number being an actual measurement of total gas-oil ratio from the D-3 wells. In the upper of the two main producing zones, the Nisku or D-2, the total gas-oil ratio is 680 cubic feet per barrel. Again, the figure I have quoted is from actual measurement.

Q And what is a gas-oil ratio? A. Gas-oil ratio is the term used to express the amount of gas produced with respect to the amount of oil produced from a given horizon. It refers usually to the solution gas produced with the oil and is expressed in terms of cubic feet of gas, measured at standard conditions to barrels of oil.

Q That is? A. That is cubic feet of gas per barrel of oil.

Q And what do you mean by standard conditions?

A Standard conditions are the conditions at which gases are measured, a specified condition of temperature and pressure, temperature at 60 degrees Fahrenheit, and the pressure, atmospheric pressure of 14.4 pounds per square inch absolute pressure.

Q All right. Will you please produce for me now your Figure 13? A. Yes.

Q Was Figure 13 made under your direction and supervision? A. It was.

MR. NOLAN: May it be marked, my lord, as an exhibit.

THE COURT: Exhibit 101.

FLOW DIAGRAM OF LEDUC GAS CONSERVATION PLANT PUT IN AND MARKED EXHIBIT 101.

Q MR. NOLAN: Before we leave this question of the gas-oil ratio, would it be fair to say that that is not a measurement process, it is more of a calculated process? A. The gas-oil ratios which I quoted, 733 cubic feet per barrel for D-3 zone oil and 680 cubic feet per barrel for D-2 zone production were actual measurements from reservoir fluid samples which were sampled under reservoir conditions at the bottom of the well, the samples then brought to the surface, the amount of gas measured by flash liberation, and the gas-oil ratio converted to terms of cubic feet per barrel of oil.

Q Now, as I understand the Figure 13, it shows what happens to the gas which has been produced at Leduc, that is, Exhibit 101, is that so? A. That is correct.

Q Will you explain it, please? A. Exhibit 101 is a simplified flow diagram of the Leduc Gas Conservation Plant. This diagram at the left shows two extremes of gas, one at high pressure and one at low pressure, coming into the gas conservation plant.

Q And they were shown on Exhibit 100, were they not, the lines running to the high pressure gas gathering system and the low pressure gathering system?

A That is correct. And this is the ultimate end of the two gathering systems, high pressure and low pressure, which brings the gas from the tank batteries to the gas conservation plant.

Q All right. A. The high pressure gas comes into the plant at approximately 40 pounds per square inch gauge, and the low pressure gas comes in at about atmospheric pressure, and is taken through a compressor which compresses the gas to about 40 pounds per square inch and brings it into the hydrogen sulphide removal unit along with the high pressure gas. At this point, the hydrogen sulphide is removed. The gas is then taken through a series of units and compressed to about 560 pounds per square inch, cooled through a gas cooler, as shown in there, and taken into a dehydration unit. From here it goes into the first distillation unit, into a fractionating tower at approximately 560 pounds pressure, and the residue gas is taken off at the top of this first fractionating tower and made available for market.

Q Well, it passes through a refrigeration reflux system, according to Exhibit 101? A. That refrigeration reflux system further processes the residue gas to remove any of the higher hydrocarbons that might still be present in the gas that first comes into the tower to remove any of the propane and heavier hydrocarbons.

Q Yes? A. Then these liquid fractions, as they are labelled in this diagram, come from the lower part of the first fractionating tower and go on into the next.

Q Yes? A. In the second tower, the second system, propane is produced. Again there is a reflux, recirculation of this propane, to remove

any of the heavier constituents than propane which might be present after the first run through the tower. The propane then is carried to storage tanks, as shown, and made available for market. The remaining liquid fractions are taken into the third fractionating tower and its associated equipment.

Q Which is the last on this diagram? A. The last on the diagram.

Q The lowest? A. The lowest.

Q And what is produced there? A. At this point the butanes and the pentanes and heavier hydrocarbons are separated, the butanes being taken off at the top of the fractionating tower and carried to storage tanks at the plant where they are available for market. The pentanes and heavier hydrocarbons, what is then very often called natural gasoline, these fractions are taken off at the lower part of the tower, carried to storage tanks at the plant, and made available for market.

Q Now, what is this expression "liquefied petroleum gases" which I find between the propanes and the butanes? A. That is the L.P.G. of commerce, a term which is used to refer to propanes and butanes.

Q Well, is that all about that? A. I think so, sir.

Q Well then, will you produce for me, please, your Figure 14? A. Yes.

Q Was Figure 14 prepared under your direction and supervision? A. It was.

MR. NOLAN: May it be marked, my lord, please.

THE COURT: Exhibit 102.

FLOW DIAGRAM FOR LEDUC GAS CONSERVATION PLANT PUT IN AND MARKED EXHIBIT 102.

Q MR. NOLAN: What is Exhibit 102?

A This is a flow diagram for Leduc Gas Conservation Plant which shows the volumes and compositions of the plant feed and products. It is still a more simplified flow diagram than the preceding exhibit, and is used here to indicate the composition of the incoming gas, the composition of the outgoing products from the plant, and the average daily volumes of these streams through or during the

month of September, 1950.

Q Well, to go back a moment, what is the Leduc Gas Conservation Plant? A. It is a plant which was installed near the town of Devon in the Leduc-Woodbend field for the purpose of conserving gas which is produced with the crude oil at Leduc. This plant processes the gas produced with the oil to obtain the residue gas, the L.P.G., propane and butane, and to extract the pentanes and heavier fractions, and that form the natural gasoline to make these products available for market.

Q It is an Imperial Oil operation, is it? A. It is, yes.

Q Now, on the left hand side of Exhibit 102 I see you have "Plant Feed 12,402 Mcf/day", is that it?

A It is 12,402,000 cubic feet per day. 12,402 Mcf is 12,402,000.

Q Oh, 12,402,000? A. Yes. That is the daily average volume of gas which came into the Leduc Gas Conservation Plant during September, 1950. At the first stage in processing there is a small arrow pointing upwards just left of the rectangle which indicates the conservation plant, and it shows that during September 25,000 cubic feet per day was consumer or lost in the extraction of hydrogen sulphide. The remainder of the gas then goes through the plant processes which we have just described.

Q And it is reduced to 11,643,000 per day? A. That is the amount of the residue gas.

Q That is after you have deducted what has been lost?

A After deducting what has been lost in the extraction of hydrogen sulphide.

Q Yes? A. And after deducting the amount of shrinkage which the gas undergoes in making these liquid products, propanes, butanes and pentanes.

Q Yes? A. Starting at the top, at the right hand side of the diagram, we show the residue gas averaging during September 11,643 Mcf. per day. In other words, 11,643,000 cubic feet per day of residue gas. Of this residue gas in September 4,078,000 cubic feet went to market, 778,000 cubic feet per day was returned to the various leases for use as fuel and lease operations, and 6,072,000 cubic feet per day is accounted for by plant losses and the amount of gas which was flared at the plant for lack of market during September.

Q Now, what has happened to the methane and the ethane in the incoming stream? A. The methane and ethane of the incoming stream are all contained in the residue gas in the outgoing stream, so that when we get to the liquefied gases, propane and heavier -

Q That is, propane, butane and pentane? A. That is correct.

Q Shown in green as is indicated by the legend on Exhibit 102? A. That is correct.

Q Yes, and when we come to them, what? A. There is none of the methane and ethane remaining in the liquid products. The propane during September averaged in volume, as shown here, 10,586 imperial gallons per day. This accounts for 385,000 cubic feet per day of the incoming stream.

Q Yes? A. Going on down to butanes, the average daily recovery during September was 8,120 imperial gallons, which accounts for 253,000 cubic feet per day of the incoming gas stream.

Q Yes? A. And going on to the pentanes, the pentanes and heavier hydrocarbons recovered during September, they averaged 3,598 imperial gallons per day, and this accounts for 96,000 cubic feet per day of the incoming gas stream.

Q Now, I notice that the propanes and the butanes are indicated as going to market or flare, and that the pentanes are heavier, and by heavier we mean pentanes plus, don't we? A. Pentanes plus, pentanes, hexanes and heavier hydrocarbons.

Q They are indicated as going to refinery. What does that mean? A. The propane is made available to the plant for sale to market. The butanes are the same, although at the present time there is a very limited market for butanes in Alberta. The pentanes are taken to a refinery at Edmonton where they are utilized in making motor gasoline.

Q Would you give me the figures for the daily average of the pentanes, the number of gallons per day and the Mcf's? A. We have it here for September shown on the chart. The pentanes plus or natural gasoline recovered at the Leduc Gas Conservation Plant during September amounted to 3,598 imperial gallons per day, and this volume accounts for 96,000 cubic feet per day of the incoming gas stream.

Q Now, you have a table that you have prepared, was it prepared under your superivision and guidance? A.Yes.
MR. NOLAN: This is merely a table, my lord, so that with your permission I would hand the original to the Clerk of the Court and ask him to mark it, if your lordship will permit it, as an exhibit.
THE COURT: Exhibit 103.

TABLE SHOWING COMPOSITION OF RESERVOIR FLUIDS PUT IN AND MARKED EXHIBIT 103.

Q MR. NOLAN: Now, Exhibit 103 is entitled "Composition of Reservoir Fluids, Leduc-Woodbend field, Alberta, from analyses made for Imperial Oil Limited". Now, what does this table intend to indicate? A. This table shows the composition of 6 samples of the fluids which were produced from oil and gas wells at Leduc. Among the samples whose composition is shown here, taking it from the left, a sample of reservoir fluid from the D-3 producing horizon obtained on Leduc No. 6. A sample of reservoir fluid from the D-2 horizon obtained from Leduc No. 5.
Q Yes? A. Now, these first two samples were taken at the bottom of the hole under pressure, under reservoir pressure as shown here.
Q The first shown here is 1894 pounds per square inch gauge, and the second 1760 pounds per square inch?
A That is correct. So that the samples contained oil and gas in solution as found in the reservoir. The next sample is a sample of solution gas from the D-3 zone at Leduc No. 6 obtained after separation of gas and oil at the surface in the separator at a pressure of 150 pounds per square inch. The next is a sample of gas taken from the gas cap zone of the D-3 in Leduc No. 8, sample at the well head at a pressure of more than 100 pounds per square inch. The fifth one is a sample of gas produced from the Viking sand at Leduc No. 10, Imperial Leduc No. 10, a sample at the well head at a pressure of 170 pounds per square inch. And the last sample is a sample of crude oil produced from the D-2 horizon at Imperial Leduc No. 11, a sample at the separator after separation of gas and oil at a pressure of 34 pounds per square inch.

Q Now, what is this table below entitled "Composition by Molecular Percentages (Percent Gas by Volume)"?
A That table indicates the composition of the samples, shows their relative proportion of the various hydrocarbons present, expressed as molecular percentages, which is the equivalent of percent gas by volume.
Q And do I understand that each of these composition tables is in respect of the fluids or gases immediately above? A. That is correct.
Q So that if I asked you how much methane there was in the sample from Leduc No. 6 in the D-3 reservoir fluid, you would say 30.3 per cent? A. That is correct.
Q And that is the way that those tables are made up right across this exhibit? A. Yes.
Q Have you any particular comment you would like to make about any of these composition percentages?
A It might be noted that all of the samples whose analyses are shown here, gas as well as reservoir fluid and oil, contain varying percentages of all of the hydrocarbons from methane through the hexanes. The Viking gas from Leduc No. 10, for example, contains a small amount of the hexanes.
Q Well, a small amount of 0.24? A. Yes.
Q Yes? A. As does the gas cap gas from the D-3 zone of Leduc No. 8. It contains in this sample 0.32 per cent of hexanes and heavier.
Q And then if you go over to Leduc No. 11, the amount of hexanes and heavier is 76.71 per cent? A. Yes, that is a sample of crude oil. But it might be interesting to note that at the sampling pressure of 34 pounds per square inch, this crude oil simply contains, or this crude oil sample contains lighter hydrocarbons, including 1.01 per cent of methane.
Q So that what you are saying is, that these samples contain varying percentages of all the hydrocarbons?
A Yes.
Q From methane up to and including hexane? A. Yes, that is correct.
Q Thank you.

CROSS-EXAMINATION BY MR. STEER:

Q Will you refer for a moment, Mr. Gustafson, to your Exhibit 100? A. My Figure 12, I believe.

Q That is correct. This is the one (indicating). As I understand it, the material in the separator on the left hand side of the diagram is put into that vessel at 100 pounds pressure? A. The pressure in the vessel is maintained at 100 pounds.

Q Yes? A. The fluid from the well head is at considerably higher pressure, but it is reduced when it comes into the separator.

Q So that I can take it what is in the tank marked "separator" is in there at 100 pounds pressure, is that right? A. Yes, sir.

Q And then it is taken into the emulsion treater at a pressure, I think you said, of 40 pounds? A. At about 10 pounds.

Q At about 10 pounds? A. Yes.

Q I beg your pardon, Mr. Gustafson, 10 pounds. And then in the large tank at the right, it is in there at a lower pressure still? A. The crude oil storage tanks are usually carried at about atmospheric pressure.

Q The crude oil storage tanks are usually carried at about atmospheric pressure? A. Yes.

Q Am I right in thinking that at atmospheric pressure maintained at the well mouth all those substances marked in red in the three vessels shown in your diagram would be in a gaseous form? A. You say at atmospheric pressure at the well head, that would mean?

Q As it comes out of the well at atmospheric pressure, those substances marked in red would all be in gaseous form? A. Of course, it does not come out of there at atmospheric pressure.

Q I am not suggesting it did, I am not suggesting that it did. I am asking you whether if these substances came from the well at atmospheric pressure and temperature, what you have marked in red would be in a gaseous form, in a gaseous state, is perhaps a better word? A. That is approximately correct, sir, allowing for the very short time it would take to obtain the separation of gas and the oil.

Q Yes. And then in your Exhibit 102, it seems to me that this follows - that is your Figure 14, Mr. Gustafson? A. Yes.

Q Well, before I go on, Mr. Gustafson, I did not quite gather what that arrow pointing to the top of the diagram from "plant feed" is? A. That indicates the point in the process where the hydrogen sulphide is removed.

Q I see. A. And it shows the amount of gas that is utilized in taking out the H_2S.

Q Well, then, this red parallelogram on the left of your diagram, called "plant feed" - - A. Yes.

10 Q - - is the substance that comes from the well mouth?

A Not altogether. It is the substances which come from the various separators, the substance which comes from the various separators at the various tank batteries, and does not include all of the gas which is produced from the oil.

Q Well, show me where the rest of the gas has gone on your diagram? A. If I may refer back to Exhibit, is it 100, Figure 12?

MR. NOLAN: Yes.

20 MR. STEER: Yes.

A A small amount of the gas is vented from the crude oil storage tank and not carried into the gathering system and taken to the conservation plant at all.

Q Yes, I see. Well, that is the line that we see leading from "Storage Tank" on the right of your diagram, of your Figure 12? A. Yes, that is the gas which is vented or burned at the battery.

Q Now, if we add that to the gas that is indicated in this parallelogram marked "Plant Feed", we have

30 got all the gas that comes from the well? A. Yes.

Q And it follows that that gas from the parallelogram on the left goes through the Leduc Gas Conservation plant and remains in the parallelogram on the right, marked "Residue Gas", is that right? A. Some of it does, some of it comes out as liquid, as shown below.

Q I am coming to that, if you will just be patient with me, Mr. Gustafson. That gas comes from the conservation plant into the parallelogram marked

40 "Residue Gas" and then is disposed of as shown in your diagram on the upper right, is that right? It goes into "September 1950 Market", "Fuel for Lease Operation" and "Flare and Plant Loss"?

A Not quite. We are talking about two different kinds of gas now. The incoming gas is not the same gas in composition as the plant product shown here as residue gas.

Q Why not? A. Because in processing the plant feed a separation is made between what we show here as residue gas, propane, butanes, and pentanes.

Q Quite so, quite so. Now, I want to ask you, witness, what I want to ask you is the parallelogram marked "Residue Gas" and add the green that is marked "Propane", and add the green that is marked "Butanes", and add the green that is marked "Pentanes" all together, and you get what enters the plant on the left-hand side of the figure as "Plant Feed"?

A Yes, sir, with the exception of small losses that occur in the processing.

Q Quite so, quite so. And what you have told me is that what enters the plant as "Plant Feed" at atmospheric temperature and pressure is in a gaseous state as it emerges from the well? A. Not the gas, it is not in there at atmospheric pressure.

Q Please, Mr. Gustafson, try to follow my questions. I am asking you to make an assumption, and the assumption I am asking you to make is that this red plus the green, as it issues from the well mouth at atmospheric temperature and pressure, and I ask you if that does not include everything that issues from the well mouth in gaseous form?

MR. NOLAN: My lord, I object to the question on the ground that my learned friend is endeavouring to turn this witness into an opinion witness by putting to him an assumption and asking him to answer based on that assumption. The rule has been well stated by Mr. Justice Stuart in the judgment of our Appellate Division in Canadian Northern Western Railway v. Moore, 1915, 7 W.W.R., at page 1327, and it was affirmed in the Supreme Court of Canada, and that is to be found at page 579 - I am sorry, my lord, it is in 53 Supreme Court Reports at page 519.

And I want to read it with regard to the question of evidence, and I am reading from the judgment of Mr. Justice Stuart in volume VII, 1915 Western Weekly Reports, at page 1331, where his lordship says:

> ".....it is the proper rule, I think, that unless a party brings his own witness within the words of section 10, and makes him an opinion witness, the opposite party cannot do so by mere cross-examination."

So that I submit, my lord, it is not open to my friend to turn Mr. Gustafson into an opinion witness, because

he was not called to do more than to give evidence as to facts.
THE COURT: Well, have you anything further to say, Mr. Steer?
MR. STEER: I would have assumed, my lord, that I was asking Mr. Gustafson questions of fact with regard to these diagrams. He is here telling us about temperatures and pressures at which these substances are measured, and if he is capable of doing that, I take it he is capable of telling us, as a matter of fact, how, at the well mouth, under atmospheric temperature and pressure, those substances would issue from the well?
THE COURT: All right, go ahead.
Q MR. STEER: Well then, Mr. Gustafson, I am suggesting to you that allowing for such losses which may have occurred up to the time that this "Plant Feed" entered the Leduc Conservation Plant - do you follow me? A. Yes.
Q Would you look at your diagram, Figure 14? A. Yes.
MR. NOLAN: Exhibit 102.
Q MR. STEER: Allowing for such losses as may have occurred before we get to that point, then my suggestion to you was that when the substances represented by the parallelogram at the left marked "Plant Feed" issue from the well mouth, if measured at the well mouth at atmospheric temperature and pressure, they would be in a gaseous state, that is right, isn't it? A. To answer that properly, sir, requires some qualification. You have to set conditions of separation, certain time conditions, temperature and pressure conditions. It is almost impossible for me at the moment, impossible to answer without going into the details of these conditions. You have to specify them.
Q So that are you prepared to say whether or not you could equip a separator at the mouth of this well and operate it at atmospheric temperature and pressure with regard to what is coming out of the well?
A Yes, that can be done.
Q You could do it, could you? A. I think so.
Q Yes. And you are not prepared to tell us whether these substances to which I have referred coming out of the well and passing through a separator operating at atmospheric temperature and pressure would be in a gaseous state? A. I am not prepared, sir, to tell you about all of these substances because

under the condition of separation you have described, the combination of the gas and oil would be different from the composition that we have here under different conditions of separation. I do not know of any test which has been made on Leduc fluid of the kind of separation that you describe and I just cannot say what will be gas and what hydrocarbons will be oil under those conditions.

Q Well, I ask you now if you will look at Exhibit 100, that is your Figure 12? A. Yes.

Q And I think you told me that the substances that came from that well head passed into this first separator on Exhibit 100 at 100 pounds pressure. Is that right?

A Yes, sir.

Q And then I think you told me that the substance passed into the emulsion treater where it was contained at a pressure of 10 pounds? A. That is correct.

Q And then I think you told me that in the large tank the substance was contained at a pressure approximately atmospheric pressure? A. That is correct.

Q What have you to say as to the temperatures of these various containers, are they high or low, or what are they? A. Well, during the wintertime they are, of course, quite low; during the summer time they are quite high; they vary.

Q So that there is no effort made to keep a uniform temperature in these vessels? A. No, sir, that depends on atmospheric conditions.

Q I see. A. Oh, pardon me, except in the case of the emulsion treater. I imagine we might have heat applied to maintain it within some specific temperature range.

Q I see. And I think I suggested to you that the red in all three of these vessels taken together, if we had the substance that comes from the well mouth issuing at atmospheric temperature and pressure, that that would all be in a gaseous state, and I think that you told me that that was so? A. Approximately so, but, again, the conditions of separation are different, so that we would not have quite the same composition of gas or oil.

Q Well then, am I right, Mr. Gustafson, in thinking that the three red sections in Exhibit 100, taken together, comprise what goes into the conservation plant, as "Plant Feed"? A. The red sections from the first two vessels, the separator and emulsion treater, comprise the plant feed.

Q Yes. And in addition to that, you have got what is flared in a comparatively small amount from the storage tank at the right? A. That is correct.
Q Yes. Now, if we take all that gas labelled "red" on that Exhibit 100, and if we have the well product put through a separator at atmospheric temperature and pressure, isn't it true that all three of those items marked "gas" on this Exhibit 100 will be in a gaseous state? A. I am sorry. We would not have the same composition of gas, nor the same volume, if we start at the one point at the well head as we indicate in these three vessels, so that it is not possible for me to answer your questions precisely.
Q I see. Now, if you will look at Exhibit 102, Mr. Gustafson? A. Yes.
Q I am going to suggest to you that making allowances for losses that have occurred before the plant feed enters the conservation plant, and assuming that this substance issues from the well mouth at atmospheric temperature and pressure, there would issue from the well mouth in a gaseous state the red on the right marked "residue gas", the green on the right marked "propane", the green on the right marked "butanes", and the green on the right marked "pentanes"?
MR. NOLAN: The same objection, my lord.
Q MR. STEER: What do you say about that, Mr. Gustafson? A. Perhaps if I tried to answer you in this way, sir. If we have a gas which is shown by the red parallelogram on the left, which is shown here as "Plant Feed" in the figure, and is shown in the volume of 12 million 402 thousand cubic feet per day, if this gas has been separated from the fluid production from wells at Leduc, and processed through the Leduc Gas Conservation Plant, then it yields these products of residue gas, liquid propane, liquid butanes and liquid pentanes. But this gas in each case, at each tank battery, is separated from the oil at certain conditions, and, therefore, has a certain composition, and in a certain volume, so the only assumption I can make is that we have this gas coming into the plant because of conditions at which it is separated from the oil at the various tank batteries at the field.
Q There is nothing goes into that Leduc Gas Conservation Plant except gas, is there? A. The stream enters the plant as a gas. It may have droplets of

water and droplets of heavier hydrocarbons but it is considered as a gas.

Q And this gas that goes in there, it is a gas that goes in there at 100 pounds pressure? A. It enters the plant from the two systems, the high pressure system at approximately 40, and the low pressure at approximately atmospheric, and then it is compressed for treatment in the hydrogen sulphide removal unit, and taken into the first stages of separation in the plant at around 40 pounds per square inch.

Q I see. And from that gas entering that conservation plant in the way you have described it, you have got the substances marked on the right of this diagram in red and green? A. Yes, sir.

Q They are recovered from what goes into that plant?

A That is correct.

Q Then will you look at your diagram, Exhibit 102, the analysis that you have given of the product which comes or goes into the plant is there? A. Yes, on the left.

Q Now, you know the Dinning Commission Report? A. I am familiar with it, yes, sir.

Q And I have here an analysis that was put before the Dinning Commission of the Leduc D-3 gas which differs to some extent from the analysis that you have put on your diagram here. Now, it may be that it is unimportant, I do not know, but I would ask you if you would look at this analysis of the Leduc D-3 gas and then at your analysis on your Exhibit 102 and account for the difference, if you can? A. Account for any specific difference?

Q Here you have got no carbon dioxide mentioned in your diagram, and you have got no oxygen, and you have got no nitrogen mentioned? A. No.

Q Why? A. This analysis which is indicated here at the left of Exhibit 102 shows the hydrocarbon composition of the plant feed as obtained from a sample which was taken on September 15th, 1950, taken to the laboratory and analyzed for hydrocarbon content, and these are the results of that analysis.

Q Who made the analysis? A. It was made in the Imperial Engineering Laboratory.

Q By you or under your direction? A. It was made by engineers who work under my direction, yes, sir.

Q Well, now, would you look at the diagram, Exhibit 102, where you have given this molecular percentage composition and compare it with Exhibit 103 where

under the D-3 you have done the same thing? A. With any particular analysis of 103?

Q On Exhibit 102 this analysis you have given on the left, methane, ethane, etc., is an analysis of what kind of gas? Where does it come from? A. Now, which one are you referring to, sir?

Q I am referring now to Exhibit 102, your Figure 14?

A That gas is an actual sample taken from the incoming gas stream, the incoming stream into the plant.

Q Oh, from any particular well? A. Oh, no, sir, it is just a sample.

Q And no particular formation either? A. No, sir.

Q From any particular formation? A. Just a mixture of all the gas that is gathered at Leduc and taken to the conservation plant.

Q And you are telling us that in that gas, notwithstanding what is in this Dinning Commission Report, that there is no carbon dioxide, that there is no oxygen and that there is no nitrogen? A. No, no, sir. This analysis is the kind of analysis that is made at a gas conservation plant or a natural gasoline plant to control plant operation and the separation of the various hydrocarbons. The analysis is made simply for the purpose of determining that plant operations are proper in separation residue gas from propane and separating propane and butanes, and in separating pentanes, and the desired degree of separation from lighter hydrocarbons, and the analysis here is made to determine the percentages of hydrocarbons only, and no effort was made during that analysis, or these analyses, to determine the exact amounts of the very small percentages of other impurities that might occur in the gas.

Q Yes, I see. My difficulty, Mr. Gustafson, is that your figures on the right, where you figure up your percentages, add up to 100 - - A. Yes, 100% of the hydrocarbons.

Q - - 100% of the hydrocarbons. Does your "composition" - molecular percentages" refer to the parallelogram marked red above there, named "plant feed"? A. It refers to the hydrocarbon composition, yes, sir.

Q It does not say so. A. Well, sir, this is a standard type of control test that is made usually among gasoline plants. It is usually done in this manner. I am sorry we did not have some further explanation of the exact nature of the test.

Q But what you say is that you take the plant feed and

and somehow or other you determine the hydrocarbons that were in the plant feed? Well, how did you determine that? A. They are determined by analysis.

Q What kind of an analysis? You take the plant feed, Mr. Gustafson, and what do you do with it? A. A sample of the gas is taken from the plant feed and taken into a container, brought to the laboratory where the gas is analyzed by standard laboratory methods as set out or set up by various engineering associations.

Q Yes? And then you ignore, in this particular analysis I have here of the Leduc D-3, you ignore 4.6% of what you are analyzing. Is that it?

A Where is your 4.6%, sir?

Q 4% nitrogen, .4% oxygen and .2% carbon dioxide, those are all ignored? A. I would not say that the percentages, those percentages, or even anything close to those percentages.....

Q What you say then is that this report of the Dinning Commission is based on inaccurate testimony, is that it? A. No, sir. I say that the impurities in the hydrocarbons, the hydrogen, carbon dioxide and nitrogen, those that have come into the Leduc Gas Conservation Plant, may not be anything like the specific samples in the Dinning Report.

Q What you are telling us is that whatever was in there was simply ignored by you and you simply take the hydrocarbons, is that it? A. I will say this, sir, that the exact percentage of carbon dioxide, oxygen and nitrogen is not determined in the type of analysis which is indicated on this chart, because it is unnecessary for the purposes of the analysis. This analysis is made to determine relative hydrocarbon composition at various points in the plant operation. It makes no difference where some of the impurities occur at the various points in controlling the plant operation.

Q Perhaps we can shorten it this way: You are not intending to suggest that these substances in the "plant feed" -- A. I am sorry, sir, I did not hear you.

Q I say, you are not suggesting that carbon dioxide, oxygen and nitrogen did not exist in this plant feed?

A Oh, no, sir.

Q They did exist? A. Undoubtedly those impurities were present.

Q Then looking at Exhibit 84 for a moment, Mr. Gustafson, and this is a diagram showing all the producing wells in what is recognized as the Leduc area by the Conservation Board, as I understand it? A. Yes, sir, as of the date of March 1st, 1950.

Q Yes. And I suppose you have no knowledge of the various titles that are involved with respect to those wells? A. Only a general knowledge.

Q Yes. Some of them are freehold? A. Yes.

Q And some of them are held under petroleum and natural gas leases from the Crown? A. That is correct.

Q Would that be right? A. Yes, sir.

Q And have you any idea of the number of them which would be in a similar situation to the title here where there is reserved to the Canadian Pacific Railway Company only the petroleum? A. I know there are several at Leduc Woodbend; I do not know the exact number.

Q Yes, you would not know that. It is a comparatively small number, I would think, isn't it? A. Well, I suppose comparatively small. I do not know within a half a dozen the number.

Q Yes. Now, with regard to this Exhibit 84 again, how do you select the wells that you got by your more or less diagonal lines here? Are they selected at random? A. No, sir, not at random. They are selected to give the best possible picture of subsurface conditions along the line of the cross-section.

Q I do not know or do not understand what you mean by cross-section, Mr. Gustafson. Cross-section of what?

A Cross-section of the rock strata encountered.

Q Can you illustrate it to me? A. If we might turn back to one of the cross-sections, I would try to, sir.

Q Oh, I do not know that we will take up the time, Mr. Gustafson. You are not suggesting, I take it, when examining Exhibit 85, you are not suggesting that there is anything but gas produced from the Belly River formation, are you? A. No, sir. I do not know of any oil that has been found there in significant amounts. Undoubtedly there are small shows of oil.

Q Does the same remark apply with regard to the Viking-Kinsella field, that there is no oil found there in significant amounts? A. Well, there is no oil found in sufficient quantity to warrant commercial production.

Q You spoke of one well where some oil was found?
A Yes, where oil was recovered.
Q And that well, I take it, was on the land that was subsequently conveyed, the rights, the petroleum and natural gas rights in which were subsequently conveyed by Imperial Oil Limited to Northwestern Utilities Limited? A. I believe so, yes.
Q And the Joseph Lake formation where oil is produced from the Viking, is it? A. Yes, sir.
Q That is a very exceptional formation, isn't it?
A It is the only Viking field I know of which produces oil commercially.
Q Yes. And do you know, as a matter of fact, that the natural gas from the Viking-Kinsella field is piped from the wells to Edmonton and used for domestic and industrial purposes in Edmonton without treatment? Do you know that? A. I know that the gas is piped from Viking-Kinsella to Edmonton. I do not know whether the utility company has any intermediate treatment or not.
Q I see. Have you studied the composition of the gas?
A Only in a general way in looking through the records from various gas analyses I have seen.
Q Would you think it would require treatment before it could be used in a gas transmission system for a city like Edmonton? A. Not a special treatment other than provision along the transmission line for vessels called drips to allow condensed gasoline to get out.
Q Do you know whether those drips are there? A. No, sir, I do not.
Q I wonder if I could get you to look at Exhibit 93, Mr. Gustafson? A. Yes.
Q That is your Figure 5? A. Yes, sir.
Q Tell me whether this was, this study of the testing of the Viking member was prepared for this case?
A Part of it was done for this case, yes, sir.
Q Yes? A. It is an expansion of a study of the Viking producing possibilities that were carried on, or that we carry on as a routine part of our engineering.
Q I see. And your evidence is that so far as the Viking is concerned, it is primarily a gas formation?
A Yes, sir.
Q Then when we come to the Basal Quartz, if there is anything there at all it is gas and no oil? A. I do not see any tests indicated here on this Exhibit

which show gas. Yes, there are one or two, perhaps, which show the wells as having produced on test gas only.

Q Yes, what about oil? A. Oil occurrences in the Basal Quartz sand are quite common.

Q Commercially? A. Wells are being produced from this sand in the Gilbert area of the Leduc-Woodbend field, so that I suppose you could call it commercial oil production.

Q I see. And what about the quantities of gas that are got in this particular formation? A. Well, I see that a number of wells tested have produced gas at the rate of more than 1 million cubic feet per day while on test.

Q Now, have you any idea of the relationship between the gas and such oil as is found in this formation?

A Not a very clear idea, perhaps, because of the lenticular nature of the sands.

Q Very well. We will pass on to Exhibit 95, Mr. Gustafson, and this is a test of what you call the Wabamun or D-1 formation, is that right? A. Yes, sir.

MR. NOLAN: Figure 7.

Q MR. STEER: Exhibit 95, Figure 7?

A Yes, I have it here.

Q And gas is produced here? A. Gas has been encountered in testing the wells, but as far as I know no gas is produced commercially from the formation.

Q And oil? A. Nor any oil that I know of.

Q I see. It is a formation of no importance either way? A. Not at the present time, no, sir.

Q Well then, we pass on to your Figure 8, Exhibit 96?

A Yes.

Q And I take it that the green area here means that gas underlies the area colored green, is that right?

A Such gas as occurs in solution in the oil. We have used the green area here to indicate that part of the formation where oil is produced and where no gas cap above the oil exists.

Q And this is true, that if we go back to atmospheric temperature and pressure again, what you mean is that there will issue from the well mouth gas and oil?

A Yes, sir, that is correct.

Q And your proposition is that the gas that is produced under those circumstances at the well mouth comes out of solution in the oil, is that it? A. Yes.

Q There is no gas cap, you say? A. From the

areas marked here in green.

Q Yes. And where we have the areas marked in red, do I understand that in this D-2 formation there is a gas cap there? A. Yes. They are small in area and have not a great deal of significance so far as production of the oil is concerned.

Q I see. But they do indicate a gas cap? A. They do indicate that there is gas above the oil zone.

Q Do they indicate a gas cap? A. I think they call it a gas cap, yes, sir.

Q And the same thing, of the same nature as is indicated in the D-3 formation? A. It is the same type of occurrence on a much, much smaller scale.

Q Because if its smaller volume? A. Yes.

Q And then your Figure 9, Exhibit 97, the portion colored in red is the gas cap area overlying an oil producing area? A. That is correct.

Q I think you said yesterday that you envisaged the line between the gas cap and the oil as being a straight line? A. As being - I think I put it this way, that the contact between the gas and the oil was relatively so uniform that it was shown as a straight line on several of the diagrams.

Q Yes? A. But, of course, it is not the sort of thing you can confine to a point or a matter of an inch or two.

Q And the same thing with regard to the line between the oil formation and the water? A. Yes, sir.

Q Then with regard to Exhibit 99, your Figure 11?

A Yes, sir.

Q That "protective liner" that is shown in the second column, I understood you to say, seals off the gas cap? A. Yes, sir. It is cemented through the gas cap.

Q And that means that gas from the gas cap, once the sealing off takes place, can not affect the production of oil from the zone below? A. No, sir, not quite. The fact that the liner is cemented through the gas cap means that gas from the gas cap can not enter the well at that particular point, but the gas cap zone and the oil zone are interconnected throughout the reservoir.

Q Yes? A. So that, for instance, if an oil well were produced at a very high rate, gas from the gas cap would invade the oil zone and be produced through a well even though the immediate well bore was sealed off from the gas cap.

Q Wouldn't it have to be by some roundabout way?
A Well, through direct connection of the porosity in the formation.
Q You are now suggesting that the gas is going to drop down from its higher position into the oil area?
A It could. I do not suggest anything like that is going to happen at Leduc, because the Conservation Board won't permit waste of the gas in that fashion. They control producing rates to conserve the gas cap energy.
Q I would like to have this clear, Mr. Gustafson. You drill a bore hole down there and you drill through the gas cap? A. Yes, sir.
Q Now, if you did not line it and seal it off, the gas cap would, the gas cap would flow into the bore hole, would it, from the sides? A. Yes, it could.
Q As you alter the pressure down there it flows in from the sides? A. That is correct.
Q Now, that liner seals off the sides, doesn't it?
A Yes.
Q And prevents the gas from getting into the bore hole from the sides, is that right? A. Yes, that is right.
Q And, therefore, the oil that is produced through that hole is going to be produced either through the expansive force of the gas in solution or the expansive force of some other gas that is down there outside of the gas cap, or it is going to be produced by a water drive? A. No, it is produced probably as a combination of the expansive force of the gas that is in solution in the oil plus the expansive force of the gas cap gas overlying the oil zone, the energy contained in the gas cap gas.
Q Would be exerted downwards? A. Yes, would be exerted downward as the pressure is lowered in the oil zone.
Q I see. That is quite probably right. As the pressure at the bore is decreased there is a tendency for the gas in the gas cap to extend and press down on the oil and force the oil up? A. That is a very good description of what happens.
Q But what you really do there is perforate that liner opposite the oil zone, you do not perforate it opposite the gas cap? A. No, sir, just opposite the oil zone.
MR. STEER: Will your lordship excuse me for a few minutes?

THE COURT: I am going to adjourn for 15 minutes now. At exactly twenty-five minutes to twelve we will resume and the Clerk of the Court will, in the meantime, give us more oxygen in this room.

(Court resumed after short adjournment.)

Q MR. STEER: Would you look at Exhibit 100, Mr. Gustafson, that is your Figure 12, for a moment? A. Yes, sir.

Q I notice that the green areas in the three vessels are marked in the two on the left "oil" and in the one on the right "crude oil"? A. Yes.

Q That is your description of these substances, is it?

A Yes, it is, because in the storage tank on the right the oil is ready for market and is the product that is often referred to as crude oil.

Q Hardly ready for market, is it? A. Ready for transport to market from the storage tank.

Q You mean to the refinery? A. Yes, to the refinery.

Q Now, we were talking about the gas coming from the gas cap, and you told us in the course of your evidence that there is a certain gas ratio with respect to the D-2 and with respect to the D-3 zones?

A Yes, sir.

Q And when you speak of that gas ratio are you speaking, the gas-oil ratio, are you speaking of the producing gas-oil ratio, or are you speaking of the formation gas-oil ratio? A. What I quoted was the gas-oil ratio of the fluid that is produced from the oil zone, and they were obtained by sampling the oil, and its contents, the solution gas, in the reservoir and then bringing the sample to the surface and separating the gas and oil.

Q Would that sample be collected at the reservoir temperature and pressure unchanged? A. Yes, sir.

Q How is that done? A. It is done by lowering a sampling device called a "sample bomb" into the well, lowering it to a point in the reservoir where it is submerged in the reservoir fluid.

Q Yes? A. And then a valve on the device is opened after lowering the device or sample bomb to the desired point, a valve is opened allowing the reservoir fluid to come into the container. The valve is then automatically closed, the sample con-

tainer is brought to the surface with a sample which has an oil content obtained at reservoir pressure and temperature.

Q I see. Then that sample that you get consists of oil from the oil zone and gas from the gas cap?

A No, sir, not gas from the gas cap.

Q It does not? A. Just solution gas that is dissolved in the oil as the sample is taken.

Q Is that sample perfectly uniform throughout?

A Throughout the sample.

Q It is a homogeneous mixture like dissolving salt in water? A. Something like that. At the sampling condition it is a liquid.

Q Can you see bubbles of gas in it? A. No, sir, not at sampling conditions.

Q Because I see that through your diagram, Exhibit 100, your Figure 12, those little red dots indicate bubbles of gas in the oil, don't they? A. No, sir, they do not indicate in this case that there are bubbles of gas in the oil, they indicate that there is gas dissolved in the oil.

Q Oh, I see. You say then that as far as the reservoir fluid, or that as this reservoir fluid comes to the surface, you have got it in there, too, solution gas? A. Yes, in the specific samples to which I have referred there was nothing but solution gas present in the oil.

Q You say that there was nothing there but solution gas? A. No, nothing there but solution gas.

Q And the drilling of the hole down into the reservoir does not alter the pressure and temperature at the bottom of the hole, is that right? A. Not to any significant extent, no.

Q Yes, I see. Well then, is it your evidence that when the well is produced there comes up with the oil gas in solution plus a portion of the gas cap gas, notwithstanding the liner sealing off the gas cap?

A Speaking of Leduc-Woodbend now, the general operations there, I would say that little or no gas cap gas is being produced. When parts of gas cap appear, as indicated by an increase in the gas-oil ratio of the produced fluids, efforts are made to do something to prevent production of that gas cap gas.

Q And what would that be? A. Such as, one method, one common method is to attempt by placing more cement under pressure near the contact point of the gas cap and oil zones to prevent any escape of the gas into

the oil zone in the immediate vicinity of the bore hole.

Q Does that mean that you re-enforce your lines?

A No, it means that you try to place additional cement to get a cement seal adjacent to the bore hole, a seal between the gas cap zone and the oil zone.

Q What relationship has that cement so far as the location goes to the liner? A. By applying pressure to the cement an effort is made to force the cement back into the formation some distance from the liner.

Q Do you mean into the gas cap formation? A. Into the porous formation in the vicinity of the contact between the gas zone and the oil zone.

Q Well, you would be plugging up the pores of the gas cap? A. Parially in the vicinity of that, that is the purpose.

Q Because I understand that the liner was put in there so as to plug up what I might call the two opposite edges of the gas cap where the drilling penetrated the gas cap? A. Yes, but it doesn't always succeed.

Q The liner does not act effectively? A. In some cases it does not.

Q And then you go down with cement and you force that cement in there somehow or other, and I would like to know how into the pores of the gas cap, which is plugged off by a liner. How do you do it? A. I think I can explain it, sir, if we might turn to the chart which indicates that liner in operation.

Q Yes. Exhibit 99, which is your Figure 11? A. If you will observe on the diagram, on the right, the location of the perforations.

Q Yes? A. They are opposite the oil zone. If a well were to start producing what is considered to be an excessively high gas-oil ratio, in other words - -

Q If there was a break in from the gas cap? A. If it indicated that gas was coming in from the gas cap, then a packer would be set just above the perforations which are shown here.

Q Yes? A. To seal off the perforations.

Q Oh, you would seal off the perforations? A. Yes, seal off the perforations temporarily that are shown here.

Q Yes? A. And then perforate again through the liner and through the cement around the liner in

the vicinity of the contact between the gas zone and the oil zone.

Q Yes? A. Those openings simply being to permit pumping the cement into the formation at that point.

Q Yes? A. The cement is then pumped in under pressure in an endeavour to force it some short distance back into the formation at that point and obtain a better seal between the gas and oil zones.

Q Quite so. In other words, you force cement into the pores of the gas cap? A. Yes.

Q With a view, as has been expressed, to reinforce your liner which has not worked effectively, is that right?

A It might not be that it is simply a defect in the cementing of the liner, it might be because of vertical fractures in the formation that gas is coming out of the formation into the vicinity of the well, coming through the formation into the vicinity of the well.

Q I see. A. The purpose of that cementing is to shut off the openings through which gas is coming in from wherever it might be.

Q That is all.

RE-EXAMINATION BY MR. NOLAN:

Q There were just two question arising out of my learned friend, Mr. Steer's, cross-examination.

MR. STEER: If my learned friend will excuse me a minute?

MR. NOLAN: Yes.

Q MR. STEER: I intended to ask you this, Mr. Gustafson, your training has been what?

A I studied Mining Engineering at the Ohio State University, and hold a degree in Mining Engineering.

Q What is the date of that degree? A. 1936.

Q And your experience since then? A. Has been almost altogether in Petroleum Geology and production.

Q Where? A. First for about one year as Junior Engineer with the United Natural Gas Company of Pennsylvania, then beginning in early 1937 with the Carter Oil Company.

Q That is a United States corporation with headquarters where? A. That is a United States corporation with headquarters at Tulsa, Oklahoma.

Q Yes? A. And I served the Carter Oil Company as Reservoir Engineer, District Engineer and Division Engineer successively, then I camt to Imperial a little over three years ago as Division Engineer.

Q Thank you.

Q MR. NOLAN: There are just two matters, Mr. Gustafson. When the gas comes out of the well, does it come out at atmospheric pressure? A. No, sir, it comes out under line pressure, varying from well to well, but under considerable pressure.

Q And at what pressure is that gas measured? A. It is measured at whatever pressure is held on the line at the particular point of the operation. For instance, the gas coming off the first stage separator at Leduc, the first stage separator, is at approximately 100 pounds per square inch, and the gas is measured at that pressure. In speaking of the volume of gas throughout, it is the equivalent volume at standard conditions for comparative descriptive purposes.

Q Now, my learned friend mentioned to you that in your Exhibit 102, which is your Figure 14, you have made no mention of nitrogen, carbon dioxide or oxygen?

A No, sir, not in these analyses which indicate the relative proportions of hydrocarbons.

Q Is there any mention made of those substances in your Exhibit 103, being the analysis of these various fluids and gases from various wells? A. Yes, nitrogen, carbon dioxide and oxygen, where they are found to be present during the analysis, are indicated.

Q Are set up in those exhibits? A. Yes.

Q Thank you.

THE COURT: Any other questions? All right, thank you, Mr. Gustafson.

A Thank you, my lord.

THE COURT: Next?

MR. NOLAN: I will call Mr. J.O. Lewis, sir. My lord, Mr. Lewis is being called as an expert witness to assist the Court as best he can in the determination of this question, whether the substance petroleum embraces natural gas. He was invited by Imperial Oil Limited to make an investigation and to make a report for our benefit and assistance. That report, my lord, has been transcribed. I have been wondering during the last half hour whether it would suit your convenience, suit the convenience of the Court, if the witness were permitted to read the report. I know that if I proceed by way of question and answer, which I am quite prepared to do, it will take three or four times as long as reading it. If this is read, I would, of course, provide your lord-

ship and my learned friends with copies of it, so that they could follow it, and the witness would be here for the purpose of cross-examination. I seek no advantage by doing it by this method, because I will obtain the same evidence by question and answer, but I wondered if it might not appear to the Court that it might be a convenient way of doing it. It is not so unusual, my lord, or, I mean, it is not usual, my lord, but the case itself is not usual, and this is really an investigator's report put in through the mouth of a man who is scientifically and technically trained in these matters. I have not discussed it with my friends. It is more a matter of time than anything else that prompts me to make this observation.

THE COURT: What harm can it do, Mr. Steer?

MR. STEER: It can not do any, my lord, I am quite sure, but I would like to have a look at it.

THE COURT: Do you want to look at it before it is read?

MR. STEER: Or at the time, my lord. I can see my friend's point perfectly, and I have no objection whatever to his proceeding in this way.

THE COURT: Mr. Nolan has just said something that has been in my mind throughout the whole of this case, that this is not an ordinary case or lawsuit where the rules of court can apply strictly, and if there is any way of getting material before the court in a way which is somewhat different, I see no reason why it should not be done, although I have observed the last couple of days that some lawyers here think that this is a football game where rules must prevail, and they have acted as if they knew everything. I am not sure that they do. I think that some of the men who have been called to give evidence, and who are qualified geologists, know a lot more than some of the real young lawyers who are here. All right, Mr. Nolan.

MR. NOLAN: May I ask at this time to have distributed to yourself, my lord, and my learned friends, copies of Mr. Lewis's report, and perhaps it could be given a number now.

THE COURT: Yes, Exhibit 104.

REPORT OF JAMES O. LEWIS
MARKED EXHIBIT 104.