In the Privy Council.

No. 12 of 1950.

ON APPEAL

FROM THE SUPREME COURT OF CANADA

BETWEEN

BOILER INSPECTION AND INSURANCE COMPANY OF CANADA - - - - - - - - - - *Appellant*

AND

THE SHERWIN WILLIAMS COMPANY OF CANADA LIMITED - - - - - - - - - - *Respondent*

Record Vol. 3

Plaintiff's Evidence at Enquête

Pages 405 - 604

BLAKE & REDDEN,
17 Victoria Street,
London, S.W.1,
Appellant's Solicitors.

CHARLES RUSSELL & CO.,
37 Norfolk Street,
Strand, W.C.2,
Respondent's Solicitors.

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DOMINION OF CANADA

In the Supreme Court of Canada

OTTAWA

On Appeal from a Judgment of the Court of King's Bench for the Province of Quebec (Appeal Side) District of Montreal.

BETWEEN:—

THE SHERWIN WILLIAMS COMPANY OF CANADA LIMITED,

(Plaintiff in the Superior Court and Respondent in the Court of King's Bench (Appeal Side),

APPELLANT,

— and —

BOILER INSPECTION AND INSURANCE COMPANY OF CANADA,

(Defendant in the Superior Court and Appellant in the Court of King's Bench (Appeal Side),

RESPONDENT.

JOINT CASE

VOL. III — PLAINTIFF'S EVIDENCE AT ENQUETE.

Pages 405 to 604.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

10.45 a.m. January 8th, 1946.

DEPOSITION OF ALAN THOMSON

On this 8th day of January, in the year of Our Lord nineteen hundred and forty-six, personally came and reappeared, Alan Thomson, a witness already sworn and examined herein and whose examination now continues under his oath already taken, as follows:—

Cross-examination continued by Mr. John T. Hackett, K.C.:

Q.—Now, Mr. Thomson, your cross-examination was not finished when you left the witness box on the 20th of November, 1945, and although you are in cross-examination I am going to tell you exactly what I want, to try and make your evidence shorter. At two or three places in your testimony, — and I can point them out to you if you ask me to, — when I asked you what was the condition of this wall and what was the condition of that wall, you said you did not remember, and I want to ask you to look at the exhibit called Detail of Costs, which is annexed to P-15. . . . .

Mr. Mann:—Part of P-15.

By Mr. Hackett:—Yes.

Q.— . . . .which is annexed to P-15 and forms part of it, and say if you can tell from it whether the work was done on the east wall, the west wall or the south wall or the north wall, or wherever it was done? A.—Yes, I think I can.

Q.—Will you begin with the north side, — that is, the St Patrick Street side. Is that clear to you? A.—Yes.

Q.—I will ask you to tell the Court what charges are made with regard to the wall on the St. Patrick Street side? A.—Well, I couldn't subdivide it here from this Detail of Costs, but it is included in certain items in the cost. I couldn't subdivide it by this, not now. I could if I had time to do it.

Q.—Will you tell me what item deals with the work that was done on the north side of the building, including the replacing of any windows that were out or the replacing of any window frames that were out, or any bulge in the wall, any work on the north side of the building? A.—The first one here, I would say, would be "Set Steel Sash", under the heading of Carpentry, — $371.05.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—Now, "Set Steel Sash", $371.05. Have I correctly understood you to say that you cannot at the moment indicate whether that "Set Steel Sash" item was on the top floor, the second floor, the ground floor, or whether it was on any of the four walls? A.—It includes all the steel sash, the setting of all the steel sash in that particular building.

Q.—Whether it be on the ground floor, the second floor or the top floor? A.—Yes.

Q.—Or whether on the St. Patrick St. wall, the D'Argenson St. Wall, the courtyard wall or the Atwater Av. wall? A.—That is right.

Q.—And there is no breakdown? A.—There is no breakdown on this sheet.

Q.—Now let us take another and probably a more substantial item. You remember that you said, in referring to the damage, that there were walls that were blown out and there were walls that were blown out of plumb. Now; is there more than one item for those two subdivisions of work, that is, the walls that were blown down and the walls that were disturbed? A.—Yes, there is more than one item on this Detail of Costs.

Q.—Take an item, will you? A.—Well, there is, "Remove "Brick Walls".

Q.—Where is that? A.—The second item under Demolition in P-15.

Q.—"Remove Brick Walls": $470.53? A.—Yes.

Q.—Now, there is nothing there which shows whether that work was done on the east or west, the north or south wall? A.—Nothing on P-15.

Q.—Or whether it was done on the ground, the middle or the top floor? A.—That is right.

Q.—And you are not able to give that at the moment? A.—That is right.

Q.—Then what are the other items dealing with walls? A.—Well, there is "Lay Bricks & Blocks".

Q.—Where is that on P-15? A.—Under the heading of Masonry, the third item.

Y.—That is an item of $8,070.36? A.—Yes.

Q.—That might include work done on walls that had been blown out and on walls that had been pushed out of plumb? A.—That is correct.

Q.—And there is nothing that indicates the segregation of those two subdivisions? A.—No.

Q.—And there is nothing that indicates whether that work was done on the ground floor, the middle floor or the top floor? A.—That is correct.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—Or on any of the four walls facing the different points of the compass? A.—That is correct.

Q.—And you are unable to give it at the moment? A.—That is correct.

Q.—There was reference made also. . . .

Mr. Mann:—He hadn't finished all the items.

By Mr. Hackett:—Go on with the rest of the walls, Mr. Thomson.

Witness:—There is the "Scaffolding" item under the heading of Masonry. You see it: item No. 1.

Q.—That is the first item? A.—Yes.

Q.—That is $1,701.08, — and, not to worry you with all the questions that I asked you about walls, on the other items, the same answer is true, is it not? A.—Yes.

Q.—There is nothing to indicate whether it had to do with walls that were down or walls that were pushed out of plumb, or whether it was walls on the first, second or third floor, or whether it was walls facing the north, south, east or west? A.—That is right.

Q.—Any other items there? A.—"Mortar", the next item to that.

Q.—$1,003.19? A.—$1,003.19.

Q.—And the same answer applies to that? A.—Yes.

Q.—Anything else with regard to walls? A.—"Clean "Bricks".

Q.—What does that mean? A.—That means that all of the brick walls that were demolished, that were out of plumb, we salvaged the bricks to rebuild back into the walls.

Q.—That means, you took the mortar off? A.—Yes, and culled them for broken brick, and so on.

Q.—And the same general answer applies to that? A.—That item definitely applies to the walls out of plumb, because we had to take down those walls that were out of plumb and salvage the brick.

Q.—Some of the bricks that were in the yard were good and could be salvaged, could they not? A.—Yes, they were.

Q.—And they were subjected to a cleaning process? A.—That is correct.

Q.—So, this item refers to the walls that were found standing but were out of plumb and to the cleaning of bricks that were found in the yard, having been pushed out by an explosion or some cause? A.—That is correct.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—And there is nothing to indicate how the allocation of this charge was made, with regard to the floor or the wall? A.—No, nothing to show which wall.

Q.—Nothing to show which wall or which floor? A.—That is right.

Q.—Are there any other items with regard to walls? A.—"Bracing Brick Wall": that is item No. 2 under Carpentry.

Q.—That is $18.56? A.—Yes.

Q.—Do you happen to know where that was done? A.—Not just offhand, no.

Q.—Anything else in regard to wall? A.—There is an item of Window Sills and Lintels.

Q.—$525.15? A.—That is correct.

Q.—And the same general answer applies? A.—That is correct.

Q.—I see "Parapet Wall," $22.80. That is not a very big item, but what is that? A.—Under what heading is that?

Q.—Under Carpentry, down near the bottom, just above "Shelter". Do you see it? A.—Yes. That was a wooden coping on the parapet wall. It was replaced after the brick had been rebuilt.

Q.—You don't know where that was? A.—No.

Q.—Does that exhaust the items that refer to walls? A.—There is an item here of Window Sills and Lintels. Did we get that? It is $525.15.

Q.—Yes. Is there anything else? A.—Did you take "Steel Sash" into that item? It pertains to the outer walls of the building.

Q.—Where is that item? A.—Page 2, under the heading of Sub-trades.

Q.—"Steel Sash," $1,388.30? A.—That is correct.

Q.—You cannot localize it? A.—That can be localized by details on our plans that we have in the office, record plans.

Q.—You haven't got those with you? A.—No.

Q.—Is there anything else as regards walls? A.—No; I think that is all. I think it is pretty well covered.

Q.—Again I am going to be very frank with you, Mr. Thomson. I want to deal with the principal items, and I understand that they are probably walls, roofing, steel work, — or, just tell me what the principal items would be, that make up this charge, and I may tell you in advance that what I want to get at is to find out in what part of the building these items were. Have I made myself clear? A.—Yes.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—We have talked about walls. What would be the other big subdivisions of the work? I recall that when you talked about it you referred to the roof and you said part of it had been burned off and part of it had been lifted, and when you referred to the walls you said part had been knocked down and part had been knocked out of plumb? A.—Yes.

Q.—Now, is it correct to say that the whole work which you did could come roughly under the headings of roof and walls, or is there another subdivision or are there other subdivisions which you think you should consider? A.—I think the sub-trades item should be considered.

Q.—As distinct from the walls and the roof? A.—Oh, yes. For instance, there is structural steel.

By Mr. Mann, K.C.:—

Q.—That is the fourth item under Sub-trades? A.—Yes, amounting to $3,175.32.

Then there was sprinkler work. "Sprinklers" is what it is called in P-15.

By Mr. Hackett, K.C.:—

Q.—You think that is separate? A.—It is a very distinct part of the work.

Q.—We have four subdivisions so far. Do you think there is any other? A.—Plumbing & Heating.

Y.—That is five. And . . .? A.—Electric Wiring.

Q.—That is six. Any other? A.—I take it that "Roofing "& Sheet Metal" pertains to the roof.

Q.—Let us begin again:—There are the following subdivisions: walls, roof, structural steel, sprinklers, plumbing and heating, electric wiring, — and then there was overhead? A.—That is right.

Q.—That would be seven categories. I assume we have dealt with walls. Now will you point out the roofing items on P-15? I am going to ask you to point them all out, and then I will ask you one question, which will probably be a quicker method than dealing with each one separately. A.—Under the heading of Demolition there is "Remove Roof", "Remove Broken Beams".

Q.—Would that mean wooden beams? A.—"Remove "Broken Beams"?

Q.—Yes. Would it be wooden or steel beams? A.—That would be wooden beams.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—What is next? A.—There would be part of the "Scaf-"folding" under Carpentry.

Q.—Part? A.—Yes. Then, "Brace Roof", "Repair Roof "and Beams", "Bolt Runners", "Mill Roof Deck".

Q.—What is meant by "Bolt Runners"? A.—It is really bolting off runners.

Q.—I'm not interested in that, because you have no charge against explosion for it? A.—No.

Q.—What is next? A.—"Mill Roof Deck".

Q.—That is the same; there is no charge against explosion. What is next? A.—"Cant Strip", only a small item.

Q.—There is no charge against explosion on that. Next? A.—"Roof Boarding".

Mr. Mann:—No charge for explosion there either.

Witness:—"Roof Framing".

Mr. Mann:—No charge there for explosion.

Witness:—"Celboard".

Q.—(By Mr. Hackett):—Where is that? A.—That is next under "Roof Framing" under Carpentry.

Q.—(By the Court):—"Celboard" is a trade name, I suppose? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—There is no charge for explosion on that item? A.—No.

Q.—Next? A.—"Roofing & Sheet Metal", under the heading of Sub-trades, next page.

Q.—That is $1,100? A.—Yes.

By Mr. Mann, K.C.:—

Q.—$1,100 as regards explosion? A.—Yes. It would be part of the structural steel pertaining to the roof, structural steel work.

By Mr. Hackett, K.C.:—

Y.—Anything else? A.—I would say that is all.

Q.—You have mentioned to the Court all the items that affect the roof. Will you say if you are able to indicate, from the

account P-15 or otherwise, where the work for which the different items are detailed in P-15 was done on the roof? A.—Yes, some of the items I can.

Q.—Will you be good enough to tell me where the work was done with regard to those items that you can identify and localize? A.—The first item, "Remove Roof", is in the east portion of the linseed oil mill.

Q.—That is over what is called the east room? A.—Yes.

Q.—Will you look at the picture P-6-d and tell the Court if you can see there any part of the roof which is down? A.—Yes, I can see it here.

Q.—Would you just describe it to the Court, and tell the Court how you can identify the slab of material which seems to rest to the left on the piled drums and to the right on a lower surface?

Mr. Mann:—Isn't it a pile of cans?

By Mr. Hackett:—I don't know what they are.

Witness:—These are cans. Of course, there was only part of the roof that had to be removed. This was a local condition.

Q.—Would you tell the Court how you identify the piece of material in P-6-d as part of the roof? A.—It is charred material.

Q.—How do you know it is part of the roof and not a partition? That is what I am trying to get at. A.—Just the way it lies and the way it looks.

By The Court:—

Q.—You recognize it as part of the roof? A.—Yes. It is very hard to explain.

By Mr. Hackett, K.C.:—

Q.—What other roof items can you identify and localize particularly, besides ::Remove Roof"? A.—There is an item, "Brace Roof", under Carpentry.

Q.—$18.90. Do you know where that was done? A.—That was done on the west side, the west room.

Q.—What else? A.—The next item, "Repair Roof and "Beams".

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—That is $1,719.37. Where was that done? A.—That was in the west room too.

Q.—What had happened to the roof and beams there? A.—Quite a few of the beams had been cracked by some force and had to be replaced.

Q.—That was wooden beams? A.—Wooden beams.

Q.—And you charged that up to explosion? A.—To explosion.

Q.—Is it correct to say that the beams in the west room were wood and in the east room were steel? A.—Yes.

Q.—Any other roof items that you find, that you can localize? A.—Well, I can identify this "Roof Boarding".

Mr. Mann:—There is nothing charged against explosion there.

By Mr. Hackett, K.C.:—

Q.—Tell me about this "Repair Roof and Beams". Was it at that point, in the west room, that the roof had been lifted? In your first examination you said part of the roof had disappeared and part had been lifted? A.—Not in the west room.

Q.—I am asking you if it had been lifted in the west room? A.—It would have been lifted but not disappeared.

Q.—You said that in the east room part of it had been burned off and part had fallen down and, anyway, it was open to the skies? A.—Yes.

Q.—And then, without identifying its location, you said damage had resulted from the lifting of the roof. Was that in the east room or the west room? A.—In the west room.

Q.—I understand, while we are referring to the east and west rooms, the east room was really a new building added to the old building: is that right? A.—The old building was a renovated building, renovated at the same time as the building of the east room. The east room was a new building and the west room had been renovated at the same time, practically rebuilt.

By Mr. Mann, K.C.:—

Q:—The west room or west building? A.—The west building in which is included the west room.

By Mr. Hackett, K.C.:—

Q.—Was there anything on the roof which indicated a line

of demarcation between the old building and the new building? A.—Yes.

Q.—Just tell the Court what that was? A.—There was a fire wall or fire stop.

Q.—What is that? A.—It is a regular wall built between two buildings to stop fire jumping from one to the other.

Q.—It goes up how far above the roof itself, in this instance? A.—In this instance, I would say from memory about two feet.

By The Court:—

Q.—Above the cover itself? A.—Above the roof itself, yes.

By Mr. Hackett, K.C.:—

Q.—Structurally, were these two rooms, as we have called them, separate buildings? A.—Oh, yes.

Q.—They were quite separate and distinct? A.—They were separate and distinct, with openings between the two buildings.

Q.—And what is called the fire wall was at one time the east outer wall of the old building, the west building? A.—No; in parts it was newly built. It would have been the east wall. There was an east wall to the old building, the west building, but this fire wall was a new fire wall separating the east and west buildings.

Q.—The purpose of all this is to find out if the east building and the west building were separate buildings, and you said that that is so, with the fire wall in between? A.—Yes.

Q.—And there were two doors, the north door and the south door, in the fire wall? A.—I think that is correct.

Q.—Will you now tell the Court what you saw in the west room that indicated that the roof had been lifted? A.—Well, it wasn't really seen from the inside of the room. It was seen from the roof itself. By walking on the roof it was seen that the slopes to run off rain water had been changed. That was the strongest indication the roof had been lifted, plus broken beams inside.

Q.—Was it the result of your observation that the roof had probably gone up and come down again? A.—In some places it had gone up and not come down again.

Q.—That lifting, I suppose, accounted for the change in the slopes? A.—Yes.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—And in some places it had gone up and come down, apparently? A.—Yes, but not to its original position.

Q.—But what I am again coming to, — and I am putting it to you straight, — is this; the condition of the roof over the west room could not be attributed to anything that had happened to the roof over the east room? A.—I don't understand that question.

Q.—What I mean is this: could the burning or the blowing-up of the roof over the east building account for the condition of the roof in the west building? Supposing the east roof had gone up, been blown up, could it have wrenched or torn the roof to the west so that it would be in the condition in which you found it, or would there have been something immediately under the roof to the west to produce the condition in which you found it? A.—The moving of the roof in the east room had nothing to do with the raising of the roof in the west room.

Q.—You are sure of that? A.—I am quite sure, positive.

Q.—And why? A.—Because the whole condition was from a blowing effect through the fire doors, which hadn't closed, and that concussion, which had rushed right across the room, had knocked the wall out of plumb and raised the roof. There was no place for the current of air to go; so it raised the roof and blew out the wall.

Q.—Then we can be quite sure that it wasn't because of any. . . . A. —. . . . movement of the roof in the east room? That had nothing to do with the raising of the roof in the west room.

Q.—Now ,was there anything else? Were there any other roof items that you can localize? A.—I would take this item of "Roofing & Sheet Metal" under the heading of Sub-trades.

Q.—Roofing & sheet metal: that is an explosion item of $1,110. Where was that? A.—That is the roof of the west room, over the west room.

Q.—Just what did you have to do for that charge? A.—Once the slopes of the roof have changed, there is nothing very much you can do with the roof or the roofing proper. It means we had to re-slope the roof and put on a new roof deck.

Q.—Why did you make one-half of that a liability of the fire insurance companies? A.—Because that is only half of the work that was done.

Q.—I don't understand. Would you explain? A.—There was an east room and there was a west room, and the roofing of the east room was charged to fire and the roofing of the west room was charged to explosion. There had been no fire at all in the west portion of the building.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

By Mr. Mann, K.C.:—

Q.—No part of that item is chargeable to explosion as regards the east room? A.—That is correct.

By Mr. Hackett, K.C.:—

Q.—Are there any other items there, as regards the roofing, that you can localize? A.—I think those are the main items.

Q.—And the other items with regard to roofing you cannot localize: is that correct? A.—That is correct.

Q.—Let us come to the next general heading that you gave me: structural steel? A.—Yes.

Q.—Can you localize any of the items which you have charged to explosion on P-15? A.—Well, under the Structural Steel heading were miscellaneous lintels that were charged, lintels for windows or other openings, that were charged to explosion.

Q.—Where is that? A.—Structural Steel is item No. 4 under Sub-trades.

By Mr. Mann, K.C.:—

Q.—$3,175.32, of which $158.77 is for explosion and $3,016.55 for fire? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—You say that includes lintels? A.—Yes. That is structural steel.

Q.—Does that mean frames? A.—No; that is angle irons, really metal supports or steel supports to carry brickwork over openings in walls.

Q.—And this item of $158.77 is in payment of work done where in the building? A.—In the east and west rooms.

Q.—In the east and west rooms? A.—Yes.

Q.—And you cannot divide it? A.—No.

Q.—Is there anything else under the heading of Structural Steel that has been charged to explosion, that you can localize? A.—How much in this $158.77, do you mean?

Q.—No, I mean in the account?

Mr. Mann:—Any other items?

Witness:—What other items do you mean? You mean under Structural Steel, Mr. Hackett?

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

By Mr. Hackett:—Yes.

Witness:—No, there is none.

Q.—I want to show you a photograph, the one you looked at a minute ago, P-6-d, and you will note that there are a number of girders. I assume they are steel girders? A.—Yes.

Q.—A number of them are sagging, — and they had to be repaired or replaced, I suppose? A.—Well, some of them were straightened and some replaced.

Q.—Is it correct to say that the charge for that work was placed on the fire insurance companies? A.—It was allocated to the fire insurance companies.

Q.—In its entirety? A.—With the exception of the lintels, all this structural steel framing was charged to the fire insurance.

Q.—Less the one item of $158.77 that you have referred to? A.—Yes.

Q.—Now we come to Sprinklers. Was there anything that indicated to you that the sprinkler system had worked? A.—I think, from what I saw, the sprinkler system was broken. I don't think it ever worked. It was just shattered; I don't think it ever worked. Water would run, of course, out of some of the pipes, but so far as working as a sprinkler system is concerned, I don't think it did.

Q.—Where is the item concerning sprinklers? Is it in the Sub-trades? A.—Yes.

Q.—The amount is $580. Can you say where the work for which the charge was made was localized? A.—No, I wouldn't like to say that.

Q.—The sprinkler system ran throughout the building? A.—Yes.

Q.—On all floors? A.—Yes.

Q.—And in both the east and west rooms? A.—Yes.

Q.—In both buildings? A.—Yes.

Q.—Was there some work done on each of the three floors? A.—Yes.

Mr. Mann:—The three floors of the east building.

Mr. Hackett:—That may be so, but I understood him to say all the floors, east and west.

Mr. Mann:—No, the three floors of the east building. There was some done in the west building, but I understood the

three floors of the east building. There wasn't some done on the three floors of the west building.

Q.—(My Mr. Mann): Just the top floor? A.—That is right.

By Mr. Hackett:—

Q.—And you haven't anything to verify that? A.—No.

Q.—Now, on the sprinkler system, you say that you are of the opinion that the sprinkler system was broken? A.—Yes.

Q.—You think it was broken by the explosion and it probably didn't work? A.—That is right.

Q.—But you no more than I know exactly what happened, of course. Will you look at the photograph P-6-d, and what I want you to say,—I don't know whether you can or not,—is that the roof when it fell down probably brought down the sprinkler system, and if that were true, you see, there would have been fire enough or heat enough to set the sprinkler system going before it was knocked down by the roof? Just look at the picture and see if you can go any distance with me on that hypothesis. A.—Well, of course, if the sprinkler system had worked properly, the roof would not have burned off, because the sprinkler head is at the roof and it would spray the roof with water, and that is what led me to believe at the time that the sprinkler system had not worked at all, that there were shattered fittings or broken pipes, which is very unusual in a sprinkler system. This sprinkler system, if it had worked, would have protected the roof that burned, from fire.

Q.—That is a reasoned answer, but I am asking you if it would make any difference in your appreciation if you had a highly inflammable substance burning, like turpentine? Do you think that the water from a sprinkler system, coming from the sundry sprinkler heads, could control a fire in burning turpentine? A.—Well, I'm not sure of that, but I do know that a building protected with a sprinkler system that functions properly would not get into this mess. (P-6-d).

Q.—That I might be inclined to accept in the case of an ordinary conflagration, but I think we can agree, can't we, that turpentine is something that is much more inflammable and something in which a fire is much more difficult to extinguish than a fire in wood or some other combustible? A.—As I understood this, and when I saw it the next morning, if it was a local fire that had burned a hole through the roof, it should not have left the place the way this was next morning when I came there. If the turpentine was contained in a vessel, a tank, it would be

just like a fire in a fire pot and would go up and burn a hole through the roof.

Q.—But, if the turpentine was spread all over the room? A.—That would be a different story.

Q.—And it would create a different situation from that of an ordinary fire burning. . . . A.—Depending on the quantity of turpentine that was burning and all that kind of thing.

Q.—Well, then, will you look at the pipe or pipes that are identified as "X-1" and "X-2", which straddle the girder, and say if you think those are sprinkler system pipes? A.—No, that is not a sprinkler line.

Q.—What is it? A.—I could not say that, but it is not a sprinkler line.

Q.—Why do you say it is not a sprinkler line? A.—Because it is not heavy enough, to begin with. It is not big enough.

Q.—What is the size of a sprinkler line? A.—They vary in size, but this is much too small. I would say, without going into it too far, that that is an electric conduit that has bent with heat and fallen.

Q.—What was the diameter of the sprinkler system? A.—Now, that is a very broad question.

Q.—But, I mean in this building? A.—Well, they are all sizes. If you are in the construction business you know a sprinkler line when you see it, and I would say this is not a sprinkler line.

Q.—The reason you gave me was because it is so small? A.—That was one of the reasons. The main reason is that I am experienced enough to know that is not a sprinkler line. That is the only explanation I can give you.

Q.—Will you look at the other pipe that isn't bent but runs from the upright column over the girder and out of sight and tell me if you would think that was a sprinkler line? A.—I would say Yes.

Q.—Would you be good enough to mark on the sprinkler line the letters "S.L."? A.—Yes.

Q.—Is that a sprinkler head beside the letters you have written? A.—I think that is what remains of a sprinkler head.

Q.—And, just for the purposes of the record, will you tell the Court what is a sprinkler head and how it is set off? A.—A sprinkler head is a. — I am not an expert on this, you know, — this is only general knowledge, — a sprinkler head is set at a temperature of 160 or 180, that it will go off at that temperature if it should fuse or burn and thus allow the water to come out through the aperture. That is not an expert explanation, but...

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—But the essential thing is that you have a waterpipe and at the heads the pipe will open if it is subjected to a certain temperature? A.—Yes.

Q.—Which is . . .? A.—160 or 180 degrees.

By Mr. Mann, K.C.:—

Q.—Depending on what the fuse material consists of? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—And the head that you have referred to, or the remains of it, is near the big cross under a little cross? (P-6-d). A.—Yes.

Q.—Now, Mr. Thomson, would you look at the photograph P-6-d again and tell the Court if that part of the roof or the roof when it fell would have interfered with that part of the sprinkler system which you have identified? A.—Well, yes, it would, or it could have.

Q.—When I said "interfered", I probably should have said "displaced". When I used the word "interfered", I should have said "displaced" or "thrown out of position", as the photograph shows it was? A.—It could have.

Q.—The next general subdivision is Plumbing & Heating. Will you look at P-15 and point out where there are any plumbing and heating items? A.—Just what do you mean by that, Mr. Hackett?

Q.—Well, what I want to get from you is this:—In your account there is a certain amount of money that was paid for work that comes under the heading of plumbing and heating? A.—Yes.

Q.—And I want you, in the first place, to indicate what those items are, and then I am going to ask you, when you have pointed out where they are in P-15, if you can tell me in what part of the building the plumbing and heating was done, that went to make up the items? A.—There would be rain-water louvers, and. . . .

Q.—Would you look at the account and identify first those items which come under the heading of plumbing and heating? Plumbing & Heating is the fifth general category. A.—There is only one item.

Q.—Where is it? A.—It is under the heading of Subtrades.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—"Plumbing & heating," $567.99, charged to explosion? A.—Yes.

Q.—Can you tell me where that plumbing and heating work was done? You understand what I mean: whether it was in the east building or west building, top floor or middle floor? A.—It was done on the top floor, principally, of the west building, and on the three floors of the east building.

Q.—Now, dealing first with the west building, can you tell me what part of the $567.99 is for work done in the west building? A.—No, I couldn't give you that from these figures here.

Q.—And I suppose you cannot any more give me what was done on the top floor or on the second floor or the ground floor of the east building? A.—No.

Q.—You said there is only one item of plumbing and heating? A.—Yes.

Q.—The sixth general category which you gave us was Electric Wiring. Can you point out the items which come under that heading? A.—It is under the same heading of Sub-trades.

Q.—And the amount charged for explosion is $570.75? A.—That is correct.

Q.—I am going to ask you the same question: can you say what portion of it was in the west building, what portion in the east, and whether on the top. . . . A.—Not from this detail of costs. (P-15).

Q.—Was some of it in the west building, do you know? A.—Yes, I think it would be.

Q.—Could you say whether it would be half or less than half? A.—I would not like to say.

Q.—Was there some done on all three floors of the east building? A.—Yes.

Q.—And could you say what proportion on the top floor? A.—No, I could not say that.

Q.—Now I want to come to the last general category. We are coming to the question of Overhead, and I think you know what I want to get at. A certain amount has been allocated to explosion and a certain amount to fire, and I want to know, first, with whom you made the allocation, and then I am going to ask you how you did it. Can you say with whom you divided up the charge and put a certain portion of it onto the Defendant and a certain portion of it onto the insurance companies? Who represented the insurance companies, as far as you were concerned? A.—It was made up with Mr. Irving, but I don't know whether he represented the insurance companies or not.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—Yes, he did. You mean Mr. W. M. Irving? A.—Mr. William Irving.

Q.—Mr. Debbage has told us that Mr. Irving represented the fire insurance companies. So, this division between explosion and fire was arrived at between yourself personally and Mr. William Irving? A.—Yes.

Q.—And there was nobody there representing the Defendant? A.—No.

Q.—That is, the explosion company? A.—No, there wasn't.

By The Court:—

Q.—You represented the owners, of course? A.—This was done in our office.

Q.—But you represented the Sherwin-Williams Company in that discussion? A.—Well, there was no discussion. It was just between Mr. Irving and me.

Q.—You didn't submit the discussion or the record of that discussion to the company, the Sherwin-Williams Company? A.—I might have sent a copy of this detail of costs. I can't remember that.

Q.—You didn't discuss it with any officer of the company? A.—No.

By Mr. Hackett, K.C.:—

Q.—Then how did you and Mr. Irving arrive at the division on the overhead? Mr. Irving probably will be the next witness, and I will have to ask him how he arrived at the division between fire loss and explosion, — you have told me what you did about it, — but I want to know how you and Mr. Irving arrived at the division in the overhead as between explosion and fire? A.—It was arrived at on a percentage basis of the total cost of the work.

Q.—In other words, you had a total bill which amounted to $68,815.84? A.—No, we didn't have a total bill. . . . You are talking of overhead, are you?

Mr. Hackett:—I'm sorry, I'm wrong.

Mr. Mann:—That is the whole thing, $68,815.84.

Q.—(By Mr. Hackett): What was your total bill before you put on your overhead? A.—It doesn't show on the detail of costs.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—(By Mr. Mann): Isn't the last item the total? A.—Yes, but it includes the overhead.

Mr. Hackett:—I think we will have to begin by asking Mr. Thomson to tell us where the overhead is.

The Court:—Why not ask the witness to make the calculation? I think that would save time.

By Mr. Hackett, K.C.:—

Q.—I will just ask you to show me where the items are? A.—There are really two items that would be covered under overhead. There is an Overhead Account and a General Account in P-15.

Q.—Where are they? A.—They are on Page 1, the last two headings on the page: Overhead Account, explosion 60%; fire, 40%. And the next item under that is General Account.

Q.—Where is that? A.—The very next heading, General Account, on Page 1.

Then on the next page there is a Plant & Tool Account.

These are three items that usually come under the heading of overhead.

Q.—And you divided those three items on the basis mentioned: 60% which you charged against the Defendant, and 40% against the fire companies: is that correct? A.—Yes, that is correct.

Q.—Well, did the total amount of the work which has been charged to the explosion company amount to 60% of the total? A.—Oh, no.

Q.—Well. if it didn't, why did you charge the explosion company with 60% of the overhead? A.—Because that was a fair figure. I think it is a fair figure as of overhead on the amount of work involved repairing the explosion damage as compared with the fire damage.

Q.—I don't know whether you and I understand one another. Can you tell me what percentage of the total amount of your work. . . . A.—Was charged to fire?

Q.— . . . . was charged to fire, before you got to the overhead items which come under three heads? A.—No, I couldn't give you that right offhand.

A. THOMSON (for Plaintiff at Enq.) Cross-exam. continued.

Q.—I am going to take his lordship's suggestion and ask you to make up the calculation, and I will tell you what I want. I think there has been charged to explosion a higher percentage of overhead than of cost before overhead? Am. . . . A.—Well, I know. . . .

Q.—I would like you to tell me if I am right? A.—I don't think you are right, because I know, including the overhead, this detail of costs is made up of 55% explosion and 45% fire; so it is very close to 60 and 40; and that is what leads me to believe that the overhead charge of 60% for explosion and 40% for fire is correct.

Q.—Do you say, Mr. Thomson, that before you added overhead . . . . A.—No, including the overhead.

Q.—But. do you say that, before you added the overhead, the cost was 60 per cent due to explosion? A.—Approximately, due to explosion.

Q.—And 40% due to fire? A.—Approximately.

Q.—That is a matter, I suppose, of just adding up the figures that appear in P-15, omitting the overhead items? A.—That is correct.

Q.—Would it be much of a task for you to do that? A.—It is quite a chore.

Q.—It is? A.—Yes. It means you have got to go back and start away from the beginning and take all the items with the exception of these three overhead items.

Q.—I thought you could add up the items, leaving out those three overhead items, and that it would not be a very difficult task to arrive at the figures, and, if you could do that, I was going to suggest. after Mr. Mann has asked you such questions as he wishes to, that you do it here and then we would see.

The Court:—(Examining P-15): It is a matter of calculation.

Mr. Hackett:—Well. I think I will leave that to Mr. Thomson. It is a matter of calculation, yes.

The Court:—Mr. Thomson, after lunch, will be able to tell us that, I'm sure.

Mr. Hackett:—Yes. I will take up something else now:—

Q.—I want you to tell me about this wall that we have called fire wall. I had been under the impression, until you stated otherwise this morning, that it was the old outer wall of the west

building. You have said that that wall had been built over as a fire wall. Did I understand that properly? A.—It had been repaired, — this is only from memory, — it had been repaired and strengthened to form a fire wall.

Q.—When you say it had been repaired and strengthened, what were its dimensions? How big was it? A.—I would need to refresh my memory on that, to check up from the plans, if there is a set of plans here.

By The Court:—

Q.—Would it be fair to say that the old wall was used, with the necessary repairs to make it suitable for a fire wall? A.—Yes.

Q.—But to all intents and purposes, it was the old wall that was used? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—The old outer wall? A.—Yes. (Consulting Mr. Moffat's Plans): There was a new wall entirely on the third floor.

Q.—How big was it? A.—A 13-inch wall.

Q.—Solid brick? A.—It consisted of, I think it was, a block wall.

Q.—What is a "block" wall? A.—A block wall is of concrete blocks.

Q.—Are the blocks solid or hollow? A.— The blocks have spaces in them for lightness or for insulation purposes.

Mr. Mann:—Mr. Moffat says it was a brick wall.

Witness:—It shows a block wall on the plans. I can't remember very well, but it shows on the plan as a block wall.

Mr. Hackett:—I am interested in getting at the fact, and if Mr. Moffat is sure it is a brick wall I am going to accept that.

Witness:—It could be brick or block.

Q.—(By Mr. Hackett): Which is the more substantial, — a solid-brick wall or a block wall? Which is the stronger? A.— Well, there are too many factors that govern that question. The question is not. . . .

Q.—The question is not propertly put? A.—No; it isn't a proper question. For instance, you can build an 8-inch brick

wall with lime mortar which has no strength at all, and you can build an 8-inch cement-block or cinder wall which is much stronger, depending on the material. . . .

Q.—This wall we are speaking of was a 13-inch wall? A.—Yes.

Q.—Now, did you build it? A.—Yes.

Q.—And I suppose we can assume that it was a well-built wall? A.—I certainly would do more than that.

By Mr. Mann, K.C.:—

Q.—In all modesty? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—Would you say, if you built a 13-inch brick wall as you would build it or a 13-inch cement-block wall as you would build it, which would be the stronger? A.—Well, without going into all kinds of mathematics, I would say a brick wall is stronger than a concrete wall built with equal mortar and materials of that kind.

Q.—What was the outer wall of this building? A.—Which one, — the west building?

Q.—Both? A.—Brick mostly. I can't remember really from memory, but on this plan it shows a brick facing and a block backing.

Q.—Is that the east building? A.—The west building.

Q.—Now take the east building. What kind of wall was there? Does the plan show? A.—No, it doesn't show on this plan, — I beg your pardon, — this is the east building that is shown on this plan.

Q.—Just check that, and instead of going all over it again we will just correct your answer of a moment ago, if you want to? A.—What was the question?

Q.—I asked you about the outer wall, and you said it was brick with block backing, and I asked you if that was the east building and you said No, that it was the west building. Do you want that to stand? A.—From the plan here, — I am only talking from what I see on the plan. — it shows the west building with a brick facing and a concrete-block backing.

Q.—What does the east building show? A.—It doesn't show on this plan at all.

Q.—Do you remember what it was? A.—No, I can't remember just offhand.

ALAN THOMSON (for Plaintiff at Enquete) Re-examined.

Q.—Where could we find out? A.—We could find out from the pictures, I think, the photographs.

Q.—Just look at the D-7 series and tell us what you can? A.—The east building is 4 inches of brick and an 8-inch concrete-block back.

Q.—Those are the hollow blocks you have referred to? A.—Yes.

Q.—Was there any reinforcement in the fire wall? A.—Not that I could remember, no.

Q.—Then, you would consider, from what you have said, that that fire wall, the solid-brick wall, would be a stronger wall than. . . . A.—. . . . than the outside face.

Q.—When you say the "outside face", I suppose you are using a trade term, with which I am not familiar. Does that mean the outside wall? A.—The outside wall, yes..

By The Court:—

Q.—In other words, the wall between the east room and the west room, to which we have referred as a fire wall or division wall, was stronger structurally than the outside walls of the building? A.—It was as strong or stronger.

Re-examined by Mr. J. A. Mann, K.C.:—

Q.—Mr. Thomson, the items that you referred to as included in the term "overhead" are Overhead Account, General Account and Plant & Tool Account? A.—Yes.

Q.—Now, Overhead Account amounts to $4,202.44? A.—Yes.

Q.—General Account amounts to $2,837.39. That is a rough calculation which I would like you to check.

Mr. Hackett:—When you say $2,837.39, is that for explosion only or for everything?

Witness:—Everything.

Q.—(By Mr. Mann):—$2,837.39? A.—Yes.

The Court:—There is a third account included in overhead?

Witness:—Yes.

ALAN THOMSON (for Plaintiff at Enquete) Re-examined.

Mr. Hackett:—Do your sums show, Mr. Mann, on P-15, or are they results of your own calculations?

By Mr. Mann:—They show as a result of my calculation, which I asked him to check.

Q.—The Plant & Tool Account amounts to $823.46? A.—Yes.

Q.—Take those three items: $4,202.44, $2,837.39, and $823.46: the total is $7,863.29? A.—Yes.

Q.—Take overhead of $7,863.29 from $68,815.84 and you get $60,952.55? A.—Yes.

Q.—That is, you take the amount of your total account less the three items I have mentioned and you get $60,952.55? A.—Yes.

The Court:—That still does not give the information Mr. Hackett wanted.

Witness:—No.

By Mr. Mann, K.C.:—

Q.—Would you now apply the percentages, Mr. Thomson, or would you prefer to do it later? Having got those figures for overhead and so forth, would you apply the percentages for which Mr. Hackett asked you?

The Court:—Why not let the witness do that during the lunch adjournment?

Mr. Mann:—Yes.

(It now being 12.30 p.m., Jan. 8, 1946, Court adjourns to 2.15 p.m.).

And further for the present deponent saith not.

H. Livingstone,
Official Court Stenographer.

W. M. IRVING (for Plaintiff at Enquete) Examination in chief

2.15 p.m., Jan. 8, 1946.

Mr. Mann:—While Mr. Thomson is making the calculations requested of him this morning, with your lordship's permission I will put Mr. Irving in the box.

DEPOSITION OF W. M. IRVING

A witness on the part of Plaintiff.

On this 8th day of January, in the year of Our Lord nineteen hundred and forty-six, personally came and appeared: William M. Irving, aged 74, contractor, residing at 4643 Sherbrooke Street West, in the City of Westmount, District of Montreal, who having been duly sworn doth depose and say as follows:—

Examined by Mr. J. A. Mann, K.C.:—

Q.—You are a contractor and builder, Mr. Irving? A.—Yes.

Q.—And have been engaged in that type of occupation for how long? A.—Pretty close to sixty years.

Q.—And have you had experience relative to the assessmen of fire losses on buildings and, if so, would you state to the Court what experience? A.—Yes, I have had a lot of experience. I have been working for about 30 years on fire losses on buildings.

Q.—You are familiar with the building of the Sherwin-Williams Co. in which an accident happened in the form of an explosion and fire on August 2nd, 1942? A.—Yes.

Q.—I understand you were called upon by Cheese & Debbage, or, as it is now, Debbage & Hewitson Inc., to endeavor to make a valuation of the loss for the purpose of allocating the loss by fire as compared to the loss by explosion? A.—Yes.

Q.—What did you do, if anything, in response to that call? A.—Well, I was told that they had called in the Foundation Co. to go ahead and repair the job, put the work back, take down the parts that were moved out of place, and also rebuild the parts that had been blown over, and I went, with Mr. Thomson sometimes and sometimes with the other fellow, — I forget his name....

Q.—Belonging to the Foundation Co.? A.—Yes, — Mr. Thomson's assistant. I visited the job in conjunction with one or

other of them pretty nearly every day as long as the work was under way.

Q.—How long was that? A.—Four months, about, approximately.

Q.—When were you first at the building? A.—I was at the building the morning after the explosion or fire.

Q.—That would be the 3rd of August, 1942? A.—Yes, 9 o'clock in the morning.

Q.—9 o'clock in the morning? A.—Yes.

Q.—What did you observe in relationship to the building? Did you go into the building, first of all? A.—Yes.

Q.—And what did you observe in relationship to the condition of the building? A.—Well, it is very big to describe the whole thing.

Q.—I think you had better describe it, because we are dealing with an allocation of explosion loss as compared to fire loss? A.—Well. I would have to start on, I would say, some section of the building and follow it right around.

Suppose I take the front elevation of the eastern building, the new building.

On the three elevations there were three large steel windows at each floor.

On the top floor the steel windows were pretty well pushed out or barrelled out by the force of the explosion. That wall itself wasn't moved out of place, but the pressure of the steel windows against the jambs and lintels moved them out, so that the steel windows had all to be taken out and the jambs and lintels rebuilt when the steel windows were installed, and I think, from memory, the glass was pretty nearly all broken.

That was the condition of that front elevation facing on to St. Patrick Street.

Q.—I am showing you Exhibit P-6-f showing the St. Patrick St. side of the building. You might indicate on that? A.—These are the windows to which I refer.

Q.—That is, the windows on the top floor? A.—Yes. They were pushed right out, two of them completely gone, and there is part of one remaining, but you can see it is pretty well messed up, and it required a new window. There was a number of glasses, although it does not show very clearly on this photograph, which

were broken, — the bulk were broken, — and the lintels and the sills were loosened. The force of the explosion behind these windows had loosened these lintels and sills, so that they had to be taken out and rebuilt. That was the condition of that wall there.

Then this is the easterly wall.

Q.—I am now showing you P-6-e? A.—Yes. That is the same thing.

Q.—That is the D'Argenson St. side? A.—The easterly wall.

Q.—Still looking at the St. Patrick St. side shown on the photograph P-6-f, and you are still talking about the easterly building? A.—Yes.

Q.—The new building? A.—Yes.

Q.—You call it "the new building". Was it a new building? A.—It was practically a new building. It was built in 1939, I think, about 1939.

Q.—Let us go to the westerly part of the building.

First, look at the balance of the easterly side, on the lower floors. You have mentioned the windows and lintels and so forth on the top floor of the easterly building. I want you now to go to the floors below, the lower floors of the easterly building, and then all the floors of the westerly building? A.—The glass in the windows here. . . .

Q.—You are pointing to the central floor? A.—Yes. The three windows were damaged, and the force of the damage behind them had damaged the sills and lintels and also the jambs, and these sills and lintels and jambs had to be taken out and rebuilt, on that floor.

Q.—That is still the second floor? A.—Yes.

Q.—The floor below where the accident was? A.—Yes.

Q.—There was no fire in there? A.—There was fire in there, if you will. It was pretty well up to there (Indicating); it was in behind there.

Q.—Partially, behind, on the middle floor? A.—Yes. There was enough heat to break the glass.

Q.—You are still in the easterly building? A.—Yes.

Q.—Take the lower floor? A.—There was no fire down there.

Q.—No fire on the first floor? A.—No.

Q.—That is the ground floor, you mean? A.—Yes.

W. M. IRVING (for Plaintiff at Enquete) Examination in chief

Q.—What damage was there in the easterly building, if any, on that floor? A.—Some of the sills and lintels were also damaged. The force of the explosion had loosened the sills and lintels, and there was a lot of broken glass.

Q.—That is the ground floor of the easterly building? A.—Yes.

Q.—What was the condition of the wall in general, other than the damage to the windows to which you have referred? A.—The wall was damaged, but it wasn't moved out of place.

Q.—In the easterly building, on the St. Patrick St. side? A.—That is right. The wall stood the shock fairly well there, but it was somewhat damaged.

By The Court:—

Q.—So far, we have been talking solely of the St. Patrick Street frontage? A.—Yes.

The Court:—Make it quite clear when you move from that frontage, Mr. Mann.

By Mr. Mann:—Yes, I intend to do that, my lord.

Q.—Would you look at the westerly section or the westerly building, on the St. Patrick St. front, and tell me the condition of the windows and walls in the westerly building on the St. Patrick St. side, beginning with the top floor? A.—On the top floor and down to that second floor there that wall had to come down.

Q.—Why? A.—Because it was pushed out six inches at the top; it was out of plumb 6 inches or approximately 6 inches; and these four windows on the top floor had all to come down, or, to be taken out.

Q.—The four windows on the top floor: what happened to them, did you say? A.—They were taken out; they were badly damaged by explosion and they were taken out. There was no fire in that building either.

Q.—No fire? A.—No. These windows were badly damaged and had to be repaired and replaced and new glass put in them, and that wall, although it doesn't show in the photograph, was pushed over at the top approximately four to six inches and had to be taken down to the level of the top floor.

Q.—Or below? A.—Down to the level of the top floor.

Q.—And rebuilt? A.—Yes.

Q.—Let us get down below the top floor. What about the second floor, the windows and the wall, or any damage below the top floor of the westerly building? A.—Well, the glass in those windows there was generally broken.

Q.—"There" doesn't mean anything in the record, Mr. Irving. You are talking of the middle floor now? A.—Yes; I have left the top floor, because I have told you that those windows up there had to be taken out and repaired and put back and new glass put in them, and that wall had to be taken down to the floor, the level of the top floor, and rebuilt.

Q.—To the level of the top floor, — the level of the floor of the top floor? A.—Yes.

Q.—Now talk about the middle floor? A.—The windows were damaged to a certain extent, glass broken, and some repairs done to the frames and the wall, but not bad. The ones in the basement were not damaged.

Q.—The ones in the ground floor were not damaged? A.—No, very little damaged.

Q.—When you said "basement" you meant the ground floor? A.—Yes.

Q.—You said the wall in the ground floor of the westerly building was not damaged? A.—Very little damaged.

Q.—Was it damaged at all? A.—It was all damaged more or less by water.

Q.—When you say it wasn't "damaged", you mean it wasn't pushed out? A.—That is right.

Q.—The pushing-out operation started about the level of the top floor and up to the roof? A.—Yes, from there up.

The Court:—Perhaps I should explain to you, Mr. Irving, that it is no use to say "here" or "there", pointing to the picture, because the Judge reading your deposition, whether myself or a Judge in a higher Court, will see your deposition as it is typed out and will have to understand from the words you use, without your gestures, what you mean; so you will have to say, for instance, "This window, which is No. 2 from the right on this "picture, on such and such a floor", or some such words as that. I hope you understand.

Witness:—Yes, I understand.

Mr. Mann:—You see, in a written record "here and there" doesn't mean anything.

Witness:—I understand.

The Court:—If this case should go to the Court of Appeal the Judges there won't have seen you and they won't know what you mean by "here and there". That is why Counsel want you to make a specific description of the part of the building to which you are referring.

Witness:—When I have talked about the westerly building I have described the elevation facing on St. Patrick Street. I am going now to take up the elevation facing on Atwater Avenue.

Mr. Mann:—Have we a picture of Atwater Avenue?

Mr. Hackett:—No.

Witness:—I will take Atwater Avenue and tell you that the first two floors, the third floor and the second floor, were pushed out, well, between four and six inches.

By Mr. Mann, K.C.:—

Q.—The wall, you mean? A.—Yes.

Q.—On both the top and middle floors? A.—Yes, — so much so that we were afraid it was going to fall out, and, as there is a railway track that runs alongside that building, we had to build a scaffold or a platform over the railway, high enough to admit of the trains going through, so that the shaking by the train would not cause that to fall out. Then that wall had to be taken down, the third storey and the second storey, and rebuilt.

Q.—You are talking about the Atwater Street side? A.—Yes.

Q.—The west side? A.—Yes.

Q.—Now the ground floor of Atwater? A.—The ground floor of Atwater was. . . .

By Mr. Hackett, K.C.:—

Q.—Was the wall taken down to the top of the ground floor? A.—The ceiling of the ground floor, yes.

By Mr. Mann, K.C.:—

Q.—You had started to answer a question with regard to the ground floor itself on Atwater Avenue. Will you complete your answer? A.—The ground floor itself facing Atwater

Avenue? Well, there was some damage to it, but the wall wasn't pushed out, — the wall stayed there, — and it was more or less a matter of cleaning and pointing, and painting and fixing up the windows. I have never seen any photograph of the Atwater St. side, but if you had one it would be the same as that picture you have there. It wouldn't show the wall was pushed out.

Q.—You are talking of P-6-f? A.—Yes.

Q.—It doesn't show the wall was pushed out? A.—No; but it was pushed out and it had to be taken down.

Q.—You were there and saw that? A.—Yes.

Q.—Would you go on now to the yard side? A.—Yes, I am following around to the yard side.

By The Court:—

Q.—By the yard side what do you mean? From the point of view of the compass, what side is that? A.—That is south.

By Mr. Mann, K.C.:—

Q.—You are going around now to the south side, and I am showing you an exhibit Mr. Hackett produced, D-7-B, showing the fire hose in operation on the building? A.—Yes.

Q.—And the single hose is being played from the yard onto the south side of the building? A.—Yes.

Q.—The five other streams are being played on the east side? A.—Yes.

Q.—Which we haven't reached yet? A.—That is right.

Q.—Look at D-7-B and tell us, first of all, as regards the west building, what was the damage, if any, that you observed and that you know, the west building being the one at the left of the photograph, beyond the angle? A.—That is the westerly building?

Q.—Yes. What did you observe? A.—Which elevation is that?

Q.—That is pointing from the angle. That building is on somewhat of an angle? A.—Yes.

Q.—Where you see all these drums is a yard? A.—Yes, I know.

Q.—You see where the loading platform is? A.—Yes.

Q.—Where the track is? A.—Yes.

Q.—That is south by west, looking south by west, the left side, and the main part where the stream of water is playing is looking practically south. You follow that? A.—That is the loading platform?

Q.—The loading platform is where you see the three openings on the ground floor in the easterly building? A.—Is that the easterly building there?

Q.—The easterly building is the part from the point of the angle or the hypotenuse of the angle? A.—The end of the westerly building. . . .

Q.— . . . . meets the Atwater Street wall at an angle. The west end of the westerly building, looking south by west, meets the wall of the Atwater Street building, the wall of which you have been talking, at the immediate left of the picture? A.—The wall I am talking about now is that wall there.

Q.—"There"? That is the southerly wall of the westerly building? A.—The southerly wall of the westerly building.

Q.—In which you see five windows on the top floor? A.—That is right. There was damage to the wall along probably twenty feet from the corner on that building there. It was pushed out. It wasn't pushed out as the one around the Atwater corner was, but it was pushed out some, and a good part of it had to be taken down and rebuilt.

Q.—To what extent had it to be taken down and rebuilt? A.—About to the middle of the windows on the top floor.

Q.—What was the condition of the windows on the whole of the three floors of the south wall of the westerly building? A.—They were all more or less broken. The glass was broken and the windows were more or less damaged but not severely.

Q.—Then, before we go to the south wall of the easterly building, let us finish with the south wall of the westerly building. Was there anything else you wanted to say with regard to the south wall of the westerly building? A.—No, I don't think so. There was some damage in there to windows, glass etcetera, a small damage, but not a severe damage. But only on the third floor we had to take this down about half way down to the window.

Q.—You had to take the wall down? A.—Yes. They discovered it and they called me, and I went down there. They said, "There is a wall on the corner that we found to be leaning out. "Is it leaning out far enough to be taken down? Would you look "at it?" and I went and looked at it and I said that it ought to be taken down, anyway, and I had it taken down midway to the window from the roof.

Q.—And that is all you have to say about the south wall of the westerly building? A.—Yes. While I am on the westerly building, that roof was heaved up. . . .

Q.—Let us finish off the walls first. Let us look at the south wall, that is, the wall facing the yard of the easterly

building or the new building to which you have referred. You know where I mean? A.—Yes.

Q.—Upon approximately the middle of it a stream of water is playing, in D-7-B? A.—Yes. That had to be taken down about 50% of the way, that whole back wall there over the loading platform. The third floor wall had toppled out and had taken down the canopy over the loading platform with it. There was a canopy over the loading platform, and the wall had taken the canopy down. The lower portion of it, down below the floor of the third floor, was pushed out to a certain extent, and we had to take down about 50% of that wall and rebuild it.

Q.—You see in the picture the whole of the top floor wall appears to be out? A.—It was pretty well all out.

Q.—When you talk about 50% that you had to take down, you are talking about the wall that is protecting the second floor? A.—Yes, half way down the second floor.

Q.—What are these large openings on the second floor? A.—Steel windows.

Q.—What are they now, according to the photograph? A.—They are not there. They have been replaced by new ones.

Q.—According to the photograph, what do you see? A.—What do you mean?

Q.—The fire was going on in this building? A.—Yes.

Q.—What do you see in those two openings below the top floor or leading to the middle floor? A.—Do you mean inside the building?

Q.—No, — I mean, what condition do you see? A.—These windows were completely blown out.

Q.—Frames, windows and everything? A.—Yes.

Q.—What is this in the right-hand corner of the right window of the second floor? A.—I don't know.

Q.—You just see there is something there? A.—Yes.

Q.—You don't know what it is? A.—No; I don't remember ever seeing it there.

Q.—You don't remember? A.—No.

Q.—You mentioned the canopy of the loading platform? A.—Yes.

Q.—You say that the wall which had fallen had fallen on and demolished the canopy? A.—Yes.

Q.—The canopy would be the protection of the loading platform opposite the three open doors that appear on the ground floor? A.—Yes; it was to protect the loading platform from any bad weather.

Q.—What about the loading platform? A.—It was pretty well demolished too, underneath there, by the wall falling down.

Q.—Was there any destruction or evidence of explosion on the lower floor of the south wall, of the south wall of the easterly building? A.—Yes.

Q.—Where I am pointing is where there are three loading doors? A.—Yes.

Q.—Was there anything there, in the windows above? A.—The windows above were still in place, but, from my memory, — this was three years ago, — the glass was broken, and the loading doors were pretty well messed up through the falling of the wall and had to be replaced.

Q.—This photograph was taken when the fire was going on, that day. Does the appearance of the photograph as regards these glasses remind you of anything? I mean the glasses above the loading doors. A.—The glass was broken pretty well on all of that floor.

Q.—Is there anything else you want to say about the southerly wall of the easterly building? If you have finished with that, we will go to another wall. We have five walls to deal with and we have dealt with four. A.—You mean the southerly wall?

Q.—The one we have been talking about: is there anything more you want to say about it? A.—No. I said we had to take it down about 50% of the way.

Q.—Then I will show you P-6-f. I tell you without fear of contradiction that P-6-e represents the easterly wall. What have you to say about the easterly wall? A.—The easterly wall facing onto the yard?

Q.—Yes, and D'Argenson Street. That is it in P-6-e? A.—That is right.

Q.—And that P-6-f, also, on the left, represents the same easterly wall? A.—Yes.

Q.—Looking at the two exhibits I have just put in your hand, would you just tell me what you found with respect to the easterly wall? First of all, let us go to the top floor. A.—Yes. The wall was pretty well all down at the top floor, had to be replaced, except portion of the front.

Q.—Just what do you mean when you say all except a portion of the front? Do you mean a portion of the right-hand corner of the easterly wall? A.—Yes.

Q.—The top floor had to be all taken down and replaced, — the wall? A.—Yes, except a portion here right in the corner.

Q.—You mean, except a portion of the right-hand upper corner of that easterly wall? A.—Yes.

Q.—If you follow me on the photographs, we will go below the level of the floor of the top floor. What did you find there?

A.—From memory, I think we took that down to almost the next floor down.

Q.—Do you mean the floor of the next floor? A.—Yes.

Q.—Down to the level of the floor of the middle floor? A.—Yes, of the ceiling over the ground floor; and replaced it new.

Q.—In that easterly wall there are three windows? A.—Yes.

Q.—What happened to those three windows? You can see them in both photographs. A.—They were very badly damaged. I'm not sure now whether we had to replace one or two of them, but at least the glass was all gone.

Q.—I am looking at the left-hand window. That is the one to the south of the easterly wall of the second floor. There seems to be glass out of that? A.—Yes.

Q.—But, looking at the middle window of that same easterly wall, does there appear to be glass shattered out of that? A.—There is one glass missing, but you can't tell by a photograph if you look at a glass that is cracked by heat, because it shows so very, very little. It will crack in all manners of ways and won't show in a photograph.

Q.—Are you aware whether or not there was fire actually in that second floor? I draw your attention to the space under the beams of the third floor. A.—There was some little fire in there, but not an awful lot.

Q.—There would be some heat? A.—Yes, there would be heat more than fire.

Q.—Is there anything else you want to say about the damage to the easterly wall? A.—No. That is about all I can say about it. We took it down and replaced it with new wall down to about the ceiling of the ground floor.

Q.—Let us go now to the roof. What about the roof?

We will start with the westerly building. The westerly building is the one towards Atwater? A.—Yes.

Q.—What about the roof? A.—That roof was heaved up. To what exent it was heaved up, nobody is able to say, but it was heaved up and, as I told you, these walls were moved out both on the Atwater side and the St. Patrick St. side, and when that roof came down again, — it wasn't burned or damaged at all by fire, — when it came down it didn't come down into the same place it was blown out of. Therefore, it took an attitude something like this, — twisted or bent, — and obstructed the

drainage of the roof entirely, because that roof was slanted to a drain. When it came down, it came down in such a twisted position the drainage system of the roof was all destroyed. Therefore, that roof had to be taken off and re-laid.

Q.—I think you said there was no fire in that building at all? A.—No; but there were some beams and columns inside that building, on the third floor, in the west building, broken by the force of the explosion and which had to be taken out and replaced.

Q.—Is there anything else you want to say about the roof of the west building? A.—No, I don't think so, It had to be taken up and replaced with a new roof.

Q.—A new roof? A.—Yes, a new tar-and-gravel roof and metal flashings.

Q.—Let us go now to the roof of the easterly building, which is what you have called the new building? A.—Yes.

Q.—The condition of that roof was what? A.—The condition of that roof, when the fire was over, it was pretty well gone, completely.

Q.—I want you to go a little further than that, if you can, Mr. Irving. What did you observe, with your almost 60 years' experience and looking at it as you did, as to what had happened to that roof, if anything? A.—You understand, the construction of that roof on the easterly building was, it had a big monitor over it.

By The Court:—

Q.—What is that? A.—I will give you the exact size of it; I think I have it in my pocket. It was 41 feet by 16 by 10. That is an opening that is cut in the roof. The roof is made of mill construction, with two-by-fours on edge nailed to form a solid piece of two-by-four completely over the roof, There is a space left, 41 feet long by 16 feet wide. On the top of that, on the edges of that, you build up a stud wall 10 feet high, and you add a roof on it, a big roof, on this monitor, and this monitor is intended to give light into that building, and ventilation. Part of it is glass, 10 feet high, and part of it is louvers for ventilation.

By Mr. Mann K.C.:—

Q.—Louvers: open ventilators? A.—Yes. You see, there was a lot to burn at that roof; there was a lot of wood to burn, on account of that big monitor being on top of that roof.

Q.—What was the roof of the monitor composed of? A.—It was metal.

Q.—I think you were going to say something. Would you continue? A.—I was going to say that there was damage certainly to that monitor and to the whole of that roof by explosion. Knowing, as I did, that I had to make some subdivision of the explosion from the fire, I took notes as I went along, along with Thomson, to enable me. . . .

Q.—Thomson, — and I think you also said his superintendent? A.—The superintendent of the building, and Thomson.

Q.—The superintendent of the Foundation Company, and Thomson? A.—Yes, the superintendent of the Foundation Company, — Gauthier, — and Mr. Thomson was there once in a while, and we made observations that enabled us to make our subdivision of the fire from the explosion.

Q.—In making that subdivision, had you any method, any recognized method or any other kind of method, for the purpose of arriving at the conclusions at which you appear to have arrived, in respect of what of the loss to that building was caused by explosion and what was caused by fire? Do you understand my question? A.—I do.

Q.—Will you answer? A.—There is no scientific method that I know of that can apply to that, because it is different in all cases. It is a matter of estimating. You have to estimate how much it is going to cost to replace that completely new, and then, from your own observations and experience and the amount of fires that you have had to hand, make your subdivision. On my own experience, I had to arrive at some subdivision of the fire and explosion; and that is the only way it can be done; and it is possible that in some cases you may err a little on the side that favors the fire and in some cases you may err a little on the other side; but in the main I think we get it as far as possible, humanly possible, down to a proper result.

By The Court:—

Q.—Would you agree with what has been said by another witness: that the allocation of damage as between fire and explosion is an art rather than a science? A.—Yes, I would.

Q.—In other words, there is no specific, precise, detailed method of doing it? A.—No.

Q.—That is right, is it? A.—Yes.

Q.—And according to your own view, the accuracy of the allocation would depend on the experience and intelligence of the person who does it? A.—Yes.

Mr. Hackett:—There is another quality which I'm sure has not been overlooked, my lord.

Mr. Mann:—What is the other quality, Mr. Hackett? Do you mind telling us what the other quality is?

Mr. Hackett:—Integrity.

The Court:—Yes, of course. That would affect probably not so much his calculations as his evidence.

By The Court:—

Q.—You would not be able to give any specific instructions to an assistant to do a job like that? A.—No; it would be very hard to do so. I don't think it could be done.

Q.—And you could not give me any assistance which would enable me to decide, from facts given to me, what was fire loss and what was explosion loss? A.—No, I couldn't, otherwise than tell you that I have had considerable experience in that kind of work; and I can tell you that I think that, with the advice of some other people, along with my own experience, I got pretty close to an accurate result.

Q.—In other words, I will just have to weigh the witnesses who talk to me about the subject: is that the best I can do, in your opinion? A.—Yes.

By Mr. Mann:—I think that is all you can do, my lord.

Q.—Now, you went to the building, I think you said, nearly every day? A.—Close to every day, until all the work was finished or almost finished.

Q.—How long was that? A.—Four months.

Q.—During that four-month period was the Foundation Company collaborating with you? That is common ground. A.—Yes.

Q.—What access did you have, if any, to the Foundation Company's figures and estimates and charges? A.—I had all access to them; I had any access to them I wanted. I went in every day I was down there, checked over the number of men and the time-sheets also, and went to the office and saw the accounts compiled as they went through.

By The Court:—

Q.—To go back to the roof of the east building; I had

understood, perhaps erroneously, from the evidence to date, that the damage to the roof in the western building was attributed by witneses to explosion, because there was no fire in the western building. I had understood, — and here I was perhaps in error, — that the damage to the roof in the eastern building had been exclusively by fire, but a remark you made led me to think you did not agree with that? A.—No, it wasn't exclusively.

Q.—Could you tell me why you attribute part of it to explosion and what part you would attribute to explosion? A.—We know that that roof would have suffered severe damage had there been no fire, from an explosion as severe as the explosion was from that tank or whatever you would call it.

Q.—So it is really a deduction from the circumstances rather than something you observed in the material? A.—That is right, because you could see, yourself, the westerly building, how severely that was damaged by explosion and not fire, and it was a considerably longer distance away from the explosion than the roof that was directly over it.

Q.—Therefore you deduce that the roof of the eastern building must also have been damaged before the fire started? A.—Yes.

By Mr. Mann, K.C.:—

Q.—Having made these investigations and inquiries and examinations, you received from the Foundation Co. the letter P-15, with the figures attached to it? A.—Yes.

Q.—Signed by Mr. Thomson, the witness who was in the box this morning? A.—Yes.

Q.—Now, you will observe by P-15, at the second page of the figures, that there appears to be an estimate of loss caused by explosion, in respect of that building, of an amount of $37,358.62? A.—Yes.

Q.—That is correct? A.—Yes, that is the figure.

Q.—The loss caused by fire being $31,457.22? A.—That is true.

Q.—Would you say as a result of what those figures are arrived at? A.—As a result of my own and Mr. Thomson and his assistant's experience, and they did the estimating of the building, principally, and I did the subdividing, with their advice, of the fire from the explosion, and I did it on my past experience of doing just that.

Q.—Doing just that very thing? A.—Yes.

Q.—And you have been doing that thing for approximately how long? You have been a contractor or builder, or in

that line, for 60 years. A.—I have been 30 years working for Cheese & Debbage.

Q.—Doing this sort of thing? A.—Yes.

Q.—You will observe that the figure in the column for explosion loss, $37,358.62, includes Foundation Company's Overhead, Plant & Tool Account, and Foundation Company and architect's fees, elevator, etc.? A.—Yes.

Q.—Are you able to speak in regard to these items, or does Mr. Thomson speak in regard to them? A.—Well, Mr. Thomson has more knowledge of them than I have.

Q.—Your figures, arrived at as a result of your experience, your calculations and observations and experience, exclude those three items, which are solely matters of the Foundation Company's charges? A.—Yes.

Q.—Looking at the last account on P-15, it includes Foundation Company Fee, Miscellaneous Small Items, Elevator, Shed Roofing, Painting, Repairs to Floors, and then Ross & MacDonald Fee? A.—Yes.

Q.—That is the architects' fee? A.—Yes.

Q.—And then F.C.C. Final Account? A.—Yes.

Q.—That is the Foundation Company? A.—Yes.

Q.—Then there is something, "Mostly Ballantyne". Do you know anything about those items? A.—I know nothing about these items down here. I know something about the Structural Steel item.

Q.—I'm not asking you about structural steel. I was only asking you about three accounts, the Plant & Tool Account, Overhead Account, and the last one, which has no name on it but is made up of the items I mentioned in my question? A.—I know nothing about them.

Q.—Your evidence is in relationship to all figures other than those in the three accounts mentioned? A.—Yes, material and labor.

By The Court:—

Q.—With regard to the figures on P-15, the actual estimate of the total cost was done chiefly by Mr. Thomson and his assistant, and your chief personal work, as I understand it, was in relation to the apportionment of the total loss? A.—That is correct.

By Mr. Mann, K.C.:—

Q.—Now, there is a discrepancy in P-15 in connection with

the item of $37,358.62, in the amount of $470.90, or, in other words the item $37,358.62 appears to be $470.90 short of what is claimed? A.—Yes.

Q.—Can you explain that $470.90? A.—Because that was work done by the Sherwin-Williams Co., at the time of the fire, cleaning up, and it never went in the Foundation Company's books at all.

Q.—It never got into the Foundation Company's books? A.—No.

Q.—And it was of a total amount, was it not, of $2,354.50? A.—Yes.

Q.—$470.90 of which was charged to cleaning up in respect of explosion loss and $1,883.60 in respect of fire loss? A.—$470.90 and $1,883.60.

Q.—You know that to be an item. . . . A.—I checked these figures.

Q.—And you verified? A.—Yes.

Q.—Now, when you were making your investigations or paying your daily visits or the visits you paid down there, were any of the defendant company's people there? Did they go down? A.—Any of the Foundation Co.?

Q.—No, any of the defendant company? Was there anybody of the Boiler Inspection Co.? A.—No, I never saw anybody there after the Monday or Tuesday following the fire. I saw Mr. Fitzgerald. I think it was Monday or Tuesday that he was there after the fire. Is that right, Mr. . . .

Q.—You will have to say that yourself. Don't ask Mr. Fitzgerald.

By The Court:—

Q.—In any event, it was Monday or Tuesday? A.—Yes. I didn't make a note of. And there was another man, Mr. McKeown, I think.

By Mr. Mann, K.C.:—

Q.—Mr. McKeon? A.—Yes; he was also there.

Q.—Did you have any discussion with these gentlemen with reference to the matter? A.—No. I think I asked Mr. Fitzgerald on the site if he was going to take any part in making an estimate or superintending or doing anything to look after this work, and he said No, that he didn't know anything about buildings, he was an insurance company's manager.

W. M. IRVING (for Plaintiff at Enquete) Cross-examination.

By The Court:—

Q.—In any event, you didn't work in collaboration with any employé of the Boiler Inspection Co.? A.—No. And I asked Mr. McKeon if he was, and he said No, he was going back to Toronto that night.

By Mr. Mann, K.C.:—

Q.—You having been there so frequently, I was merely directing my question to this: did you see them down there taking any interest in the matter? A.—I don't remember seeing any of them down there.

Q.—If you had seen them would you remember? A.—I don't remember seeing them. I didn't see them. They may have been there at times I wasn't there, but I didn't see them, and I would have remembered if I did.

Cross-examined by Mr. John T. Hackett, K.C.:—

Q.—Mr. Irving, in your examination-in-chief you made reference to an explosion? A.—Yes.

Q.—And you know that this action is brought against the company that I am defending, for loss arising from explosion: you know that? A.—I suppose.

Q.—And the action has been brought on the figures that you have provided, with Mr. Thomson, — with some slight modification, because there has been an addition of some few hundred dollars of loss the plaintiff company said it sustained other than the cost of putting the building back?

Mr. Mann:—Other than what got into the Foundation Company's books.

By Mr. Hackett:—Other than the amount charged by the Foundation Company to put the building back.

Q.—You made a reference to an explosion, and you don't know, I suppose, — because you were not there, — whether there was one explosion or whether there were two explosions or three explosions? A.—I know there was one explosion.

Q.—There may have been one, but if there was more than one you don't know. A.—No. I know I saw a machine that was damaged and I saw the lug of the hook with the wheel on it that

closes that plate into place and holds it in place, and this lug was a piece of three-quarter by one-half steel, and it was shorn off by the force or the explosion, like that.

By The Court:—

Q.—"Like that", — you make a cutting gesture? A.—Yes. I know there must have been a very heavy explosion, — one, anyway, — though I don't know if there was any more. It was shorn off just like a piece of cheese.

By Mr. Hackett, K.C.:—

Q.—What I am particularly anxious to get from you is, you don't know whether all the damage that you charged up to explosion came from the pent-up force that blew that door off that you talk of or whether it came from some other explosion? That is what I am putting to you. A.—I didn't know there was any other explosion, but I was under the impression that that was the explosion that caused all the damage and that is why I made the statement.

Q.—I understand that, Mr. Irving, but I just wanted to have you tell the Court if, when you placed certain things under the heading of damage done by explosion as distinct from damage done by fire, you had any means of knowing that the damage charged to explosion was damage caused by the force that blew out the door ? A.—We had no means of telling if there was any other explosion.

Q.—I understand that, and that is all I want you to say on that point.

Now, I am going to ask you about the bill which is attached to the letter P-15. You were in Court this morning and heard me ask a lot of questions of Mr. Thomson? A.—Yes.

Q.—I don't want to ask you all those questions over again unless it is necessary. I asked Mr. Thomson if, looking at the bill, he could say, "This item represents repairs to the wall on "the north side of the east room or the west side of the east room "or the south side of the east room", and he told me he couldn't. Now, could you, looking at the bill which is attached to P-15 and forms part of it, localize for me. . . . A.—No.

Q.—You couldn't localize the items? A.—No, because it would be impossible, because when that masonry was being built

there were probably ten or twelve or fourteen bricklayers working there and there were probably twenty laborers, and they were working with an elevator taking up and down wheelbarrows of mortar and bricks. Now, there would be some bricklayers working on that wall over there and some on that wall over there, and some of the laborers would be taking the wheelbarrows of mortar or wheelbarrows of bricks over there and some would be taking them over there. (The witness points to various directions as he answers).

Q.—I think it is fair to summarize Mr. Thomson's evidence on the bill which forms part of P-15 by saying that he said he was unable to localize the different items in the building. Do you say the same thing? A.—Yes.

Q.—Do you remember 'phoning Mr. Fitzgerald on one occasion as to costs of repairing or reconstructing the building and telling him that you had instructions that no such information was to be made available to him: do you remember that at all?

Mr. Mann:—Are you asking him if he remembered it, Mr. Hackett, or if he didn't?

Witnes:—No, I didn't telephone anything of the sort.

Q.—(By Mr. Hackett): Was all the loss or damage resulting from water charged against fire or was it apportioned? A.—It was portioned off.

Q.—Portioned off? A.—Yes.

Q.—Between fire and explosion? A.—Yes.

Q.—On what basis? A.—On the basis that there was a certain amount of fault to the explosion as well as to the fire, that there was so much water poured down through the building.

Q.—Now, you told his lordship, — and I am paraphrasing what you said, — that in your view there wasn't any scientific way of unscrambling a fire loss from a loss from explosion, and that one had to arrive at a finding which was based upon experience: was that about it? A.—That is right.

Q.—You got no instructions from Mr. Debbage as to how to proceed in this matter? A.—No, sir.

Q.—And it was by Mr. Debbage that you were retained to segregate the fire loss from the explosion loss? A.—Right, — Cheese & Debbage.

Q.—But it was by Mr. Debbage himself? A.—No, — Mr. Cheese.

Q.—The late Mr. Cheese? A.—Yes.

Q.—And, acting for the fire insurance companies, you kept a supervising eye on the work as it progressed? A.—I did.

Q.—And were on the site nearly every day during the four months? A.—Pretty well every day.

Q.—Well, frequently enough to keep track of what was going on? A.—Yes.

Q.—And you said you had access to the Foundation Company's books? A.—Yes.

Q.—So you felt, whoever was to pay for the loss, they were not going to pay more than was fair in the circumstances? A.—That is right.

Q.—Now, had you ever had any previous experience in segregating fire loss from explosion loss? A.—Oh, yes; I have had several.

Q.—And do you recall any of them offhand? A.—Well, I can recall I took part in the one up at Rigaud.

Q.—That was Curtis & Harvey? A.—Yes.

Q.—A little beyond Rigaud? A.—Yes.

Mr. Mann:—This side of Rigaud.

Witness:—And another one down here in a church building on Rouen Street, where the furnace blew up. I have had several. I have done half a dozen explosions where I had to segregate fire from explosion.

By The Court:—

Q.—The biggest one was the Curtis & Harvey case? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—And did you proceed in the same manner in this case? A.—Yes, because all you can do is, you have to size the thing up as you go along. That is why it was more necessary for me to go down there and make notes that I went on than look after the Foundation Co., because they looked after their own job, anyway, and that is probably why I was down there more every day, to take note of the conditions.

Q.—I don't quite follow you there, Mr. Irving, because I thought that within two or three days after you got into the building you would have determined pretty well in your own

mind what was a fire loss and what was a loss attributable to something else? A.—No; that wasn't exactly done in two or three days. It took more than that, because there were certain places in the building when they came upon damage and they would call me in and say, "You had better come down and look at this. "We found such and such. This wall is a little out of plumb yet. "We want to know whether it is advisable to take it down or "build on it as it is", or there might have been some place where there was certain fire damage, and they would call me in to look at it and they would say, "Do you think we should take that out "or leave it in?" So, it was necessary for me to go down there more than two or three days after the fire, to decide things like that.

Q.—I can see that, — but I thought that very early in the period of the activities of the Foundation Co. you would have known in your own mind what you were going to allocate to fire and what you were going to allocate to explosion, because I thought that the first operation was a general cleaning-up? A.—No, that couldn't be. When that main roof was burned off, I had first of all, before I could allocate the division of fire, I had to get an estimate of what the cost was to replace it, and it took quite a while to rebuild those brick walls and replace the roof, because that was a heavy roof a great big monitor on the top, and, first of all before I could make the subdivision, I had to find out what it was going to cost to put that roof back new, and then when I knew the cost I did my subdivision, and before that roof was on it was at least two months.

Q.—Now, with regard to the roof on the eastern building. . . . A.—Yes; the eastern building I am talking about.

Q.—What proportion of the damage to or destruction of that roof did you allocate to explosion, do you remember? A.—No, I don't know offhand.

Q.—Did you put any part of it to explosion? A.—Yes.

Q.—Is there any means of telling from P-15 what part of it was allocated to explosion? A.—No, I don't think there is. It would take some time to do it. I have one copy where I have it noted on it.

Q.—Did you at any time see the terms of the contract or the policy between the Defendant and the Sherwin-Williams Company? A.—No, sir.

Q.—What is your idea of the fact that determines that a loss is due to fire and that a loss is due to explosion? A.—The conditions practically govern that. I mean, you can't. . . .

Q.—You cannot. . .? A.—I cannot say a loss by fire should be so much per cent and explosion so much per cent, because

that might apply in this case as regards that roof or this portion of the building but on other portions of the building it might not apply at all. For instance, take the westerly building up there, there was no damage by fire, but the building was very severely damaged, and I think, if I remember rightly, there were some repairs to floors to be done in there, because these floors were pretty well saturated with water; so we allowed some small percentage to fire, in the westerly building, on account of the floors. It would be only a small percentage of the heavy loss. There was a heavy loss in the westerly building, although there was no fire in there. So, you see, I couldn't put down a figure that would apply to the subdivision of fire and explosion at all, because every case is different; each part of the building has to govern itself.

Q.—If there hadn't been any explosion insurance, would it have made any difference in the amount you found? A.—If there hadn't been any explosion?

Q.—No, — if there hadn't been any explosion insurance? A.—Not a bit of difference, because, I can tell you this, I didn't know, until two or three days before I visited Mr. Mann's office, about a month or six weeks ago, that there was any such case pending. When I made that allocation I thought I was giving it for all the companies concerned.

By The Court:—

Q.—Including the explosion company? A.—Including the explosion company; and I was very much surprised to get a letter from Mr. Mann to come down to his office, before we met the first time in November of this past year.

By Mr. Hackett, K.C.:—

Q.—Will you just tell me, Mr. Irving, whatever made you think you were acting for the explosion company? A.—Unless I am specifically told. — if I am handed a loss by Debbage or Cheese & Debbage and I am given a list of the companies on it, I expect I am acting for all those companies unless it is specifically understood that I am not.

Q.—Were you given the name of the company defendant? A.—I was given the name of the company defendant, being on the loss. I was never told I was working for them or not; so I supposed I was acting for them too.

W. M. IRVING (for Plaintiff at Enquete) Cross-examination.

Q.—So, throughout your allocation, you thought Cheese & Debbage were acting for all the companies, including the company defendant? A.—Yes.

Q.—And you thought when you got instrctions from them you got instructions for all the companies, including the company defendant? A.—Yes; and I made up my figures, put them in, and there was never any objection raised or never any question. I was paid my fee; I sent a bill for my fee for appraising, which was paid; and even then there was no. . . .

By The Court:—

Q.—No "kick" then about the bill? A.—No; and there was nothing to indicate to me that I wasn't acting for all the companies concerned.

By Mr. Hackett, K.C.:—

Q.—I thought you said, in your examination-in-chief, that you had seen Mr. McKeon there and you had seen Mr. Fitzgerald? A.—Yes.

Q.—Did you know they were acting for the company defendant? A.—No. I asked Mr. Fitzgerald, I think, if he was going to take any part, and he said No, he didn't know anything about buildings, he was an insurance man; and I asked the other gentleman, Mr. McKeon, and he said, "I am going back to "Toronto tonight."

Q.—You never had any talk that you recall with Mr. Fitzgerald? A.—No, sir. I never had orders from anyone, of that nature.

Q.—You never had any orders from anyone to appraise the value of the loss in company or in conjunction with Mr. Fitzgerald? A.—No.

Q.—Did you make any of your appraisal with Mr. Newill? A.—Newill was with me when we went through, the first time we met there, when we met Mr. Fitzgerald and Mr. McKeon; and I think Mr. Ross. of Ross & Macdonald, Junior, was there, and their superintendent; and Newill and myself.

Q.—So far as you are concerned, you never had any instructions to collaborate with Fitzgerald and representatives of the defendant company in effecting an appraisal of the loss. . . . A.—No.

Q.—. . . . on the Sherwin-Williams building? A.—No. You see, in all these cases I don't do any adjusting. I merely do the

appraising and Debbage does the adjusting, and sometimes there is a company that says, "No, we will send our own adjuster", and I am intimated to get in touch with that adjuster.

Q.—It all sums up to this: that when you got your instructions from Messrs Cheese & Debbage you thought you had instructions from everybody on the risk? A.—That is right.

Q.—And that you were representing all the companies, whether they insured the hazard of explosion or of fire? A.—Yes.

Q.—Would you look at the photograph that I am going to show you, — P-6-d, — and tell me if you see a certain number of girders that are sagging and bent? A.—Yes.

Q.—Now, it was suggested that they might have been bent in that way by the roof falling on them. Do you share that view? A.—No.

Q.—What bent them? A.—The heat. You see that pipe running up there? That is not the ordinary sprinkler pipe. The ordinary sprinkler pipe is down there. (The Witness Indicates).

By Mr. Mann, K.C.:—

Q.—You will have to make that clear for the record. The pipe "running up there" is marked what? A.—"S. L." or something.

Q.—Over it is an "X", anyway? A.—Yes.

Q.—The pipe over which the "X" is imposed is not sprinkler pipe at all, you say? A.—Yes.

Q.—Well, what did you say it wasn't? A.—I say it isn't an ordinary sprinkler pipe. There is the ordinary sprinkler pipe down there.

Q.—What do you mean by "down there"? A.—On the right-hand upper part of the picture; and that one with the "X" over it is the main sprinkler pipe in the monitor roof, and that fell down when your monitor burned. There is your explanation why it is running over the steel beam.

By Mr. Hackett, K.C.:—

Q.—You have just talked to Mr. Mann about a sprinkler pipe? A.—Yes.

Q.—That has a big "X" with a little "x" over it? A.—Yes.

Q.—You said that was the main sprinkler pipe? A.—In the roof of the monitor, — and you know where the monitor is? Q.—You told us. You said it was 41 feet long, 16 feet wide and 10 feet high? A.—Yes.

W. M. IRVING (for Plaintiff at Enquete) Cross-examination.

By The Court:—

Q.—And when you say 10 feet high, you mean 10 feet above the level of the roof proper? A.—Yes. It is used for lighting and ventilating purposes, and probably when there is a lot of odor of paint and smells coming out of their operations there this monitor is to take them out of the buliding so they won't affect the men.

By Mr. Hackett, K.C.:—

Q.—Will you take my pen and indicate where the second sprinkler pipe is to which you referred a minute ago? A.—Yes. There (Indicating) is an ordinary sprinkler pipe.

Q.—Which I identify in the right upper corner of P-6-d with the letters "S.P."? A.—That is right. That (Indciating) has the elbow off.

Q.—And is what I show you more sprinkler pipe? A.—Yes, that looks like a sprinkler pipe, anyway, or it might be a radiator.

Q.—Well, would you look at it and say? A.—I think it is a sprinkler.

Q.—You have marked that "S.P." on P-6-d? A.—Yes.

Q.—Would you look at this photograph P-6-d and say if you see in it any other sprinkler pipe than the two you have already marked? A.—No. That (Indicating) looks more like a water pipe. It is too small for a sprinkler pipe. It is not the same size as the sprinkler mains.

Q.—The things that you have already marked as "S.P."? A.—That is right. They are about an inch and a half, probably with a seven-eighth sprinkler head running off them.

Q.—What was the roof on the east building made of? A.—The wood?

Q.—The thing that made up the roof? A.—Two-by-four mill construction. It was two-by-fours on edge nailed together to form a four-inch-thick roof.

Q.—That was before the fire and explosion? A.—Yes.

Q.—Would you look at P-6-d, where you see something lying on top of the cans. Is that part of the roof? A.—No, I don't think so. I don't know what that really is. I don't think it has got anything to do with the roof at all.

Q.—Mr. Thomson said he thought it was part of the roof. What would you say? A.—It might be.

Q.—What might it be, if it isn't part of the roof? A.—It is so charred it is difficult to say what it is. It might be part of the roof. It was a four-inch solid wood roof.

W. M. IRVING (for Plaintiff at Enquete) Re-examined.

Q.—Two-by-fours nailed together? A.—Yes.

There is another portion of it standing up there (Indicating on P-6-d) and there is some more there. It might be charred two-by-four. I can't say; it is uncertain.

Q.—What would be the effect of an agglomeration of material like that which we see in P-6-d, falling on those empty tin cans? A.—That is quite a sizeable part there, but usually before wood comes away and falls it is usually pretty well burned up.

Q.—But these cans were pretty vulnerable? A.—Well, I didn't take very much notice of them. I wasn't interested in the cans. I had enough trouble of my own.

Re-examined by Mr. J. A. Mann, K.C.:—

Q.—I have very little to ask you, Mr. Irving. Again looking at Exhibit P-6-d and at the space at the top, that Mr. Hackett on several occasions has quite properly described as being open to the skies, would you say where this monitor was, in relationship to the open space? A.—It was on top of that.

Q.—It was on top of where the space wasn't, as it were? A.—That is right.

By The Court:—

Q.—The monitor would be higher than the picture itself? A.—10 feet higher than there, 10 feet from the top of the beam to the top of the picture.

Q.—10 feet from what is shown in the picture? A.—No, it isn't shown in the picture. It is above the roof.

By Mr. Mann, K.C.:—

Q.—These beams are up towards the roof, aren't they? A.—They are the roof.

Q.—Then the monitor would be above the beams shown in the picture, as the Court properly says? A.—Yes.

Q.—Was there any part of that monitor there when you examined the building? A.—No, it was all gone.

Q.—And it was covered with tin? A.—Yes.

Q.—Where was the tin? A.—I don't know. It was lying all around the floor maybe. Look at the mess. It might be there. Everything was there.

Q.—Was it lying anywhere else? Was it on any other part of the roof? A.—I don't know. I don't remember seeing it.

Q.—I now show you photograph D-7-F. You see a mass of material in here at the far end of the photograph? A.—Yes.

Q.—Under a large apparently covered crosspipe? A.—Yes.

Q.—And you see the roof open to the skies there too, don't you? A.—Yes.

Q.—When you referred to the monitor, where would that be in relation to that picture? Would it be across these beams that you see there, at the upper left corner? You understand that is looking in a different direction from the picture you were looking at a moment ago? A.—I know. Yes, that might be the frame of the monitor there.

Q.—You mean, these two I-beams that you see there might be the frame of the monitor? A.—Yes.

Q.—You can't say whether that is so or not? A.—No; it is very hard to say. I can show it to you on a quarter scale that Mr. Moffat has there, if you want to have a look at it.

Q.—It was 41 feet long? A.—Yes.

Q.—16 feet wide? A.—Yes.

Q.—And 10 feet high? A.—Yes.

Q.—And it had a peaked roof? A.—Yes.

Q.—And the peaked roof was made of what? A.—Wood covered with metal.

Q.—What kind of metal? A.—I suppose a galvanized iron roofing.

Q.—Do you know? A.—No; it was all gone when I got there; it was all down.

Q.—How big were the sheets of metal? A.—I don't know.

Q.—You can't help me with regard to the metal sheets? A.—No. But I know that was the size of the monitor.

Q.—But you can't help me in regard to the galvanized iron sheets that covered it? You don't know how big the metal sheets were ? A.—No. Galvanized iron that had been through a fire curls up in the fire and may be any shape.

Q.—Does it break in a fire? A.—It curls up.

Re-Cross-Examined by Mr. John T. Hackett, K.C.:—

Q.—You said that the monitor had all gone when you got there? A.—Yes.

And further deponent saith not.

H. Livingstone,
Official Court Stenographer.

DEPOSITION OF J. S. MOFFAT (Recalled)

On this 8th day of January, A.D. 1946, personally came and appeared, John S. Moffat, a witness already sworn and examined for Plaintiff in this case and who being now recalled for further examination, under his oath already taken, doth depose and say as follows:—

Mr. Mann:—With your lordship's permission, I would like to ask some question of Mr. Moffatt.

Examined by Mr. J. A. Mann, K.C.:—

Q.—Mr. Moffat, in your prior examination you were asked to make a diligent search for the purpose of finding, if possible, the prescription delivered from Mr. Hodgins, the chemist, to Frazier, covering the operation of bleaching the turpentine on the 2nd of August, 1942. Have you made a diligent search? A.—We have, sir.

Q.—Is there extant to your knowledge any writing containing such prescription or memorandum of instructions? A.—We haven't been able to find any.

Q.—Is it fair to ask you if you believe such exists? A.—I don't think it does. I think it was destroyed in the fire.

Q.—If there was any, it was destroyed? A.—Yes. It was pasted up on one of the pillars of the east room and we believe it was destroyed by fire.

Q.—You appear in a number of exhibits as being a witness to the signatures of quite a number of your company's employés who made statements with respect to the circumstances of which they were witnesses on the 2nd of August, 1942, at the time of the accident in question. You recognize your signature there as being a witness to their signatures? A.—Yes.

Q.—At whose request or by whom or under what circumstances were all these statements made, prepared, typewritten and signed? A.—These statements were all made at the request of the Boiler Inspection Co. and in their presence. There was Mr. Parker; and Mr. Fitzgerald was there in most cases. I'm not sure whether Mr. Gregg was there. In the first ones I think Mr. Gregg was there too; in the first few, but then, when Mr. Parker came into town, he took over and he was the one that asked most of the questions, and I just stayed there to witness the results and have the papers typed up for them.

J. S. MOFFAT (for Plaintiff at Enq., Recalled) Exam. in chief

By The Court:—

Q.—Mr. Fitzgerald told us, I think, that these statements were made at his company's request? I think he said that yesterday?

Mr. Mann:—Yes, I think he did. I was going to follow with another question, but I won't, because Mr. Moffat has answered it in his statement that Mr. Parker asked most of the questions. I will ask the witness this:—

Q.—Are you aware as to what position the personnel of the defendant company took in respect to the investigation and allocation of the respective losses. . . .

The Court:—I'm sorry to interrupt, but before we leave the point of the statements made by the employés there is something I would like to clarify as far as I can:—

Q.—Mr. Fitzgerald told us this investigation was made at his request? A.—Yes.

Q.—Or at the request of the company defendant, for which he was acting and of which he is an officer? A.—Yes.

Q.—You have told us that either Mr. Fitzgerald or Mr. Parker or some other representative of Defendant. . . . A.—Mr. Gregg.

Q.— . . . . were or was present when the interrogations took place? A.—Yes.

Q.—And that Mr. Parker for the most part put the questions? A.—Yes.

Q.—These statements are not in the form of question and answer, as produced in Court? A.—No; they were principally to get as close to the time of the accident and to try to find out the real causes of the accident.

Q.—I quite understand why they were done, and I think it was quite a sound idea; but I want to know how the interrogation actually took place, because the papers on which the typewriting was done don't say "Question", such and such, and "Answer", such and such. The statement in each case is more or less a summary of the result of the interrogation by specific questions? A.—Yes; it was a statement by the man, led by questions, and then written out and read, so they would understand exactly what they were signing.

Q.—Who did the typing-out? A.—My stenographer typed it. She was there and took down the dictation.

Q.—Who dictated? A.—The men themselves. You will notice these statements were made mostly in their own words.

Q.—Mr. Parker or someone else would question the man, and the man would answer, and your stenographer would do the operation of more or less summarizing but using the man's own words as far as possible? A.—Yes; as the man mentioned the answers she would write it down and then type it out.

Q.—And then, after she had completed the writing-out, what was done? A.—The statements were typed and were re-read in front of the men and in front of the representatives of the Boiler Inspection Co. and myself, and we asked the men if they understood and they said Yes, and then we asked them to sign and I witnessed their signatures.

Q.—Some of these employés were French? A.—Yes. In cases like that we discussed it in French with them, and I think, if I recall correctly, I had Frazier there to make sure. I speak French myself to a certain extent but, to be absolutely sure, we had another French person in the room to translate, to make sure, and we had it written in French and English in those statements.

Q.—Are you satisfied that the men in question understood what they signed? A.—Yes. I think they all understood it very well, the idea being entirely to get as close to the last person at the place of accident as possible.

By Mr. Mann, K.C.:—

Q.—Are you aware as to what position the personnel of the defendant company took in respect to the investigation and allocation of the respective losses, fire and explosion, when the work of Mr. Irving and the Foundation Co. and other trades was going on? Do you understand the question? A.—It is rather complicated. There are two or three questions in one.

Q.—No, it is one question. (Question read): Do you understand the question? A.—Yes, I understand it. At the first meeting held at which the Boiler Inspection people were present, it was explained at that time as to the urgency of getting back into production, and they agreed that the Foundation Co. and Ross. Macdonald be appointed to reconstruct or to replace the building in the same position and condition as it was in before the accident, and at that time they formed a committee to go over the building, to ascertain as closely as possible the relative valuaion or portion which would be applicable to the explosion and which portion would be applicable to fire or water damage. Does that answer the question?

J. S. MOFFAT (for Plaintiff at Enq., Recalled) Exam. in chief

Q.—I would like to know what you mean when you say "formed a committee"? A.—There is a report which has been sent in and which is already in the Court record, naming that committee. . . .

Q.—That is P-4? A.— . . . . and Mr. Fitzgerald and Mr. McKeon were part of that committee.

Q.—Look at P-4? A.—That is not the one.

Q.—Which report do you refer to?

Mr. Hackett:—I wish to object to any verbal testimony.

Mr. Mann:—You won't have to, Mr. Hackett, because P-13, I believe, is the report to which Mr. Moffat refers. P-13 is the exhibit that has a letter attached to it, dated the 14th of August.

Mr. Hackett:—P-13 is a document similar to P-15 and P-17 and P-18, which were produced after I had objected to them, and your lordship admitted them subject to further consideration. . . .

Mr. Mann:—Provisionally.

Mr. Hackett:— . . . . stating, as I recall it, that they constituted no proof against the Defendant.

The Court:—P-13 was produced by Mr. Ross?

Mr. Mann:—Yes. I want to say this:—Firstly, I don't know whether my friend is objecting to my question, and, if he is, I haven't asked it yet; and, secondly, this is to meet the lacuna left at the time of the production of that document.

The Court:—My note says that it was admitted under reserve, subject to being substantiated later.

Mr. Hackett:—Yes, and it wasn't a matter that was subject to proof in that way and I object to it going into the record. Here is a letter from Plaintiff's architect to Plaintiff, which my friend is endeavoring to put into the record as proof against the Defendant, and I submit with great deference that it is not proof and that it is not properly admissible and that the evidence my friend is trying to put into the record is not good evidence and has no value.

The Court:—First, let us hear your question, Mr. Mann.

J. S. MOFFAT (for Plaintiff at Enq., Recalled) Exam. in chief

By Mr. Mann, K.C.:—

Q.—Exhibit P-13 is composed of two parts, a letter of August 14th, 1942, addressed to the Sherwin-Williams Co. by Mr. H. M. Patterson. . . . Who is he? A.—That was the superintendent of Ross & Macdonald, the architects.

Q.— . . . and attached to it what would look like. . . .

The Court:—What was undoubtedly a report by Ross & Macdonald to the Sherwin Williams Co., and concerning which Mr. Ross, Junior, has already testified at some length, and the present witness was here at the time Mr. Ross testified and knows all about it.

By Mr. Mann, K.C.:—

Q.—Were you at that meeting that is mentioned there? A.—Yes.

Q.—I want you to look at and read the report that was made by Mr. Ross?

Mr. Hackett:—That is objected to. If my friend is taking his witness and putting a document before him, to ask him if it is true or not, that is not the proper way to question a witness in chief, and I object to the leading and suggestive form of the question.

The Court:—It is admitted, is it not, that there was a meeting on the 10th or 11th of August? Isn't that a fact?

Mr. Hackett:—There was a meeting; I think it was the 10th.

By The Court:—

Q.—Were you at the meeting of the 10th of August? A.—Yes.

Q.—To your presonal knowledge was Mr. Fitzgerald there?

Mr. Mann:—And Mr. McKeon.

The Court:—Wait a minute.

Mr. Hackett:—The witness is now taking the document that is objected to and getting the names from it.

J. S. MOFFAT (for Plaintiff at Enq., Recalled) Exam. in chief

By The Court:—

Q.—First of all, I will ask you if you remember the meeting of August 10th, 1942? A.—Yes.

Q.—Do you remember who were there? Don't tell me who they were. Just answer my question as it is put: do you remember who were there? A.—Yes, I remember them now.

Q.—Remembering who were there, will you tell me if Mr. Fitzgerald of the defendant company was there? A.—Yes.

Q.—Was Mr. McKeon of the defendant company there? A.—Yes.

By Mr. Mann, K.C.:—

Q.—I am going to ask you a question, Mr. Moffat, but please don't answer for the moment. Having stated that Mr. McKeon and Mr. Fitzgerald were present at the meeting of the 10th of August, would you look at the exhibit. . . .

Mr. Hackett:—I am going to object to my friend putting the answer in the mouth of the witness, who is the Plaintiff, I suggest if there be propriety in a question it is in this question: "What did they say?" and my friend should not read him the answer that is found in the communication from Messrs. Ross & Macdonald and ask him if it is true.

The Court:—What do you want to ascertain from this witness?

Mr. Mann:—Merely this, my lord. . . .

Mr. Hackett:—Now you are going to tell him what you want to get.

The Court:—Mr. Moffat will withdraw into the corridor for a moment. (Mr. Moffat withdraws).

Mr. Mann:—Inasmuch as your lordship ruled, at Page 364 of the evidence of Mr. Ross, that the document was admitted to make "such proof as subsequent evidence indicates", I had proposed to ask the witness if he was at the meeting. Your lordship asked him that question and he said he was. He said Mr. McKeon and Mr. Fitzgerald were there. Now I propose to ask him if the report contains the truth, insofar as he knows, of what happened at that meeting.

Mr. Hackett:—That is just what I object to. My friend is giving this gentleman, his client, a statement that was prepared by somebody else who is in his client's service, and is asking him if it is the truth, and I submit with great deference. . .

The Court:—On the face of it, no question could be more leading. How do you justify it, Mr. Mann?

Mr. Mann:—To ask the witness a question such as that is not, I submit, a leading question. The document is of record. There is no other way of asking the question, I respectfully submit.

The Court:—Why not ask him what occurred at the meeting?

Mr. Mann:—Very well, my lord; I will ask him that.

The Court:—I don't want to assist you or impede you in any way in making your case, but if your opponent objects to your question as a leading question and I consider it is leading I am bound to maintain the objection.

(The witness, J. S. Moffat, returns to Court).

By Mr. Mann, K.C.:—

Q.—You were at the meeting of the 10th of August?
A.—Yes.

Q.—I am not permitted to put the report filed by J. K. Ross in your hands and ask you if it is true, but I am permitted to ask you what happened at that meeting, and that is all I am permitted to ask you. Will you tell us that? A.—At the meeting it was suggested that the various people mentioned a few minutes ago would go over the whole building to ascertain what portion was fire and what portion was explosion. From then on I don't know who was at the meetnig, or who went to the inspection of the building, and who received copies of the report afterwards. I know that we got ours and we read it over, and who else got them I don't know. We never inquired as to that, presuming each one there would make their own and have a copy or that they would delegate a secretary to take the notes and make it the same as we would at any meeting we might have. I think that covers the picture.

J. S. MOFFAT (for Plaintiff at Enq., Recalled) Exam. in chief

By Mr. Mann:—On that I have no further questions.

Q.—Now, the day of the fire and explosion, Mr. Moffat, did you go to the building and, if so, when or how long after. . . .

The Court:—Is this going over old ground? Is it going over it again?

By Mr. Mann:—No; these are the questions I asked permission to ask.

Witness:—I was at the building or in the yard looking at the building, within half to three-quarters of an hour after the fire started.

Q.—Were the fire brigade at work when you got there? A.—Yes, the hoses were on.

Q.—The hoses were on when you got there? A.—Yes.

Q.—The only other question is this:—I ask it to save rebuttal, and I don't think my friend will object to it:—Other than for the refinning and bleaching of linseed oil, was that tank No. 1 used for the purpose of bleaching and filtering any other material, and if so, what? A.—The tank was used for the purpose of bleaching and processing perilla and soya bean oil.

Q.—Now, are you able to say, Mr. Moffat, as to the barrels of turpentine which had been brought up to be put into these tanks for processing, and including tank No. 1, how long they had been in the possession or in the hands of the company? A.—I would say it was from around March or April, in the early spring.

Q.—The previous March? A.—The previous March, the same year, 1942.

Q.—In barrels lying around? A.—In drums, all in returnable drums.

(It now being 4.30 p.m. on this 8th of January, 1946, Court adjourns to 10.30 a.m., January 9th, 1946).

And further for the present deponent saith not.

H. Livingstone,
Official Court Stenographer.

J. S. MOFFAT (for Plaintiff at Enq., Recalled) Exam. in chief

Wednesday, January 9th, 1946, 10.30 a.m.

((At 10.30 a.m. on the 9th of January, A.D. 1946, Court reassembles, and the examination of the witness above-named, John S. Moffat, is continued under the same oath as follows):—

Examination continued by Mr. J. A. Mann, K.C.:—

Q.—I had just one question left to ask you, Mr. Moffat, when we adjourned last night. The only question I had to ask you was in respect to the item of Machinery & Equipment.

Did you have any part with anybody in working out the loss on the machinery and equipment, — I refer to the item Mr. Newill spoke about at the sitting in November, — and, if so, with whom, and what did you do, and to what extent did you have an interest in and consideration of the fixing of the losses and the distribution as between explosion and fire? A.—I sat in with Mr. Newill and Mr. Debbage to discuss the machinery and equipment portion, and we had a value at that time of $42,296.27.

Q.—Loss at that time? A.—Yes. The portion attributed to fire was $37,787.59 and the portion attributed to the explosion was $4,608.68. We arrived at that by determining the amount of damage which we considered to be caused by explosion in the different sections of the building, by segregating our motors, our switchboards and our panel boards and all that, and also conveyors and dust collectors and things of that nature. For example, there is a conveyor running from the west building to the east building ,along the roof, to where the seed conveyor is. In none of the pictures is this conveyor shown. It was scattered, and it wasn't even on the top floor. We found it down in the yard.

The reason the opening in the wall is facing east was that on the east left there is a long seed bin and on the east south or right is an oil meal bin. Those bins helped to prevent the expansion of the explosion and directed it through that passageway that is shown in the pictures. It took with it, then, this conveyor that was going across under the monitor roof. It also took the switch boxes and the grinding equipment and the cyclon which you see lying there in the yard. So all of that kind of damage and repairs to that kind of damage were charged up to the explosion.

There were only two items that were discussed with Mr. Newill here in the witness box that were not quite clear in our

claim, one an item for $120 and one for $124.20. It wasn't quite clear in our claim, in that the wording stated "Iron cover for "vessel".

By Mr. Hackett, K.C.:—

Q.—When you speak of "our claim" what document are you referring to? A.—The claim of losses here.

By The Court:—

Q.—The proof of loss? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—Is that P-5? A.—I don't know. I just want to clarify two things.

Mr. Mann:—Perhaps Mr. Hackett might wait for his cross-examination.

The Court:—I think it would be preferable if the witness identified the document to which he is referring now. I take it to be P-5.

Witness (Examining P-5):—Yes.

By Mr. Mann, K.C.:—

Q.—What did you want to say? A.—I just wanted to mention that I have two invoices, and I find they are from Miller Brothers. One is covering the manhole door and the other is for fitting of the manhole door. That is why there are two different things: manhole and brass rings with wiper, $124.20; and the other is for fitting it, $120, which was labor only.

By Mr. Hackett, K.C.:—

Q.—$120 flat? A.—Yes.

By Mr. Mann, K.C.:—

Q.—Are those the two items? A.—Yes. $124 for the manhole door and the wipers; and then the other one, $120, was for fitting it onto the vessel.

J. S. MOFFAT (for Plaintiff at Enq., Recalled) Exam. in chief

Q.—That is very clear and precise with respect to things blown through wall and into the yard and so forth.

Mr. Hackett:—I just enter an objection to the assertion of Mr. Mann as being contrary to proof.

The Court:—The assertion of Mr. Mann does not constitute proof.

Mr. Hackett:—I suggest it should not be put in, in that form.

By Mr. Mann:—Well, I will add to that and in modification of that, "With respect to the matters you have spoken of."

Q.—Now, there are some matters you have not spoken of. They have relationship to equipment and machinery not dealt with in your previous answer, that remained in the premises, which appeared to have been injured by either fire or explosion or both. What method or art did you adopt in respect of establishing the loss, bringing it up to $4,508.68, for explosion, with regard to those things that were still right in the building and in place? A.—We had a heavy electrical bill, for example, which entailed practically a whole new wiring system right through the building, of which we put most on to water damage, but, where we had a motor which was up in the room where the explosion took place, or the grinding motor which was cracked, or any of them that had to be re-wound, we attributed it to explosion, and, where we had to change conveyors where they were bent, where the dust collector was blown away from the end of it, that was attributed to explosion.

Q.—Now, have you anything to say with regard to the charge of $4,508.68 as regards its fair, reasonable and moderate amount?

Mr. Hackett:—I object to the question as being suggestive.

The Court:—Objection maintained.

By Mr. Mann, K.C.:—

Q.—Have you anything to say with regard to that item of $4,508.68? A.—I would say we leaned to the low side of damages rather than the high side of damages by explosion as indicated here. We only attribute machinery and equipment less than 10%

of our total damage to that particular item. I felt that Mr. Newill and Mr. Debbage were very fair and just in any figures that they submitted and suggested at any time.

Cross-examined by Mr. John T. Hackett, K.C.:—

Q.—When you say that Mr. Newill and Mr. Debbage were fair in the division which they made between fire loss and explosion loss, by what standard did you measure the fairness? A.—Well, I would put it this way:—There is no doubt in my mind that when an explosion of that nature takes place certain water pipes steam pipes and so on would break, — it is natural to assume that, — which then would cause a great deal of water to go down into lower floors, causing damage to most electrical equipment and other machinery down below on the other floors. In the division all of that damage to other floors was taken as being water damage, or fire and water damage, that could happen from hoses, but I think it first of all would happen from our interior pipes breaking, rather than from hoses.

Q.—Do I understand you to say that all water damage was charged to the fire companies? A.—Yes. In discussing that, we were very, very careful in endeavoring to segregate water damage and taking that as fire and water rather than explosion.

Q.—And you are quite certain that all water damage was allocated to the fire cause? A.—As much as we could feel justified in doing so.

Q.—You see, Mr. Moffat, I am not questioning your integrity. I am trying to get at the fact. You said, a moment ago, that all damage resulting from water was charged to the fire companies. I am asking you now is that true? A.—No, — because there was water damage on your top floor which we would definitely consider as being explosion damage, to the motors on the top floor, for example.

Q.—What would be the proportion? A.—We took the motors, the motors all over the building, segregated them as to where they were and what floors they were on, and as regards the ones on the lower floors, like the basement and the first and second floors, we took that all as water damage.

By Mr. Mann, K.C.:—

Q.—Or fire damage? A.—Fire and water damage.

Mr. Hackett:—I would ask Mr. Mann to withdraw his

interjection, because it is not in conformity with what the witness has said. The witness has said that part of the damage. . . .

Mr. Mann:—I would ask Mr. Hackett to let the witness say what he said:

The Court:—Perhaps you will let me say what I understand the witness said with regard to water damage:—

Q.—If I understand you correctly, Mr. Moffat, your statement in substance is this:—The damage caused by water on the first and second floors was exclusively attributed to fire damage? A.—Yes.

Q.—The damage caused by water on the third floor was partially attributed to fire and partially to explosion: is that right? A.—Yes.

The Court:—That is clear. Whether it is correct or not, it is perfectly clear.

By Mr. Hackett, K.C.:—

Q.—Will you be good enough to show me in P-5 where the damage done by water on the first and second floors is charged to the fire insurance companies? A.—This (P-5) doesn't show any fire and water claim at all.

By The Court:—

Q.—The document Exhibit P-5 only covers, of course, the claim against the explosion company? A.—Yes.

The Court:—I understand the witness's entire testimony just now relates to machinery and equipment only?

Mr. Mann:—Yes.

The Court:—Perhaps he can answer this question:—

Q.—Was any damage to machinery and equipment on the lower floors attributed, in your claim, to explosion? A.—No, sir.

Q.—So that any claim for machinery and equipment attributed to explosion refers to machinery and equipment on the top floor? A.—That is right, sir.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

By Mr. Hackett, K.C.:—

Q.—Will you look at the document P-18 and say if it was discussed with you and Messrs. Cheese & Debbage?

Mr. Mann:—The document itself, Mr. Hackett?

By Mr. Hackett:—Yes.

Witness:—No; this is the first time I have seen this document.

Q.—With whom did you discuss the loss on machinery? A.—With Mr. Newill and Mr. Debbage.

Q.—And the amount of the loss, you said, was $4,508.68? A.—That is right, for explosion.

Q.—And what is the amount mentioned in the document P-18? A.—$4,508.68.

Q.—If you didn't see the particular piece of paper that is in your hand now, was the information which is therein contained discussed with you and were you a party to an adjustment on that basis? A.—It is the same figures as I have got in my report.

Mr. Mann:—I beg your pardon?

Witness:—It is the same figures that I have in my own report; so I presume they were discussed.

Q.—(By Mr. Hackett):—And you discussed that with whom? A.—With Mr. Newill and Mr. Debbage.

Q.—Now, I want you to show me, if you can, just where the items are on the third floor that constitute that total of $4,508.68? A.—I couldn't tell you. I haven't got that here with me, the breakdown. I don't know his breakdown figures.

The Court:—Let me see that document P-18.

Mr. Hackett:—Yes. That is a document that was put in under reserve and merely to show that Mr. Debbage received a communication from Mr. Newill, without making any proof as to its contents.

Mr. Mann:—And dated January 25th, 1943.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

By The Court:—Now, the witness has stated to me that all the machinery and equipment with respect to which the claim has been made for explosion losses was situated on the top floor.

Q.—You did say that, didn't you, Mr. Moffat? A.—Yes.

10 Q.—And that any damage to equipment on the lower floors, whether caused by water or otherwise, was attributed to fire? A.—Yes, sir; that is my memory.

The Court:—And then the additional information which would seem to be relevant would be to establish that all the equipment with respect to which the figures are given on P-18 was indeed situated on the top floor. Now, can't we arrive at that in some way?

20 By Mr. Hackett, K.C.:—

Q.—Can you give me the items constituting the $4,508.68? Can you tell me what was damaged? A.—Let's see, — there was the vessel cover, the door.

Q.—That is the manhole door that was blown off? A.—Yes; and then the fitting of the door, and the repairs to the gauges.

Q.—You have told us that the cost of the manhole door was $124.20? A.—$124.57.

30 Q.—$124.57? A.—Yes.

Q.—And that the cost of fitting was $120? A.—Yes.

Q.—What was the cost of repairing the gauges? A.—$45.55.

Q.—Where were the gauges situated? A.—On the outside of the vessel.

Q.—$45.55? A.—Yes.

Q.—Would you be good enough to look at the photographs P-6-a to P-6-f and say where the gauges were situated? A.—There was a gauge right here (Indicating). It has gone. There was another one there.

40 Q.—I will see if I can help you, Mr. Moffat. You have looked at P-6-c. Will you take my pen and make a capital "G" at the two points where the gauges are missing? A.—There are three points.

Q.—Just put a "1" over the first "G"? A.—Yes.

Q.—Then there is a second gauge? A.—Yes. That is the one indicating the vacuum in the tank.

Q.—Just mark that "2". And then there was Gauge 3? A.—There was a Gauge 3, showing the temperature.

Q.—I think the exhibit you put in as P-11, which was merely put in to show his lordship what the tank looked like

after it had been repaired, shows the same gauges. Does it show the three you spoke of? A.—No, it shows two from this angle, "1" and "2". It doesn't show No. 3.

By Mr. Mann, K.C.:—

Q.—Why? A.—It is behind the other side of the pipes. You can't see it. The picture isn't taken the same way.

The Court:—It might be useful to mark the corresponding G-1 and G-2 on P-11.

By Mr. Hackett, K.C.:—

Q.—Will you mark on P-11 the two gauges that can be seen and the location of the third, giving the same numbers that you did on P-6-c? A.—Yes.

Q.—What is the next item? A.—Repairs to the seams of the vessel: $28.00.

Q.—$28. Where were the seams? A.—They were strained, and we had to have an outside party come in before they could be proved to be used again.

Q.—As I understand it, an outside party came in and tested the vessel and charged you $28 for doing it? A.—They had to tighten up the seams and test it also.

Q.—Are you sure there was anything to be done? I understand the $28 was a charge for testing the vessel? A.—It says in my report "Repair seams of vessel". I believe when they put the pressure on there were slight signs of leakage of steam on the vessel part.

Q.—Wouldn't they do that as part of the job of putting on the door and putting in the glass peephole in the rear? A.—No; it would be different people that would come in for that. I am pretty sure there was another party came in.

Q.—What was the next item? A.—The next one on my report is for repairs to dust collector. That is $287.54.

By Mr. Mann, K.C.:—

Q.—Where were they? A.—Out in the yard.

By Mr. Hackett, K.C.:—

Q.—Before we go to the dust collector, I want to ask you a question about the previous item. Wouldn't the seams of the

tank have been loosened by the intensity of the fire to which it was subjected? A.—I couldn't say how it was loosened.

Q.—Well, that is an ordinary precaution that one would take after a fire, isn't it, — to have the seams tested? A.—It is necessary. The inspection department ask for that and we have to get a certificate.

Q.—And you say you are not in a position to say whether the weakness of the seams happened from the fire outside or the pressure inside? A.—If the explosion was great enough to blow the door off and blow the window out, I imagine it would have the same effect on the seams of the vessel.

Q.—That would depend on the comparative strength. . . . A.—I think an engineer would answer that better than I could.

Q.—You pass that one up? You won't express an opinion there? A.—I expressed my opinion. I would say if the explosion was great enough to blow the door off and the window out at the back it is natural to assume there would be a strain on the rest of the vessel at the same time.

Q.—You remember as regards the window it has been conceded that if any water touched it, it would shatter? A.—I don't know that it has been conceded.

Q.—You don't know that it has been conceded that if water touched the glass while at a high temperature, it would shatter? A.—I don't say that that has been conceded.

Q.—I won't debate that with you, but I will tell you that your expert, Mr. Hazen, said that if water came into contact with the glass of the peephole while it was at a high temperature it would shatter. You may not have heard that, but I am telling you what he said? A.—He may have said that, I don't just recall.

Mr. Mann:—You mean the glass at the back?

By Mr. Hackett:—Yes.

Q.—Then we will come to the door.

You have said that it was your opinion that the seams were loosened by explosion, because, as you put it, the peephole was blown out at the back and the door at the front? A.—Yes.

Q.—That would depend entirely upon the relative strength of the peephole, — and I have told you what has been said about water coming into contact with glass at a high temperature, — and the fastenings that held the door in place, to the strength of

the boiler or tank, would it not? Do you understand the question? A.—Yes, I understand.

Q.—It would depend on the relative strength of the fastenings that held the door on and the resistance of the tank? A.—Yes.

Q.—And I understood you to say quite candidly that you are not an engineer and you don't know what that relative strength is? A.—That is right.

Q.—So, then, your opinion as to the weakening of the seams by the explosion, as you put it, is not founded on any knowledge that you have, is it? A.—It isn't on knowledge; it is just on common sense or point of view.

Q.—Well, is it common sense? A.—Well, yes, it is.

Q.—Let us take an example. Let us assume that you have a boiler or a tank which has a resistance, we will say, of 500, whatever that may be, and you have door fastenings that have a resistance of 50, whatever that may be. In those circumstances the door would blow off without putting any undue strain on the tank itself, would it not? A.—On those percentages, yes, but, when you figure that the whole building blew up, there must have been more than 50 pounds pressure.

Q.—We will have to talk about a building a little later on. I ask you, then, do you know what the relative strength was of the door fastenings and of the tank? A.—No, I haven't got that information.

Q.—Then will you admit, Mr. Moffat, that your opinion is without any scientific foundation or knowledge? A.—Well, I wouldn't say that it is an opinion without some knowledge and thoughts behind it, — because I have been in manufacturing so many years, you see, and I think, as I mentioned before, that good common sense will tell you if you have a movement of machinery of any type or size, a sudden jolt or jar is bound to loosen any parts that have either been welded on or been riveted on to another part.

Q.—Do you know the intensity of the heat that was developed in the third floor during the fire? A.—No.

Q.—You know it was a very intense fire? A.—Definitely.

Q.—You know there were great quantities of turpentine, — and turpentine is very inflammable and burns with great rapidity, — consumed?

Mr. Mann:—I object to that question about "great quant-"ities" unless my friend qualifies it.

The Court:—There has been evidence as to the number of gallons in the tank.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

Mr. Mann:—I would like to know the definition of "great".

By Mr. Hackett, K.C.:—

Q.—We will say, Mr. Moffat, you have told us that there were 850 gallons of turpentine in that particular tank. You told us that, didn't you? A.—Yes.

Q.—And I call 850 gallons of turpentine a great quantity of turpentine, and I want. . . .

Mr. Mann:—I object to that, because there is no evidence as to what amount of turpentine evaporated and became fumes and gases before the fire.

By The Court:—The witness admits,—and he could hardly do otherwise,—that the fire in that particular part of the building was very intense.

Q.—That is so, isn't it? A.—It would have to be, yes.

The Court:—And it was.

By Mr. Hackett, K.C.:—

Q.—And a tank of the type of the tank in question, subjected to a fire of that kind, might well emerge with its seams weakened, might it not? A.—Well, if it had been heat only, that would change the entire shape of the tank. I have seen times where the heat was underneath, — and the tank will warp and go into a different shape entirely, caused by heat. This was not that type of heat, and it wasn't that type of strain; so it couldn't have been by heat only.

Q.—You see, Mr. Moffat, the question I asked you was: if a tank of the type of the tank No. 1 in question were subjected to fierce and intense heat such as that resulting from the burning of quantities of turpentine, would it tend to weaken the seams of that tank? A.—The heat that you mention, intense and severe, in the tank, would warp the tank, and the tank was not warped.

Q.—Is it your testimony, Mr. Moffat, that no damage was done to the tank, — and when I say no damage I am restricting my question to the seams and I am not talking about the covering, — no damage was done to the seams of the tank by the fire which raged outside it from 10 o'clock in the morning until late afternoon? A.—It is my candid opinion that the strain that they talk about on this tank was not caused by heat.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

Q.—But I have asked you if you can state that the damage to the seams was not caused by the fire which raged outside the tank from 10 o'clock in the morning until 6 in the afternoon or nearly that time? A.—I answered it that I didn't think it was done by heat.

Q.—That is not an answer to the question, but if it satisfies you I will have to take it.

We will come now to the dust collector? A.—There should be two dust collectors. I think this is part of it down on D-7-A, which shows a portion of a dust collector on top of the coal pile. D-7-C shows a dust collector hanging outside of the building.

By The Court:—

Q.—And where was it? A.—On the top floor.
Q.—What room? A.—The east side.

By Mr. Hackett:—I have indicated it, below the words "Dust Collector", by an arrow pointing to a funnel-shaped implement facing toward the yard.

Q.—That is the dust collector to which you refer? A.—Yes.
Q.—And you say that the object to be seen immediately ahead of the last fireman to the left of the picture is part of a dust collector? A.—Yes.
Q.—Are you sure of that? A.—The shape indicates it is one. We had two of them. I know one was down on the ground when we looked for it.
Q.—Will you tell the Court, looking at D-7-C, whether the dust collector which was on the ground was situated to the left or to the right of the dust collector shown in D-7-C? A.—I could not be sure. The two were right alongside one another and so close that I wouldn't like to state whether one was on the right or the left.

By The Court:—

Q.—They were both in the east room? A.—Yes, right up against one another, and I wouldn't like to tell from the picture which is which.
Q.—Whereabouts were they in the east room? A.—On the east wall of the east room.
Q.—The east wall of the east room? A.—Yes.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

By Mr. Hackett, K.C.:—

Q.—Would you take the plan P-7 and tell the Court how long the east wall of the east room is? A.—I would have to measure it, — but it is roughly 120 feet, if I recall the measurements properly. I have the plans here. Somebody has marked it 120' 10". It is roughly in that neighborhood.

By The Court:—

Q.—That corresponds to your recollection, does it? A.—Yes; I said it was roughly 120 feet.

By Mr. Hackett, K.C.:—

Q.—Will you look at the plans and say whether the upright beams supporting the roof, shown in D-7, are placed at regular intervals. and tell us what the space between them is? A.—From your ceiling it is 18' 2" from floor to floor.

Q.—I'm not interested in the measurement from floor to floor. What about the spaces between the beams? A.—They varied on account of the equipment that was being put in. Starting from the south and working north, on the east wall, the divisions are: first, 21' ¼"; the next is 22'; next is 19'; the next is 22'; the next is 16' 6"; and the last one is 18' 4".

Q.—And the total of the figures which you have given us will give us the eastern frontage . . . . A.—Of the east wall, yes.

Q.—And it appears that the dust collector which you have shown on the photograph D-7-C is in the space of 16' 6"? I understood you began from St. Patrick St.? A.—No, I started from the south and worked north. It should be 22 feet.

Q.—I'm sorry, — you started from the south and worked north? A.—Yes. It should be in the 22-foot section.

Q.—Can you tell me what was the length of the fire wall, —that is, the wall between the east room and the west room? A.—I would have to measure it up. It isn't shown on these plans.

The Court:—The plan P-7 is drawn to scale?

Mr. Hackett:—We were told it was.

Mr. Mann:—One-eighth of an inch to the foot.

Witness:—The length of the fire wall is not indicated on my plans. I would have to measure it.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

By Mr. Hackett, K.C.:—

Q.—I understand, Mr. Moffat, that you have been informed by Mr. Thomson that the east outer wall is 120 feet long and the fire wall back of it is about 122 feet long: is that right? A.—Yes.

Q.—Will you just tell me how far from the southern wall tank No. 1 is, on the fire wall? A.—68 feet.

Q.—From measurements taken on P-7 I understand it is about 68 feet? A.—Yes.

Q.—From the south wall. . . . A.—The south wall of the east building.

Q.—Will you go on to the next item? A.—There is one item in my report, of "Labor Cleaning Equipment", $470.90.

Q.—I think we will leave that in abeyance for the moment, because that probably depends upon the amount that is properly attributable, if any, to explosion? A.—Well, this is the part that we had charged to explosion only.

Q.—You charged that to explosion on the basis that the figure of $4,508.68 less the item $470.90 was correct? A.—I think that was included in the figure I originally gave, wasn't it?

Q.—But what I am trying to point out to you, Mr. Moffat, is that I do not think I will discuss that item with you, because you made, apparently, an apportionment. . . . A.—Yes.

Q.— . . . . between loss by explosion and loss by fire? A.—Yes.

Q.—Based upon the loss of property, as you saw it, by explosion, and the loss of property, as you saw it, by fire? A.—Yes, I presume that is the way it was based. I am trying to recollect. I will think of it afterwards. I am just trying to figure out how we arrived at it.

Q.—I think, if my memory is correct, you put 80 per cent of it on to the fire total and 20 per cent of it onto the explosion total? A.—That is about right. It is about that.

Q.—I am not going to discuss that with you, because that depends, I would think, upon the accuracy of the whole charge to explosion. What is the next item? A.—Well, we have then two items grouped together. I will quote them separately. One is a portion of the charges covering the labor dismantling and reconditioning equipment. We have $1,000 of that for the explosion.

Q.—What was the equipment that was dismantled and reconditioned? A.—On this picture D-7-C, as an example, you will find two long conveyors between the seed tank and the east wall. That all had to come down and be reconditioned, and we had to take parts out and put it all back up again.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

By Mr. Mann, K.C.:—

Q.—In what room? A.—In the east room.

By Mr. Hackett, K.C.:—

Q.—Let us take the east room. Look at the plan P-7 and indicate where the seed tank was in that east room? A.—It started from the middle of the third bay from the south on the east wall side and continued north to within 10 feet of the north wall.

Q.—Will you just indicate on P-7? A.—It would start from within 10 feet of the north wall. . . .

Q.—On St. Patrick St.? A.— . . . . the north wall, running parallel with the east wall, approximately half way down the building.

Q.—You have drawn an oblong there with a lead pencil. Put "Seed Tank" on it? A.—Yes.

Mr. Mann:—Put "Seed Tank" within the oblong, Mr. Moffat.

By The Court:—

Q.—The seed tank was merely a container? A.—Yes.

Q.—It wasn't what you would call a "machine"? A.—No, it was just a bin.

By Mr. Hackett, K.C.:—

Q.—What was it made of? A.—Of heavy-gauge sheet metal, — I think quarter-inch plate.

Q.—I understood it was just galvanized iron? A.—No; this was quarter-inch plate. It was a seed tank.

Q.—Did that seed tank go to the east wall of the east room? A.—It was badly battered and buckled.

Q.—You don't understand my question. Was there a passageway between the east wall and the east side of the seed tank? A.—There was a distance of about three to four feet.

Q.—And how high was that seed tank? A.—That seed tank would be, oh, 13 or 14 feet high.

Q.—And it was 17 feet from the floor to the ceiling? A.—It was 18′ 2″ from centre to centre, from the centre of one floor to the centre of another or the centre of one floor to the centre of the roof.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

Q.—Was there a slope in the roof? A.—No, that is the way you measure things, from centre to centre.

Q.—The roof at all places in the east room was 17 feet above the floor? A.—A little better than 17 feet, 18 feet really.

Q.—Was the charge of $1,000 for the damage to the seed tank only? A.—No, that thousand-dollar item states "Labor dismantling and reconditioning equipment." That doesn't take in very much of the seed tank, if any, but it takes in all these conveyors and equipment adjoining to the seed tank. That would be the elevator from your seed cleaner to your seed tank, your conveyors underneath your seed tank to take it away, your scale at the end of the seed tank, the spiral conveyor leading to the scale, and the two large conveyors running parallel with the tank, which carried the oil cake meal, the conveyors for your oil cake, and also it would take care of the conveyors bringing the seed to the seed cleaner.

Q.—Was there any portion of the $1,000 attributed to the seed tank? A.—I am under the impression that that all went into fire. It was badly buckled, but we figured that heat had done that more than explosion.

Q.—So then, the $1,000 is for something else than the seed tank? A.—Yes, it is just equipment, machinery.

Q.—Equipment? A.—Yes.

Q.—And that consisted of elevators, carriers? A.—Elevators, conveyors, scales.

Q.—Where is the scale situated? A.—It is situated between the north end of the seed tank and the north end of the building.

Q.—That is in the 10 feet? A.—Yes, in that 10 feet that I allowed for that.

Q.—How much did you allocate to the scale? A.—The proportion of dismantling and putting in a new one, — not a new scale. I mean, we had to buy a new scale for the scale which was destroyed and which we charged to fire loss. You see, the scale was burned.

Q.—But, if the scale was burned, why do you charge any part of it to explosion? A.—We had to dismantle it, and we had to put it back in, all caused from the explosion part. It was part of the connecting link all the way through. It was connected with the conveyors and with the things that were damaged by explosion.

Q.—So it is your view that the scale was damaged by the explosion? A.—I say the connecting-up, the labor, the dismantling of it and that, was charged. The scale itself was not charged to explosion.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

Q.—But what I don't grasp, Mr. Moffat, is why you make a charge to the Defendant, for dismantling something that was not damaged by explosion? A.—It is a connecting link between them all. You only have a certain portion of it, you must remember. You have not got the entire amount. That is the connecting link from one end of the system to the other on that particular floor, for which we have charged you with $1,000, whereas we have charged the fire with $2,813.

Q.—Was there anybody representing the company defendant present when the division was made between fire and explosion? A.—No, there wasn't anybody there.

The Court:—I haven't heard one word that would suggest that any member or any representative of the defendant company was present when any allocation was made between fire and explosion. Am I not correct in that?

Mr. Mann:—No, there wasn't.

The Court:—My statement is right, then?

Mr. Mann:—Yes.

The Court:—There were representatives there when the matter was discussed and suggestions were made, but so far I have no agreement on it and I have no evidence of the presence of any of the defendant company's representatives when any of the allocations were made.

By Mr. Hackett, K.C.:—

Q.—Now, to make it shorter, Mr. Moffat, does the equipment in respect of which the charge amounting to $1,000 is made to the defendant company fall into the same category as the scale, — it was damaged by fire, not by explosion, but for the reasons you have given you have allocated a part of the loss to explosion? A.—No. You take for example all these conveyors, — the one feeding the seed tank, the one carrying the oil cake meal, at the back of the seed tank, and the elevators, — they weren't destroyed by fire, but they were buckled and banged up through the falling of debris and also through the explosion, so that, when I say we did not charge the seed scale itself, I mean the replacement scale was charged to fire.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

Q.—But how do you say that the equipment which you have mentioned as being buckled, — I think that is your term, — and bent. . . .

Mr. Mann:—Battered.

By Mr. Hackett, K.C.:—

Q.— . . . . was so deformed by explosion rather than fire? What enabled you to say that? A.—Well, there is quite a difference in metal when it is bent, — particularly a heavy gauge, like these gauges that to-day are used on conveyors and elevators, — if it is bent by fire or bent by twisting or buckling with falling weights or explosion. There is quite a difference in the two when you see it. You would realize it right away if we had samples here to show you the difference; you would see the difference.

Q.—You see, Mr. Moffat, I am a little bit perplexed about that, because we had a man of great experience here, — Mr. Debbage, — and he could not tell us whether the girders of the superstructure of the east room were bent by fire or explosion, — and I may tell you that Mr. Thomson and Mr. Irving said right away that they were bent by fire, — and I am anxious to know how you can be so certain that the conveyors and other equipment were bent by explosion and not by fire? A.—Well, these conveyors were all banged and battered, — I am looking at this picture D-7-C. — that were down the side there, and there was no fire of any consequence out that side of the building, and they were all out of alignment and had to be taken down and reconditioned and put back again, and if it had been by fire you would have seen them charred and bent by heat.

Q.—Now, this equipment, I understand, was steel equipment? A.—Yes.

Q.—There was no wood on it? A.—Well, I wouldn't say there was no wood on it. On the conveyors and elevators there is no wood, — they are all steel.

Q.—I would like you to tell me what part of the east room was not burned out? A.—Take, for example, this picture here, D-7-F, — you see a section of the roof above the tank there, that is not burned out.

By Mr. Mann, K.C.:—

Q.—Tank No. 2? A.—Yes. And then you see the north ceiling not burned out, — that is, the ceiling beyond the monitor roof.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

By Mr. Hackett, K.C.:—

Q.—I understand, looking at D-7-F, part of the roof has been removed, burned out? A.—Yes. You mean this part here?

Q.—Yes, — but do you see any part. . . .

Mr. Mann:—I think the part you are talking about should be indicated.

By Mr. Hackett:—The witness is pointing to the left upper corner of the picture D-7-F.

Q.—But do you suggest that any part of the east room was not the scene of an intense fire? A.—The most northerly point of that roof was not nearly as severely damaged as the centre and southern sections. The part that you see as an opening is where the monitor roof was, and you will always find that your fire will go to that part of the roof before it goes to any other part, it being higher and it creates a chimney or a vacuum to carry it to that section, and that is why you have that opening.

Q.—You indicate the opening shown in D-7-F. But you do not suggest as a result, Mr. Moffat, that there was any part of the east room that was not a furnace at one time on the day of the 2nd of August, 1942? A.—That is not the question you asked me.

Q.—It is the question I ask you now? A.—I don't want to get mixed up.

Q.—I don't want to mix you up at all; that is not my aim. Will you answer that question? A.—I will answer it this way: that no human being could have gone into that room during the course of the fire.

Q.—But, there was fire all over the room and you saw evidence of fire all over the room? A.—Yes, there was evidence of it.

Q.—And even in the remote northeast corner, which is the place where you say there was less fire than anywhere else, the scale was destroyed by fire and charged as a complete fire loss? A.—Yes.

Q.—Will you look, please, at P-6-e, — which gives a pretty good view of the damage that was done to the roof and of the fire damage that was done to that upper floor, does it not? A.—Yes.

Q.—That being the case, how are you able to say that the equipment, the conveyors and so forth, — I have forgotten the enumeration, but I am referring to the equipment you mentioned,

— how are you able to say that that equipment was damaged by explosion and not by fire? A.—I mentioned, before, that that was from looking at the condition of the various parts of the equipment.

Q.—And what was the condition? A.—Pretty bad.

The Court:—It might be bad as the result of fire or bad as the result of explosion. That doesn't help us.

By Mr. Hackett, K.C.:—

Q.—I mean, what were the characteristics of the blemishes on the equipment or what was the damage to the equipment that enabled you to say definitely, "This equipment was damaged by "explosion rather than by fire", when you knew that it had all been in the midst of a terrible fire? A.—There were parts of this conveyor, as an example, that is shown in picture D-7-C, that had no fire damage to it at all, but it had to come down because some other ends were damaged so badly that we had to pull the whole thing down and rebuild it all; so even the parts that were not damaged had to be dismantled, re-panelled and put back up again.

Q.—You are speaking now of conveyors? A.—Yes.

Q.—How many of them were there? A.—Oh, there was quite a lot. In that room I would say there was over 200 feet of conveyor.

Q.—Was it all part of one conveyor or were there several conveyors? A.—The whole building is interlocking from top to bottom. You can't start one floor without watching your other floors. It is a continuous-flow system, and every department is controlled through motors and that, so that they are interlocked.

Q.—I want to know whether you would say that in the east room there was one conveyor or there were many conveyors? A.—There are at least four sets of conveyors.

Q.—How do you call them? How do you discern one from the other? A.—By their position and by the commodities they are carrying.

Q.—Tell me what the four are, because I want to get at each one of them? A.—The first one we will call the Seed Conveyor, leading from the elevator in the west room, bringing the seed into the building.

Q.—From where? A.—From the supply tanks in the yard. That conveyor and elevator, — the elevator being entirely in the west room and the conveyor half in the west building and half in

the east building, — that was so badly damaged it all had to be taken down and be straightened out. So there is one instance where a conveyor and elevator had to be taken down, in the west building, that wasn't even in the fire room. That supplied the seed to the seed cleaner.

By The Court:—

Q.—Which was in the. . . . A.— . . . . east room.

By Mr. Hackett, K.C.:—

Q.—And operated by Marier? A.—That is right.

Q.—You have given me now the first conveyor, which you have called the Seed Conveyor? A.—Yes.

Q.—What was the second one? A.—Between the seed cleaner and the tank was . . . .

By The Court:—

Q.—Which tank do you mean? A.—The seed tank.

The Court:—The word "tank" might be ambiguous. That is why I interrupted.

Witness:— . . . . was an elevator bringing the seed from the seed cleaner to the storage seed tank .

By Mr. Hackett, K.C.:—

Q.—Bringing the seed from the seed cleaner to the seed tank? A.—Yes. In that tank there was a spreader conveyor on the top, and, underneath the tank. . . .

Q.—Is that the third one? A.—No, I hadn't counted that. That is another one I had not thought of before.

Q.—That will make five? A.—Yes.

Q.—The third one is what? A.—The third one will be the conveyer underneath the seed tank, which unloads the seed tank. Then there was a vertical conveyor at the end of the seed tank, feeding the seed scale.

Q.—That is at the north end of the tank? A.—Yes.

Q.—And then what about the fifth one? A.—Then there was another elevator coming up in the east building, which brought up the cake and which fed these two long conveyors at

the east side of the seed tank, for the cooling and supplying the grinding equipment.

All of these had to be dismantled, overhauled, and replacements made, and put back into condition again, — and I wish I could get a contractor today to do that for $1,000.

Q.—But, my particular duty is to find out how you could determine that damage to these five conveyors. . . . I understand that "elevator" at times is used as meaning the same thing as "conveyor"? A.—Well, it is a conveyor, but it is a vertical and the other is a horizontal conveyor.

By The Court:—

Q.—All part of the same system? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—You say the vertical conveyor is called an elevator? A.—Yes.

Q.—What was there that enabled you to say that damage to these conveyors was done by explosion? A.—Well, as I pointed out, in your west room, where there was no fire at all, both the elevator and conveyor had to come down. They were badly out of alignment.

Q.—I want to restrict your evidence, if I can, for the moment, to the east room? A.—Yes, but. . . .

Q.—We will go to the west room a little later on? A.—Of course, you are working on the one system. There is a connecting link between the two. Your conveyor, even in the west room, that is bent, definitely has to continue into the east room, where it was also bent. It is all one continuous conveyor.

Q.—But I don't yet see how you can say that the conveyor which is found in the west room, — where, according to you, there was no fire, — was damaged by explosion, because that portion of the conveyor which you found in the west room might have been in the east room and subject to fire. I understand that the conveyors keep moving: is that right? A.—No, the conveyor doesn't move, — it just turns, and the blades are so shaped as to move the material. The conveyor in the west room doesn't go into the east room. It is a pipe with a ribbon in it that is curved to propel the material along. The conveyor doesn't go into the east room; so if the force was so bad as to damage this piece

of machinery that is continuing all through into the other room it is natural to assume it must have had equally as hard a damage knock as it had in the west room. That piece of machinery didn't go into the fire and out again.

Q.—I thought it was something like an endless chain? A.—No.

By The Court:—

Q.—Some conveyors are? A.—Yes; we have that type too, but I wasn't thinking of that type.

By Mr. Hackett: —

Q.—I am told it was a screw conveyor as distinct from a bucket conveyor? A.—Yes, or as distinct from a belt conveyor. A belt conveyor will go from room to room, but a screw conveyor doesn't.

Q.—But can you go this far: if there had been no explosion and the fire which was there did occur, it would have damaged the conveyors? A.—In certain spots I would say Yes, it would, but not in its entirety.

Q.—I find it difficult to follow you when you say that the damage to the linseed tank was charged entirely to the fire insurance companies. You said that, didn't you? A.—To my recollection, yes, because we figured that the explosion would hardly damage a heavy seed tank the same as it would a lighter conveyor material.

Q.—And that you charged such a substantial portion of the loss on the conveyor to explosion? A.—I didn't say that. The proportion is about a quarter on this particular item. We had $2,813.24 to fire and $1,000 to explosion.

Q.—What did this conveyor look like? Was it a pipe, the outside of it? A.—No; the conveyor runs in a trough.

Q.—Is the trough open? A.—No; it is sealed on the top, not exactly sealed, but it has a cover on the top.

Q.—What would be the diameter? A.—Those were nine-inch conveyors.

Q.—That is, if it were pipe, it would be pipe of. . . . A.—The outside round of the conveyor is 9 inches.

Q.—Did it run along the ceiling? A.—You can see them in the picture. One of them shows in D-7-F; shows it crossing it. That is the seed conveyor coming from the west room into the east room.

Mr. Mann:—And in D-7-C.

By Mr. Hackett:—

Q.—In D-7-F you point out that the pipe-shaped mechanism is a seed conveyor and it has, you say, a diameter of nine inches? A.—No, — the outside casing would be about eleven inches. The diameter of the screw itself is nine inches. This one here is covered.

By Mr. Mann, K.C.:—

Q.—Which one is that? A.—The one in D-7-F is covered with insulation. I mean, the seed conveyor marked as such on the photograph D-7-F. is insulated with asbestos on account of the fact the cold seed coming into the building sweats and would be dripping on the floor. This one here in the picture indicates that the fire has not damaged the insulation, and therefore the expense could not be attributed to fire damage when we had to take that conveyor down and recondition it and put it back up again.

By Mr. Hackett, K.C.:—

Q.—Mr. Mann has pointed out to me that on D-7-C, — which you might show to his lordship, — there are other mechanisms which look like seed conveyors running along to the upper right of the picture. Will you say if they are seed conveyors? A.—Yes, those are cake conveyors in that particular case. I think we called them "five" before.

By The Court:—

Q.—They are of the same construction? A.—Yes, and operated in the same manner.

Q.—Are they also insulated with asbestos? A.—I will have to try and recall whether they were or no, — I don't think they were, sir. They weren't at that time.

By Mr. Hackett, K.C.:—

Q.—But, from what one can see, Mr. Moffat, these conveyors in D-7-C and in D-7-F remain in place, and, that being so, how do you explain that you attribute to explosion any damage

that may have resulted to them? A.—They were all out of alignment, and a conveyor is no good to you unless it is perfectly in alignment, and they had to be taken down and fixed up and put back up again.

Q.—Why do you say, knowing the intensity of the fire and the heat, why do you say that these conveyors were not damaged by heat and fire rather than by explosion? A.—In the case of these cake conveyors here. . . .

The Court:—Appearing in D-7-C.

Witness:—In the case of the cake ones appearing in D-7-C they had been coated by what is known as lithcote, to obviate corrosion through moisture and damages, and the lithcoting on them was just as good after the fire as before the fire, and yet they were out of alignment, — so it showed that shock, rather than heat, had damaged them.

By Mr. Hackett, K.C.:—

Q.—But may not shock result from heat? A.—No, not to the same extent.

Q.—Well, I submit to you as a problem that intense heat will buckle up and distort conveyors as it buckled and distorted the steel framework of the building. Would you be inclined to agree with me? A.—Yes, if there is heat on these conveyors they would be inclined to agree with me? A.—Yes, if there is heat on these conveyors they would naturally buckle with heat too, — they are metal.

Q.—There must have been heat on them? A.—Of course, in D-7-C there is asbestos covering. . . .

Mr. Mann:—No. you are speaking of D-7-F, where the conveyor has asbestos covering.

By Mr. Hackett, K.C.:—

Q.—Look at D-7-F. Don't you think the asbestos covering shows it has been damaged and cracked? A.—Yes, it is damaged and cracked, but it saved the conveyor. Yet it was all out of alignment and it had to come down, as I have said.

Q.—But might not the heat, the fire, the terrible temperature, which buckled all these big steel beams, have played some

pranks with the alignment of the conveyor? That is not impossible, is it, Mr. Moffat? A.—It would not be impossible, but it does not seem probable.

Q.—What would be the effect of the roof falling on these conveyors? Would that tend to put them out of alignment? A.—Anything heavy falling on them, whether it is roof or bricks or whatever it would be, would result in some damage occurring. It was more by weight or strain than heat in these cases.

Q.—It is to your knowledge that the roof and the monitor came down. . . .

Mr. Mann:—The monitor didn't come down. Part of it flew around, but it didn't come down. Part of it came down.

By Mr. Hackett, K.C.:—

Q.— . . . . came down onto the third floor? A.—I believe so.

Q.—And any substantial part of the roof or any substantial part of the monitor falling would tend to distort the seed conveyor or the convevors if it hit them? A.—If it is of fair size, yes, if it is a fair-sized piece.

Q.—And from what you saw on the third floor after the fire, you know that things of fair size did fall? A.—Well, I wouldn't like to answer that. When we say "fair size" we mean a piece of weight; not just a piece of wood falling on it would dent it. I haven't seen anv big pieces of metal fallen down.

Q.—Let us look for the moment at the piece of roof which is shown in P-6-d. If something like that had fallen on the conveyor it would have distorted it? A.—Yes, a fair-sized weight.

Q.—And undoubtedly some of these pieces of roof and monitor continued to burn after they had fallen onto the third floor? A.—I didn't stay in to see that part of it.

Q.—What was the next item that you had charged to the explosion? A.—The next item covered electrical equipment, drying, re-winding of motors, etcetera. The proportion charged to explosion was $2,250.

By Mr. Mann, K.C.:—

Q.—And to fire? A.—$12,750.

By Mr. Hackett, K.C.:—

Q.—Will you tell the Court what the principal items were of the electrical eqnipment?

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

The Court:—Generally, or that charge solely?

Mr. Hackett:—I think we have to take them all, because it was an apportionment.

The Court:—Yes.

Witness:—We had to take every motor, — which ran into quite a considerable number, send them out to be dried, to be rewound in many cases, and all the conduits had to be taken down, even the switches at the side, — in other words, every portion of electrical equipment in the whole plant, both east and west buildings, had to be taken out and put back in. We had to go right through the whole thing, both east and west buildings.

By Mr. Hackett, K.C.:—

Q.—Now, Mr. Moffat, I am going to ask you a direct question. You remember you have told us that the damage to the electrical equipment on floors other than the top floor was charged to fire? A.—Yes.

Q.—Are you quite sure that no portion of this damage on the other floors was charged to explosion? A.—No, I will tell you the way we arrived at it: — We took the number of motors on every floor and we segregated, — we had this bill for around $15,000, — we segregated all the motors for the different points of the building, and then we came up to the top floor and figured the horsepower and the size for the top floor, and it worked out approximately to this percentage which we attributed to explosion. We did it to the best of our ability on that division.

Q.—Again I tell you I am not questioning your integrity. I am just trying to get at the basis. How many motors were there involved? A.—I would say roughly here would be one hundred motors in that place.

Q.—And what equipment other than motors comes under the heading of electrical equipment? A.—All your switch boxes, all your panel boards, all your electrical lighting, and your heating system is all on fans, unit heaters, which are all electrically-controlled, — everything like that.

Q.—What was the total damage to electrical equipment? A.—The total . . .?

Q.—The total, by fire and explosion, according to you, on the top floor? A.—It would be $2,250. $15,000 was for the entire two buildings.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

Q.—$2,250: the total on the top floor. Then am I to understand that the entire damage o electrical equipment on the third floor in the east room was charged to explosion? A.—I wouldn't like to say that the entire amount was charged to explosion. I would have to check it up or go over some of the figures we had at the time, to refresh my memory. I know we eliminated the bottom floors and then worked on the top floors according to the number of outlets and the number of motors and so on.

Q.—But you would not be able to give us that detail? A.—Not from memory just now, because I didn't think of it from that angle at all.

Q.—From what angle did you think? A.—I mean just now, — I didn't come prepared with any thoughts of that.

Q.—How many motors were located on the top floor, in the east room first, and then in the west room? A.—That would be a little difficult for me to tell you offhand without going over it all.

Q.—How many do you remember in the east room? There was a motor, for instance, that was running the seed cleaner? A.—First of all you have one on each of the tanks.

Q.—Where are they situated? A.—They are at the back of those vessels. There are two there.

Q.—They were not hit by the flying door, anyway? A.—No, but they may not have been damaged through the causes of the door flying, but let us not get into that discussion.

Q.—We are coming to that. I want to keep some bright spots ahead. How many motors? A.—There are two that I have mentioned. There is one on the grinder.

Q.—Where is the grinder situated? A.—On the east side of the east room. I could show it to you on the picture. The motor for the grinder appears in the second bay from the left on the east wall of D-7-C.

Q.—You have told us that the stretch from the first upright to the second was 22 feet, I think? A.—Approximately 21′ ¼″.

Q.—And the motor would be about 25 feet from the south wall? A.—Yes.

Q.—Where are there any more motors on the top floor in the east room? A.—There is the motor operating the seed cleaner.

Q.—That is the machine that was being operated by Mr. Marier, who was killed? A.—Yes.

Q.—Does that seed cleaner show on any of the photographs? A.—No, it doesn't show. It is further in.

Q.—Is it about back of the motor that you have just ident-

ified? Would it be about 25 feet from the south wall? A.—No, it is on the south side of the seed tank.

Q.—On the south side? A.—The south end of the seed tank.

Q.—The scales are at the north end and the seed cleaner is at the south end? A.—Yes.

Q.—You told us that the seed tank was about. . . .

Mr. Mann:—About half the length of the building, he said, pretty nearly.

Witness:—Well, it would be around 50 feet, if I recall correctly. I'm not quite sure. I think it is a 50-foot tank.

By Mr. Hackett, K.C.:—

Q.—We can see the south end of the seed tank in D-7-C, and you have told us that the first aperture was 21. . . . A.—21′ ¼″.

Q.—The second one 22 feet and the third one 19, — and the south end of the seed tank doesn't quite go half way down that third opening? A.—That is right.

Q.—So, then, from the end of the seed tank to the south wall there would be roughly 10 feet, 22 feet and 21 feet? A.—Yes.

Q.—That is 53 feet? A.—53.

Q.—And the seed cleaner operated by Marier would be south of the south end of the seed tank? A.—Yes.

Q.—Was it between the seed tank and the dust collector or was it further to the west? A.—Between the end of the seed tank and the dust collectors.

Q.—So, then, that motor would be 21, 22. . . . A.—Just about 45 feet from the south end.

Q.—The south wall of the building. How many more motors? We have had four. A.—There was a motor on the elevator between the seed cleaner and the tank.

By The Court:—

Q.—You are speaking now of an elevator forming part of the conveyor system? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—That is five. Any more? A.—There was a motor on the spreader conveyor across the top of the seed tank.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

Q.—That is 6. Any more? A.—There was a motor driving the conveyor on the bottom of the seed tank.

Q.—That is 7. Any more? A.—There was a motor handling the cake elevator. That motor was up on the top floor.

Q.—That is 8? A.—And there was a motor covering the two conveyors carrying the cake.

Q.—9. Any more? Was there one on the elevator that came up from the ground floor? A.—Yes; I have mentioned that. That was the cake elevator one; and I think there was one more on the vertical conveyor feeding the seed scale.

Q.—That would be 10. Any more? A.—There was also a motor on the oilcake meal bin.

Q.—What for? A.—For the spreader conveyor on the oilcake meal bin. That is the most of them I can recall at the moment.

Q.—That is 11? A.—Yes, in the east room.

Q.—Before we go to the west room would you tell us if these motors, or any of them, were on the floor? A.—I'm sorry, — another one, one I forgot, was the one on the vacuum pump.

By The Court:—

Q.—That makes 12 in the east room, on the top floor, east room? A.—Yes.

Q.—There may be some others that will come to your memory? A.—That is right.

The one on the vacuum and the one on the grinder were on the floor. Most of the others were suspended from. . . .

By Mr. Hackett, K.C.:—

Q.—From the ceiling? A.—No, but from pillars or tanks or whatever they were operating.

Q.—When I asked you if there was a motor on the elevator, I meant the freight elevator. Did you think of that? A.—There is one in the freight elevator. That was in the penthouse above the elevator.

Q.—That doesn't come into this? A.—It is above the elevator. I had forgotten about it.

By the Court:—

Q.—That is an elevator in the ordinary sense of the word? A.—Yes.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

Q.—Used for carrying freight? A.—Yes. That was in there.

By Mr. Hackett, K.C.:—

Q.—The one they brought the drums up on? A.—Yes.

Q.—And the men? A.—Yes.

Q.—These motors, — I think there would be 10 of them that were not on the floor, — would be at what elevation above the floor? A.—That would vary from 5 to 16 feet.

Q.—Were any of them torn, — I won't say torn from their moorings, though we have used that term, — torn from the wall or the upright or whatever they were attached to? A.—I don't definitely recall those. The only one I can visualize at the moment was the grinder motor and the switch box of it. It was standing up on a pedestal and it was all battered. With regard to the other ones, I could not tell for sure at the moment.

Q.—It might have been hit by falling debris? A.—Yes. I'm not saying what it was hit by. I don't know.

Q.—By part of the roof or by part of the monitor? A.—I don't know.

Q.—Now, does that exhaust the electrical equipment? A.—No; there are, of course, also, two or three other motors on the heating system, which is a unit system.

Q.—Are they on the third floor? A.—Every floor and every division have their own percentage.

Q.—Where would they be? A.—They would be hung from the ceiling, at possibly three feet from the ceiling.

Q.—How far apart might they be? A.—There might be three in that room.

Q.—One to the north and one in the centre and one to the south? A.—Possibly that I couldn't say definitely how many there were, but I imagine for a room of that size there would be two or three. There would be two, anyway.

Q.—Would you look at the photograph D-7-J and say if you see a motor there on the left-hand side? A.—In D-7-J, centre left, there is one hanging from a conduit; and I believe Mr. Thomson just mentioned that he counts five on that floor, of these.

By the Court:—

Q.—Five for the heating system? A.—Yes.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

Q.—Instead of the three you suggested? A.—Yes. I thought there might be three. It sometimes depends on your sizes and location as to how many you would have.

By Mr. Hackett, K.C.:—

Q.—The motor is the thing in the box that is hanging on or near the steel upright at the left of the picture? A.—Yes; it is connected to it somewhere.

By the Court:—

Q.—Does it look like a motor, to a layman? A.—No, you can't see a motor on it, but you can see the heating unit there. The motor might be at the back blowing the fans.

By Mr. Hackett, K.C.:—

Q.—You say what we see is the heating unit? A.—Yes.
Q.—But the motor itself is not visible? A.—No; it possibly might be at the rear of that. I don't see the motor on that unit, but of course there is one to each unit.

By The Court:—

Q.—It might be behind it in the picture? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—Do you see something sticking out back of the box? A.—Yes; that is a motor for driving the tank. That looks like No. 1 tank.

Q.—I have got to ask you the same question again, Mr. Moffat. What peculiar characteristic did you find on any and all of these motors that warranted you in saying that they had been damaged by explosion rather than by fire? A.—We felt that, in all fairness, the explosion was the cause of a lot of our damage, and we figured that it would be only fair to put the proportion from the top floor to that explosion and put the rest to fire or water damage, and that is the conclusion we arrived at.

Q.—You see, Mr. Moffat, I understand your answer, but it is not an answer to my question? A.—Well, it is difficult to answer your question. You take in the west room, — there was no fire there, and yet all the motors and all the conduits in that section were damaged by the water.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

By the Court:—

Q.—So far, Mr. Moffat, if I have understood you correctly, the basis of your apportionment appears to have been the general circumstances of the disaster? A.—Yes.

Q.—And the location of the various parts of the equipment? A.—Yes.

Q.—In addition to what you have already said, can you give us any statement with regard to actual physical indications which you found on any part of the material in question which would enable you to say that that damage was fire damage or explosion damage? A.—The switch box of the grinder motor, which was on the east side, was very badly battered, and that motor was damaged too, cracked in fact, and I think we had to replace that one, — so that that would be one that I know personally would to my mind be a total explosion damage without indirect cause. Most of the damage to motors in our analysis was through indirect causes.

By Mr. Hackett, K.C.:—

Q.—Are we to understand your answer to mean that with the exception of the specific item that you have mentioned, there was on the others no physical indicaion that would enable you to attribute the damage to explosion as distinct from fire? A.—That I would not say, because I did not go over all of each item personally to find out the extent of the damage. That was Mr. Newill's job. I just sat in, with my general knowledge, on the division of the percentages. He made the minute, detailed examination of all the different machinery and equipment.

By the Court:—

Q.—But, that is the only one on which you personally saw these physical indications, so far as your recollection goes? A.—Yes. I have seen them hanging, but, as to going and examining them, I didn't. This one I did notice, because it was on the floor, where you could see it.

By Mr. Hackett, K.C.:—

Q.—And what had happened to it? A.—Well, even the framework was cracked. The stand on which the switch box was had fallen right over and the switch box was all damaged and broken.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

Q.—That might have been caused by some heavy body falling upon it, might it not? A.—It would take quite a heavy blow, whatever it was, to knock it over.

Q.—But you know that there were heavy things that fell that day on to the third floor of your building? A.—Well, no, you wouldn't call any of the things that fell in the building heavy. Even sections of the roof, you don't term them as heavy. There were no steel beams fell. If steel beams had fallen I would say Yes, that they would be heavy. They were buckled, but they didn't fall.

Q.—There were parts of the roof fell? A.—Yes, sections, but the sections that I saw, that fell, would not be sufficient to damage the motor or the switch box that I saw.

Q.—Of course, you did not see them until after the fire had been extinguished and until after they had been partly consumed after falling? A.—Yes, — I was up there that Sunday afternoon. I was in the building.

Q.—Where was this particular switch box located? How high up was it located? A.—It was on a stand about four feet off the ground.

Q.—Was it on the stand when you saw it? A.—The stand and everything had fallen down.

Q.—Would the fact that it had fallen over on to the floor not have been an explanation for the damage? A.—No, because it was damaged on the upside as well as on the downside. It got hit from all sides by the looks of it. The whole front cover was dented away in. It was in bad shape.

Q.—I am asking you to assume that a weight of several hundred pounds fell upon it and knocked it down. Wouldn't the blow and the weight falling upon it and the concussion between the floor and the article falling have been a possible explanation of that damage? A.—There was no heavy article at that particular point lying around there.

Q.—What point was this? A.—It was shown in the picture D-7-C. It was in a position about 25 feet from the south end, near the east wall. It is just in back here, about four or five feet from the edge here.

By the Court:—

Q.—From the edge of what? A.—From the edge of the building, the east edge of the building.

J .S. MOFFAT (for Plaintiff at Enq., Recalled) Cross-exam.

By Mr. Hackett, K.C.:—

Q.—And just south of the dust collector? A.—Yes, approximately south of the dust collector, just in there in the picture.

By the Court:—

Q.—It is not distinguishable in the picture? A.—No. Unfortunately, these pictures don't cover everything, as you will see. They should have been all taken in sequence, if we had known what was going to be wanted.

By Mr. Hackett, K.C.:—

Q.—Would heat explain the cracking of this switch box? A.—It was more dented, like. It seemed as if something had hit it rather than buckling from heat. There is a difference.

Q.—I am now speaking about the cracking. You said it was cracked. Couldn't the heat account for that? A.—When I said it was cracked I meant it was hit with a bang of some sort. Instead of a crack call it a dent, — it was dented.

By The Court:—

Q.—Was there a fissure in the metal, or was there just a dent? A.—It was dented. There was a fissure, of course, in the frame of the motor; it was cracked.

By Mr. Hackett, K.C.:—

Q.—That might have been caused by falling to the floor, might it not? A.—Well, it was on the floor. It wouldn't fall. It was one of the ones on the floor. It wouldn't fall. It was one of the ones on the floor, but something may have cracked it.

Q.—That was cast iron? A.—Yes. It doesn't take an awful lot of banging to crack them.

Q.—Or possibly an awful lot of heat to crack them? A.—No, I suppose heat would crack it too.

Q.—Are there any other items that you charged to explosion? A.—No, I think that covers everything for explosion for machinery and equipment.

Q.—Do you know where Mr. Hodgins is now? A.—I don't.

Q.—I understood you to say yesterday that you thought that the formula had been destroyed, because it had been nailed

up or suspended from a nail near the tank. A.—Yes, they had it on one of the pillars.

Q.—It was my recollection of your first examination that you said that that would only be a copy and the original would be in the laboratory?

Mr. Mann:—Might be.

Witness:—We have looked through all of his records and have found no formula where he has put it into one of his records.

By Mr. Hackett, K.C.:—

Q.—Have you communicated with Mr. Hodgins? A.—I don't even know where he is. We haven't heard from him for over a year now.

Q.—He is still in your employ? A.—Definitely, until he comes back. He is in the Air Force.

Q.—Is he on this Continent? A.—We don't know. None of the boys in the office has heard from him. We don't know where he is.

By The Court:—

Q.—Is my recollection correct when I say that the operator of the tank in question told us that the formula for the turpentine was the same as he had been given for the linseed oil save as to the temperature?

Mr. Hackett:—Yes.

Mr. Mann:—Yes. that is my recollection.

The Court:—That is what the operator told us?

Mr. Mann:—Yes.

By The Court:—

Q.—Would that seem reasonable to you? A.—Yes, because, after all, it was only a bleaching process. There was no treating in it. If there had been treating it would have been different.

Q.—What I have told you of the operator's testimony seems reasonable to you? A.—Yes, because, in fact, we questioned

Mr. Hodgins about this after the accident, and he gave us what his formula was, verbally, and we took the same statements from our own men, and their statements were the same as his; so he had evidently given it to them as he said, and they know it, and there was no question about it.

Q.—And that would be the statement that the operator made to us in this case: the same formula as for linseed oil save as to the temperature? A.—That is right.

Mr. Hackett:—Unfortunately, I have got to go into the question of explosion with Mr. Moffat. I am quite willing to begin, but I don't think we can finish that item within the time at our disposal.

The Court:—I think we have done fairly well this morning. We will adjourn until February 4th.

And further for the present deponent saith not.

H. Livingstone,
Official Court Stenographer.

DEPOSITION OF J. S. MOFFAT

A witness for Plaintiff, recalled for further cross-examination.

On this 4th day of February. in the year of Our Lord nineteen hundred and forty-six, personally came and re-appeared John S. Moffat, a witness already sworn and examined for Plaintiff in this case and who being now recalled for further examination, under his oath already taken, doth depose and say as follows:—

Cross-examination continued by Mr. John T. Hackett, K.C.:

Q.—Mr. Moffat, by way of preface: when was the work of reconstructing and repairing the linseed oil mill done? A.—You mean, after the accident?

Q.—Yes? A.—We started cleaning up the day right after the accident, on the Monday afternoon, and continued right on then until into October, when it was completed around that time.

J. S. MOFFAT (for Plaint. at Enq., Recalled) Cross-Ex. con't.

Q.—So, the work done by the Foundation Company was completed in October, 1942? A.—Practically all. There were a few odd-and-end jobs that we had to wait for, like hardwood flooring and things like that, that continued a little later than that.

Q.—And at that time had the repairs on tank No. 1 been completed? A.—I could not say definitely. I know we started crushing flax on the first of October, but I don't think the refining started till a little while after that. It would be possibly in the middle of October or early November before refining was started again. I wouldn't like to say definitely on that date.

Q.—Could you tell me when the plant resumed normal operation? A.—I think we started crushing flax seed on the 1st of October.

Q.—I'm not familiar with the technique of your business, and I don't know exactly what crushing flax seed means in terms of operating the plant. Would you clarify that? A.—That means we started operating the plant on October the 1st, but that does not mean every part of the plant was operating. The essential part was operating, which was producing linseed oil at that time.

Q.—What date are you satisfied to fix as the one on which the plant was again in normal operation? A.—Well, operating or completely refinished? The painting and that wasn't finished until possibly into January or February. It was January or February before the repainting of the building and that was done, so that for a complete job I would say that by the time we got everything done, the new staircases put in and the new platforms and things like that, it would be about January or so before we would be finished everything.

Q.—Have you any record to show you? A.—No, I don't think we have, because we just continued working on it as we could and as we had the men and material available. During that time there was scarcity of materials and labor, of course.

Q.—I am speaking of the painting and the platforms and things like that? A.—They weren't, possibly, finished till January.

Q.—That wasn't an essential part? A.—Not essential from an operating point of view.

Q.—You were able to get into operation before that? A.—Yes.

Q.—And, from what you said, is it fair to say that the plant was in normal operation sometime in October? A.—I would rather say that the normal operations would be November than October. Although we were producing oil in October, everything wasn't normal.

J. S. MOFFAT (for Plaint. at Enq., Recalled) Cross-Ex. con't.

Q.—And oil is the. . . . A.—Oil is one of the main things, but refining also comes into the picture. There are other sections that are maybe not as important but that are quite essential.

Q.—You have told us that you visited the top floor, the scene of the fire, at the end of the day of the 2nd of August, 1942? A.—Yes, I was up there on the Sunday afternoon.

Q.—I am not familiar with what the duties of a man in your position are, and I don't want you to think that I am suggesting that you slurred your work if I ask you if you had ever been to that floor before? A.—When do you mean before?

Q.—I mean before the fire? A.—Oh, yes, hundreds of times I have been up on that floor before.

Q.—In the normal operation of the plant you never went there, did you? A.—Oh, yes. I am responsible for the plant; I visit all the plant.

Q.—You went up onto that third floor where they were purifying. . . . A.—Not that day.

Q.—No, I understand. I am just trying to find out how familiar you were with the east room and the west room and whether you ever went there? I thought your job was in the office. A.—I designed and planned the plant and built the plant.

Q.—How often before the fire would you normally go to the third foor, — once in six months? A.—No; I would say that during the construction of the plant I was there every day.

Q.—Now you are talking of the time it was built, before the fire? A.—Yes, I would say I would visit the plant. . .

Q.—During normal operations? A.— . . . . during normal operations, up till about 1941, when I was in town, possibly once a week, but since 1942 I haven't visited quite so often after the fire.

Q.—I'm not talking of after the fire; I am limiting it to before the fire.

You had these very large tanks, in which there was material raised to a temperature considerably above that of the atmosphere. It was a pretty hot place up there in the summer, wasn't it? A.—What tanks are you referring to?

Q.—To tank No. 1 and tank No. 2, — and there was some other tank in the east room? A.—Yes.

Q.—Now, don't be worried. It was a hot place up there? That's all I want to get at. A.—You mentioned "large" tanks. We know that the capacity of these tanks, Nos. 1 and 2, is a thousand gallons. We don't consider those as large tanks.

J. S. MOFFAT (for Plaint. at Enq., Recalled) Cross-Ex. con't.

Q.—You can't call them little tanks if you want to. They were ten feet or so long and they did heat the place up pretty well when they had in them material that was above the temperature of the room? A.—These tanks are all insulated, and I would say that the maximum room temperature, even in the summer time, wouldn't be more than, say, possibly five degrees higher than the outside temperature, because your windows are open all the time, in the summer time. You couldn't get any more than that.

Q.—How many windows were there, Mr. Moffat?

Mr. Mann:—Doesn't the photograph show?

Witness:—In the east room, I presume you mean?

By Mr. Hackett:—Yes, and the west room too.

Witness:—There are three on the north side and there are two on the south. There are at least five big windows. When I say "big", they go about 10 by 14. They are very large windows. Then there are two doors that are open all the time.

Q.—Doors that go where? A.—The fire doors leading into the west room, — they are open all the time, — so that your heat is dissipated or distributed, and with the insulation of those tanks I doubt very much if you would ever have more than ten degrees difference from the normal temperature.

Q.—I was under the impresion that these windows admitted light but that they were so constructed that they could not be opened? A.—They have these big panes that open on a pivot. They pivot on the centre and open top and bottom.

By The Court:—

Q.—You indicate that the windows open on a swivel movement? A.—On a swivel movement. There is a swivel or pivot in the centre, and the windows swing open top and bottom. Possibly Mr. Thomson could explain the type of windows they are, in more technical language.

Q.—Your explanation seems clear enough to me. There is a kind of axle in the middle of the window, and the window swings on that? A.—Yes, that's it. Mr. Thomson is here, and he says my explanation is all right.

J. S. MOFFAT (for Plaint. at Enq., Recalled) Cross-Ex. con't.

By Mr. Hackett, K.C.:—

Q.—Is the operation of opening or closing done mechanically? A.—No; there is a chain on them that the men open and close them with.

Q.—I suppose they had to close them every night? A.—We were operating twenty-four hours a day at that time; so they weren't always closed nights either. They only closed them when they closed the plant up. As long as the men were working there, they kept them open.

In the west room you would have possibly a dozen windows. You have windows on the three sides. They were of the smaller type, though.

Q.—You made mention in your examination-in-chief of having had dealings with Mr. Newill and Mr. Debbage, and I think you mentioned somebody from the Foundation Co. but I don't recall accurately. Did you mention anybody from the Foundation Co.? A.—In what type of. . . .

Q.—With regard to determining what the damage was to the building? A.—No, I didn't. I had with Mr. Newill and Mr. Debbage on machinery and equipment and merchandise, but as regards buildings I had nothing to do with the division of costs, if that is what you are referring to, as I presume. I had nothing to do with the division of costs as regards the building, for explosion or fire.

Q.—By whom was that carried on? A.—I presume by Mr. Debbage and the others. I don't know. I never sat in at that.

Mr. Mann:—I don't remember discussing in the examination-in-chief anything about the building, with this witness. In his examination-in-chief we dealt entirely with the equipment.

The Court:—Probably because you knew he had nothing to do with the building part.

Mr. Mann:—That is right.

The Court:—Counsel for Defence wants to be sure about that.

By Mr. Hackett, K.C.:—

Q.—Did you have any negotiations concerning this matter with Mr. Jennings?

J. S. MOFFAT (for Plaint. at Enq., Recalled) Cross-Ex. con't.

Mr. Mann:—Concerning what matter? I would like to know what matter my friend means. It may be an objectionable question.

By Mr. Hackett, K.C.:—

Q.—Concerning the fire and the incident which destroyed your property, or the property of your company, on the 2nd of August, 1942? A.—I don't just get what you mean, but Mr. Jennings discussed various phases with us from time to time, but I don't know any particular one that you are referring to.

The Court:—I don't recall who Mr. Jennings is.

Witness:—He is the insurance agent for us, of Jennings & Jennings.

By Mr. Hackett, K.C.:—

Q.—Johnson-Jennings? A.—Johnson-Jennings.

By The Court:—

Q.—That was the firm through which you negotiated the insurance for the building? A.—He is what we term our insurance broker. He is our agent.

Q.—For the insurance on the building? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—I am referring to Mr. F. A. Jennings, of Johnson-Jennings Incorporated, Coristine Building, Montreal? A.—Yes.

Q.—That is the Mr. Jennings you are referring to? A.—Yes, that is the one I was thinking of too.

Q.—Now, in the Particulars to Paragraph 16 of the Plea it is alleged:—

> "All the insurers on the risk, other than Defendant, paid "to Plaintiff, prior to the production of Defendant's "Plea, over $100,000.00 of the loss sustained by Plaintiff "and since have paid or agreed to pay the balance of the "loss in the event of Plaintiff's action failing, and De- "fendant is unable to say whether the undertaking to make "a further payment is in writing or was verbal."

J. S. MOFFAT (for Plaint. at Enq., Recalled) Cross-Ex. con't.

My question is, Mr. Moffat, whether you know of any agreement between your company, or anybody who represents it, and the fire insurance companies, to pay your company an amount in excess of the payment already made, if this action fail?

Mr. Mann:—I object to this question, for several reasons: firstly, this matter is one which was never even suggested or touched on in the examination-in-chief; secondly, my friend does not limit his question to any date of any agreement; and, thirdly, because the agreement itself is of record, the only agreement, and there is an admission and it is proved. The very language of the document makes the situation clear. I am speaking of Exhibit D-3, which has a schedule attached to it which shows the various amounts paid by the companies, which amounts total in all $112,793.34. The admission therein is that the claim of the Plaintiff is not jeopardized by accepting the payments by the fire insurance companies. These documents are dated within the ambit of a few days in May, 1943. The action was served in September, 1943.

The Court:—That is the letter that was written in a similar form to all the fire insuring companies?

Mr. Mann:—Yes, and the list is attached.

The Court:—If you would allow me to put a question, Mr. Hackett, perhaps the matter could be satisfactorily cleared up.

Mr. Hacket:t—It isn't within my prerogative to "allow" the Court to do anything; the Court is master of the situation.

The Court:—When I say "allow" I mean, would you mind if I put a question which perhaps would clear the matter up? Would it interfere with your cross-examination?

Mr. Hackett:—I don't think it will interfere, but I must tell the Court that I have instructions on this, — they may be erroneous, as sometimes they are, — and I intend to pursue the matter. If the Court in the circumstances feels it should put the question, I cannot say I shall not be satisfied, but I cannot let the matter drop there.

By The Court:—I will put a question which may or may not be satisfactory to either Counsel but which will be satisfactory

to me. Then, if my question is not satisfactory to you, Mr. Hackett, you may attempt another one, if you wish, or Counsel for Plaintiff may attempt another one.

Q.—I have before me Exhibit D-3, which is a letter written by one of the fire underwriters to your company, and I understand that all the fire underwriters wrote a similar letter. That letter comprises a certain undertaking and a certain agreement between the fire underwriters and your company. Will you tell me if to your knowledge any agreement beyond what is contained in this letter and the other similar letters was made with respect to this disaster, between your company and the fire underwriters, either through your company directly or through anyone representing your company?

Mr. Mann:—Is that limiting it to the date of 17th of September, 1943, the date when the action in this case was served?

Mr. Hackett:—No.

Mr. Mann:—I am asking the Court.

The Court:—The question is unlimited so far.

Mr. Mann:—Would your lordship's question include "up "to the date of the action"?

By The Court:—I will ask first prior to the institution of the action.

Q.—Is that question perfectly clear to you? A.—Yes. Prior to the institution of the action against the Defendant there was no other agreement made with the fire underwriters, either with our company or indirectly through other people.

The Court:—Now, Mr. Hackett, if you wish to pursue the matter, you may go on.

By Mr. Hackett, K.C.:—

Q.—Mr. Moffat, what is your position with your company? A.—With the Sherwin-Williams Company it is manager of the linseed oil mills.

Q.—And if an arrangement were to be made with the insurance companies, would it be part of your function to negotiate it or would it fall within the ambit of the duties of another

officer of the company? A.—It would fall within the duties of the president and directors and also with the secretary-treasurer.

Q.—The secretary-treasurer is Mr. Hollingworth, I understand? A.—Yes. But I would be acquainted with any action they would take.

Q.—That is, of course, if they decided to tell you? A.—Well, they have decided and they have told me anything they have told me anything they have done.

Q.—So far as you know? I am not questioning your integrity, — but the fact remains that an arrangement, if made, would not fall within the ambit of your duties? A.—Not necessarily, but being manager of the plant and also a director of the associated company I would know what was going on.

By The Court:—

Q.—Do you say you are a director? A.—Yes, of the Carter White Lead, — which gives me a great deal of information, being on the board of management, from the board of Sherwin-Williams too.

By Mr. Hackett, K.C.:—

Q.—Are you a director of Sherwin-Williams too? A.—No, but of Carter White Lead, which is subsidiary of the Sherwin-Williams.

Q.—You are not a director of Sherwin-Williams? A.—No.

Q.—What was Mr. de Merrall? A.—He was vice-president in charge of operations.

Q.—He is away from here? A.—Yes, he lives in Vancouver now.

Q.—Who is the president of the plaintiff company? A.—Mr. D. A. Whittaker.

Q.—Where does he reside? A.—In Montreal.

Q.—Was he president in 1942? A.—Yes.

Q.—And has been ever since? A.—Yes.

Q.—And takes an active part in the administration of the company's business? A.—Yes, sir; he is there all the time.

Q.—And so is Mr. Hollingworth? A.—Yes.

Mr. Hackett:—Would the stenographer read his lordship's question. (The question commencing at the bottom of Page 507 is read: "Q.—I have before me Exhibit D-3, which is a letter "written by one of the fire underwriters to your company, and I

J. S. MOFFAT (for Plaint. at Enq., Recalled) Cross-Ex. con't.

"understand that all the fire underwriters wrote a similar letter. "That letter comprises a certain undertaking and a certain agree- "ment between the fire underwriters and your company. Will "you tell me if to your knowledge any agreement beyond what "is contained in this letter and the other similar letters was made "with respect to this disaster, between your company and the "fire underwriters, either through your company directly or "through anyone representing your company?"

The Court:—And at the suggestion of Counsel for Plaintiff I limited it to prior to the institution of the action.

By Mr. Hackett, K.C.:—

Q.—Now, Mr. Moffat, I know you are a man of experience in business, but some people are under the impresion that an agreement or a contract necessarily means something that is in writing, and I am telling you that his lordship's question went beyond any writing or any written contract. It meant any understanding, verbal or otherwise. I ask you if your answer is the same? A.—My answer is the same, for the simple reason that I have already asked Mr. Whittaker and Mr. Hollingworth whether there was any other agreement, and they have assured me that there was no other agreement prior to our action.

Q.—Will you tell me, if you know, how any decision, — I am speaking now about the losses to machinery and equipment and stock, — agreed upon by you and Mr. Newill, would go forward to the Defendant through Mr. Jennings? Can you tell me why that channel of communication was selected?

Mr. Mann:—I may be entirely wrong, — one might easily be when it comes to a question in a case of this length, — but I certainly don't remember any suggestion in any part of the examination-in-chief that the matter of quantum went through Mr. Jennings in regard to the loss on machinery and equipment and stock. I remember nothing of that kind. My friend will correct me if I am wrong.

Mr. Hackett:—I will ask him if it did.

Mr. Mann:—Your question is directed to a channel of communication through Mr. Jennings, an insurance broker, to somebody. I have no recollection of any question of that kind or evidence of that kind. I may be wrong in that, but I don't think I am. I am objecting to the form of the question.

J. S. MOFFAT (for Plaint. at Enq., Recalled) Cross-Ex. con't.

The Court:—The question, of course, implies the existence of a fact. I'm not sure whether that fact has been proved. Mr. Hackett can change his question.

Mr. Hackett:—Mr. Moffat can easily way what the fact is. He has heard the discussion.

Mr. Mann:—I am wondering whether we are not wandering tremendouly far afield from the examination-in-chief.

The Court:—I have been wondering that for some time, but, on the other hand, this is a difficult case, and it is hard for the Court to restrict the cross-examination of an important witness, by the Defence. Questions that at the moment do not seem to have any bearing may have some importance later, and therefore I do not like to disallow them and I feel it is better to take them under reserve. except, of course, where the irrelevance is clear. I will allow the question under reserve.

By Mr. Hackett, K.C.:—

Q.—What is your answer, Mr. Moffat? (Question read, P. 509. A.—Mr. Jennings is our, what we term, insurance broker and adviser on all our insurance problems, and it is only natural that we should consult and work with him, as we place a great deal of faith in his judgment and in the advice that he gives us both in insuring and in settlement of claims. So we hand it over to him.

Q.—That includes the findings to which you have referred in your testimony in chief with regard to loss of stock and loss to machinery and equipment? A.—Generally speaking, everything that pertains to claims of an insurance nature.

Q.—But I want to restrict it to this claim, the claim which has given rise to this suit? A.—I imagine all those points were discussed with him too. I don't just recall definitely.

Q.—Now, the first question that I asked you in cross-examination had to do with the last answer that you gave to Mr. Mann, which was in these terms: "I felt that Mr. Newill and Mr. Deb-"bage were very fair and just in any figures that they submitted "and suggested at any time."

Q.—You were speaking, you recall, of the loss of stock, machinery and equipment, and its apportionment between the fire companies and the Defendant, and I asked you what standard

you accepted as the basis of your statement of fairness, and we got off on to some other matters. I come back to that now. What was it? A.—The standard of fairness that I looked at was the picture that I had seen after the accident and the disrupted condition of the machinery, equipment and so on, and I thought in fact they were very lenient to the explosion portion, because to my mind the explosion was the cause of the accident and the resulting picture of the east room, where the whole roof was raised, every window blown out and the walls out of plumb, would indicate that the explosion was really the cause, because in that east room, or, rather, in that west room, there was no fire whatever. In the east room there was a fire, but it is natural to assume a similar condition existed there where the explosion originated, — so that, when you look at the whole picture, I would say that there was more cause of damage by the explosion than cause of damage by fire.

Q.—It is because the amount of damage attributed to explosion, as you saw it, and the amount of loss attributed to fire, was very fair, that you gave the testimony you did? A.—Definitely.

Q.—Now, I want you to tell the Court, that having been the basis of your opinion, what kind of explosion you had in mind, upon which to base your opinion? A.—I don't say any kind of explosion I had in mind. The result of what took place is what I have in mind. As far as the explosion or the technical part as to type of explosion and that, I think we have technical advisers that should be called upon to give their opinion on that part. I am just talking about what I have seen.

Q.—Again, I am not questioning your integrity, Mr. Moffat, but you have given the Court your opinion? A.—Yes.

Q.—And you have stated that you thought that the amount that was charged to the Defendant, as compared to the amount charged to the fire companies, was fair. Now, that means that you brought the assessment of the amount of damage attributable to fire and the amount attributable to explosion, to the test of a certain standard. You had to measure it by something, and I am asking you by what you measured it? A.—I think we went all over that before, Mr. Hackett. In all our findings and discusions, we sat down there with Mr. Newill, who is an expert on that; we sat there with Mr. Debbage, who has also had many years of experience; and we discussed it backwards and forwards, frankly and openly, and I think their opinions and their suggestions and the actual results that they gave us warrant my opinion to be fair and just in saying that the distribution as we have placed it on record is as fair as anyone could arrive at.

J. S. MOFFAT (for Plaint. at Enq., Recalled) Cross-Ex. con't.

Q.—We know what a fire is. At least, we think we do. What does an explosion mean to you, when you are making it the basis of your judgment that the division between the fire loss and that charged to the Defendant is fair? A.—Well, when you go into the west room and see the roof off, the walls out, the windows blown out, and no signs of fire whatever, I would say that is an explosion. Well, it is natural to assume, if that happened in the west room, that same thing must have happened in the east room.

Q.—Will you look at Exhibit P-5 and tell the Court where the amount to which you have testified as regards the stock and the equipment and machinery can be identified in that exhibit? A.—I would have to study this document all out, because it isn't my document and I had nothing to do with the formation of it and I can't tell offhand what parts are the ones I had anything to do with, unless I get it all broken down and go over it item by item.

Q.—The action is brought on this exhibit, this P-5, and your testimony bears upon another exhibit which is not in terms identical, or, to one who only has my knowledge of the claim, susceptible to being identified with the document on which the action is taken?

Mr. Mann:—Is that a question or a statement?

By Mr. Hackett:—

Q.—I am just saying that, and I would be grateful if you would tell me where the items of which you have spoken form part of the document on which the action is based?

Mr. Mann:—I have no objection to the question part of what my friend has just said, but I have to object to the statement. The action is not brought on P-5, which is the proof of loss. The proof of loss is a document made in conformity with the statutory conditions.

The Court:—The action, I take it, is brought on the policy Exhibit P-1.

Mr. Mann:—Exactly. And certain conditions must be fulfilled, au prealable, and that is one of the conditions. That opened the door to my friend to say, "Your proof of loss is insufficient", but there has been nothing said of that nature. I have no objec-

tion to the question, but I draw the Court's attention to the statement.

By The Court:—Any statement implicit in Counsel's question is not thereby proof and it is not an authoritative statement of the law, either; so I do not think it matters very much.

Q.—You understand the gist of the question, no doubt, Mr. Moffat? Counsel for Defence finds it difficult to identify on that Exhibit P-5 the figures about which you have been speaking and he asks you to show them to him. You say you are not familiar with the document P-5 and that you would have to study it. If you wish to study it at your leisure, we will postpone the question to a later session. That is what we will have to do.

Mr. Mann:—P-5 opened the door to my friend to ask for details. The conditions, of one of which P-5 is a fulfillment, opened the door to my friend to call for invoices at the time, to call for details, to call for everything else, under the provisions of the very policy itself. My friend didn't do that. Now he asks the witness to identify figures within P-5, which covers the whole claim. He was in a position to get all those details by demanding them. He could have demanded those before the action was brought. There is no attack on P-5 as to insufficiency. He had all that opportunity before, and he didn't call for these things. I respectfully submit this is not the time to ask the witnes to spend hours, maybe, or whatever time it may take to pick out details on P-5, when they have already been dealt with by other witnesses.

The Court:—The witness has stated in his estimation the apportionment of the respective damages was fair and reasonable, and he is now asked to point out or identify in Ex. P-5, which is an important document, — it is not the basis, if you like, of the action, but it is an important document, — it is the setting out of the figures which are claimed, — he is now asked to identify the figures that are mentioned in that document. I think the question is reasonable. If it wasn't necessary, I'm sure Mr. Hackett wouldn't put it and put the witness and the Court to the delay which answering the question is going to involve.

Mr. Mann:—My desire is to get along with the case and finish it this week.

J. S. MOFFAT (for Plaint. at Enq., Recalled) Cross-Ex. con't.

The Court:—I have the most urgent desire to finish the case this week, because if it isn't finished this week I don't know when it will be. I remember telling that to Counsel at the end of the last session and suggesting that all possible means be taken to shorten the enquête, as far as reasonably could be done.

Mr. Mann:—I remember your lordship saying that very unequivocally.

The Court:—However, I cannot rule the question illegal. If Counsel for Defence thinks it is necessary, and if he feels he is doing his duty by insisting upon it, I will allow the question, but I suggest that Mr. Moffat take the opportunity at the adjournment to study the document and to be prepared to answer the question during the afternoon session or later.

Witness:—I have the answer here now, sir. I look at this document (P-5), and I find the first section covers building and so forth, — which was fully covered by Mr. Thomson and Mr. Irving. The second section of this document covers loss or damage to merchandise, labor of cleaning building and equipment and so on, and merchandise there also; and the last section is equipment.

Now, with regard to all of this loss and damage, I find that it has been taken up before, in the earlier sessions, both with Mr. Newill and Mr. Debbage and myself, and we have covered all of these items step by step, and I don't think it is necesary to review them all.

Just as an example, we had the manhole cover and the pressure gauges and so on, all that. Each item was reviewed the last time I was on the stand.

Mr. Mann:—That is what I thought.

Witness:—They are all included in there.

By Mr. Hackett:—

Q.—The electric installation item, drying, rewinding motors, etc., $2,250.00, — that is the item which you said was on the third . . . . A.—That was discussed the last time.

Q.— . . . . on the third floor? A.—That is apportioned to the third floor damage.

J. S. MOFFAT (For Plaint. at Enq., Recalled) Re-examination.

Q.—It is damage on the third floor? A.—Yes.

By Mr. Mann, K.C.:—

Q.—Explosion damage on the third floor? A.—Well, that's all in.

By Mr. Hackett:—

Q.—On the third floor? A.—Yes.

Re-examined by Mr. J. A. Mann, K.C.:—

Q.—May I ask you, Mr. Moffat, to take a look at D-7-F. First of all, I point to tank No. 2. And I would like you to look at D-7-H, and I also point to tank No. 2. I ask you, looking at D-7-F and H. if that photographic reproduction indicates anything, to you in respect of tank No. 2? A.—Well, the photograph in question shows that this vessel had been covered with insulation, held on by wire, and due to the damaged condition it is loose and broken in different spots.

Q.—That insulation looks to me to be in brick form. Would that be correct? A.—It is asbestos insulation, of pieces approximately six inches wide and an inch to an inch and a half thick. It varies in length, — possibly two feet long. They put it on in strips and then they wire it around to bind it.

Q.—What is the condition of tank No. 2 as shown in D-7-F and D-7-H? A.—The condition there shows that it was badly damaged, and I would say almost 50 per cent of it had been knocked off the tank.

Q.—Of "it", — of what? A.—Insulation. There are ends and pieces visible.

Q.—Take D-7-C. Look at the upper right of the picture D-7-C. Between the roof and what appears to be the girder supporting the top floor I see tubes, which begin from somewhere near the middle of the building, running to the right hand side of the picture. What are those tubes? A.—That is the cake conveyor system.

Q.—Those are the conveyors which you referred to? A.—Yes.

Q.—And those are the tubes inside of which the screws are? A.—Yes, screw conveyors. That is the casing you see.

Q.—Those are cake conveyors, you say. My friend Mr. Hackett suggests I ask you if there are other similar conveyors

throughout the top floor of the building, and throughout the rest of the building, as a matter of fact? A.—Throughout the entire building. That is the system we followed throughout, the screw conveyor system.

Q.—That carries, by a screw, the material inside that casing? A.—Inside the casing, yes.

Q.—Looking again at D-7-C, and looking at P-6-e, you will observe, as Mr. Hackett pointed out to you, that through the roof in these pictures appears the clear sky, as I think you said. Will you indicate where the principal hole or damage to that roof is, in relationship to No. 1 bleacher tank? A.—The hole in the roof is at approximately the spot where the monitor roof was, and which was immediately in front of the No. 1 bleaching tank.

Re-Cross-examined by Mr. John T. Hackett, K.C.:—

Q.—I think that, looking again at P-6-e, it is pretty clear that the roof over the east room was pretty well burned off, is it not? A.—I would state, looking at these two pictures in front of me (D-7-C and P-6-e) that possibly 50 per cent of the roof was gone. The rest is damaged but not gone.

Q.—And you see that the roof is burned out from a point a little to the right of the first girder on the left, — I am speaking now of P-6-e, — right across to the north wall or the right-hand side of the picture, in the centre of the building? A.—This picture does not show the west section of the east building. Over at the back of the building the roof was similar to this, over at that northwest corner of the east building or east room, it was similar to the south end of that building.

Q.—But, you see, Mr. Moffat. . . . A.—You only see parts of it. That's the trouble: it doesn't give a true picture.

Q.—But, Mr. Moffat, I am discussing a photograph that was put in by the Plaintiff, and I am very loth to think he would put in a picture that wasn't a true picture of things as they were? A.—Your own picture is the same one.

Q.—I am asking you again if you cannot see that the roof of the building was burned out from a few feet from the southern extremity to the northern extremity, over what appears to be the centre of the room? A.—That is what I mentioned. The whole monitor section was burned out, but around the monitor section it wasn't burned out so much. The monitor section is the centre of the roof.

Q.—And a section of the roof right over the centre of the room, from a few feet north of the south wall to the north wall,

was burned out, and you can see the sky through it, looking at P-6-e? A.—Yes, I see the sky there, (P-6-e) in sections.

Q.—"In sections", — but. . . . A.—There are spots here (in P-6-e) with roof on.

Q.—But, you see, Mr. Moffat, if I correctly understood your answer, it was to indicate that the roof was missing in particular over the tank No. 1, and I am pointing out to you that that is not the case according to the photograph P-6-e? A.—According to the photograph P-6-e I would say that the entire centre of the roof was gone, but there are portions of the roof, all the way round, that are still intact.

Q.—Mr. Mann showed you the photographs D-7-F and H, showing the No. 2 tank in the foreground, with a certain amount of the asbestos covering displaced? A.—Yes.

Q.—Will you tell the Court what in your opinion displaced that covering? A.—It would be pretty hard to tell what did that. You see, there is a cotton sheet placed over that insulation, placed over all the insulation, and it is sized and painted, and it evidently had been burnt off, leaving the rest open. As to how it was all displaced I couldn't tell you exactly how it was done besides that.

Q.—But a man of your experience, I submit, would have a pretty good idea, a pretty shrewd idea. What were the possible agencies that could have displaced that asbestos covering from tank No. 2? A.—It could be a lot of things.

Q.—Just give us a few of them? A.—It could be firemen climbing over it. It could be anything like that.

Q.—You are not suggesting to the Court that the first and most probable agency that might have displaced that asbestos was. . . . A.—No, I didn't say that.

Q.— . . . . that the first and most probable agency that might have displaced the asbestos from tank No. 2 was firemen climbing over it? A.—It could be partly that.

Q.—And it might be that somebody had gone there with an axe and knocked it off. and it might be that the lightning had struck it? But let us not fool with ourselves. I am asking you, as a man of business and a serious man, what are the probable agencies that removed that asbestos cover from tank No. 2? A.—I mentioned that first of all I think possibly fire would take the outside sheeting off, that was painted and sized. Then it would be firemen working around that point, because there was turpentine in that tank also leaking out, and they may have been trying to find out what the tank was like or what was in the tank. That is what I think it would be too, firemen working on that. It is really hard to say.

J. S. MOFFAT (for Plaint. at Enq., Recalled) Re-cross-exam.

Q.—Will you look at the photograph P-6-d and say if you have any doubt what sagged those steel beams?

The Court:—It seems to me that question was discussed at great length.

Mr. Hackett:—Yes; and I do not think the witness should have any hesitancy in saying that the fire was the probable cause that knocked the asbestos covering from the tank.

The Court:—This witness has been in the box several times. He has been questioned on a great many things more than once. This is re-cross-examination, — which was started without permission, for one thing. I know it is difficult to stick to the regular procedure when a case of the complexity of this one is being handled, but at the same time there must be some limit, and I distinctly remember, or at least I am pretty sure I remember your questioning this witness on the sagging of those beams and endeavoring to get him to admit the sagging was due to fire.

Mr. Hackett:—And he did admit it.

The Court:—If he did, why go any further?

Mr. Hackett:—I have to go further, because of certain things which came up in re-examination, — which also, my lord, was undertaken without permission, and I submit when there was re-examination then re-cross-examination would follow.

The Court:—I do not think there is any permission required for re-examination if anything further has come up in cross-examination. However, that is a minor point. The real question is, has this matter been dealt with? If so, I don't think it is admissible in re-cross-examination.

Mr. Mann:—I never mentioned it in my re-examination of the witness.

Mr. Hackett:—The witness was asked in re-examination a question he should have been asked in examination-in-chief, and I am trying to find out from the witness what it was that caused the asbestos covering, in his opinion, to go from tank No. 2.

The Court:—The witness has already told us how he thought the damage could have occurred to the outer skin and to the asbestos.

J. S. MOFFAT (for Plaint. at Enq., Recalled) Re-cross-exam.

Mr. Mann:—In any event, there is no charge for that as against explosion, at all.

Mr. Hackett:—That is not the point.

By Mr. Mann, K.C.:—

Q.—There is no charge for fixing that, in the items for explosion, is there? A.—No.

The Court:—The witness's explanation indicated to me that the damage to that particular asbestos covering could have been caused by fire or by firemen.

Witness:—I said the cover on the outside, the outside cover, could have been burned off by fire, but the asbestos bricks themselves cannot be damaged by fire, because they are fire proof. They had to be damaged by a human element of some kind.

The Court:—But if the cloth skin. . . .

Mr. Hackett:—The binder.

The Court: — . . . . of the insulation was burned off and the rest of the covering was loosened by firemen, I certainly would not conclude it was damage that properly could be attributed to explosion, nor any part of it.

Mr. Mann:—And it is not charged to explosion.

Mr. Hackett:—May I ask the witness another question?

The Court:—Yes.

By Mr. Hackett, K.C.:—

Q.—Did you notice that the gauge or a gauge on the No. 1 tank was fused or melted? A.—I don't recall whether it was melted. I couldn't say that. I know they were broken and they had to be replaced, but as far as saying whether they were melted I don't recall any of them being fused or melted.

Mr. Mann:—I have one question and if your lordship will permit me I will ask it.

The Court:—Let me hear it.

J. S. MOFFAT (for Plaint. at Enq., Recalled) Re-cross-exam.

By Mr. Mann, K.C.:—

Q.—Looking at those two exhibits, D-7-F and H, you observe some lines. I don't know what they are. Are they steel bars? I mean the lines down the side. Are they steel stays, or what are they? A.—They are wire.

Q.—And I notice another line towards the front, that seems to be broken? A.—That is a wire, loose. They put these bricks on and wire them to hold them in place, before they put the outside covering on.

Q.—And that wire appears to be broken? A.—Yes; they snap sometimes.

Q.—You say there was a cover over this tank.

Now looking at No. 1 tank, you don't see the same condition of broken insulation as you do on tank No. 2 do you? Look at the picture. A.—No, although originally it was the same covering, the same type of covering.

Q.—But you do not see the same broken condition there as you do on the other one? A.—No.

Q.—I will ask you just this one question, — and don't answer it for a moment: — Could the force of the explosion have broken off that cover and those bricks?

Mr. Hackett:—That is leading.

Mr. Mann:—I can't very well ask the question any other way.

The Court:—The objection is maintained.

Mr. Hackett:—May I ask the witness a question on the suggested snapping of this wire?

The Court:—Yes.

By Mr. Hackett, K.C.:—

Q.—I am asking you, Mr. Moffat, if the heat of the fire might not have caused the snapping of the wire? A.—I think you would have to leave that to a technical man, as to the strain on wire with heat. I wouldn't like to answer that.

And further for the present deponent saith not.

H. Livingstone,
Official Court Stenographer.

DEPOSITION OF ALAN THOMSON (Recalled)

On this 4th day of February, A.D. 1946, personally came and reappeared, Alan Thomson, a witness already sworn and examined for Plaintiff in this case and who being now recalled for further examination, under his oath already taken, doth depose and say as follows:—

Cross-examination continued by Mr. John T. Hackett, K.C.:—

Q.—Mr. Thomson, when you were under examination on the 8th of January I asked you to figure out the cost of that part of the work which you did, minus three items that went to make up overhead, and to show what percentage of the whole, less those three items, was charged to fire, and the balance to the Defendant, and then to tell the Court if in dividing the overhead you had followed the proportion established? Is that clear to you? A.—Yes. The proportion of overhead charged to explosion and fire was made up by using the detail of costs (P-15) as a basis and taking the amount of $18,310.72 under the heading of Explosion, Page 1, and adding the amount of $6,701.52, under the heading of Explosion, Sub-trades, Page 2, and the total arrived at amounts to $25,012.24.

By taking the amount of $10,114.38, under the heading of Fire, Page 1, and adding $7,603.78, under the heading of Fire, Sub-trades, Page 2, the total arrived at amounts to $17,718.16.

By adding $25,012.24 and $17,718.16, the total reached is $42,730.40. This amount represents the cost of the work, exclusive of overhead charges and miscellaneous items enumerated at bottom of Page 2.

Q.—That comes under the three headings? A.—Under the three headings.

The explosion cost of $25,012.24 is 58½% of the total cost; and the Fire cost of $17,718.16 is 41½% of the total cost of the work.

Q.—You charge Explosion with 60% and Fire with 40%? A.—While these figures do not agree with the 60% and 40% of overhead charges allocated to explosion and fire damage, respec-

tively, it was decided to distribute 60% of the overhead charges to explosion damage, as the tendency in preparing percentages between Explosion and Fire was to place the greater percentage on fire loss, so that if any argument came up I would be prepared to show good faith.

10

There is one more point, too, that I think should be mentioned when speaking of the allocation of overhead charges. The head office supervision of the job, for which there is no charge in the job costs, was much heavier on the explosion damage than on the fire damage, on account of the serious condition of some of the walls and roofs and so on.

By Mr. Mann, K.C.:—

20 Q.—And that is not included in the figure you gave? A.—That is not included at all.

By Mr. Hackett, K.C.:—

Q.—I think you will admit that that last little flourish is something that came to you since you were in the witness box last time ? A.—Well, this all came to me since I have been in the witness box last time. I wrote this memorandum since I went back to the office, after I got the figures.

30

Mr. Mann:—May I ask the witness one question?

The Court:—Yes.

By Mr. Mann, K.C.:—

Q.—The building, I understand, according to the evidence, was built in 1939? A.—Yes.

40 Q.—This work was done in the autumn of 1942? A.—Yes.

Q.—Now, there might be some depreciation on that building between 1939 and 1942. Have you anything to say with respect to that depreciation, in relation to increased costs as mentioned in the. . . .

Mr. Hackett:—Well, it seems to me that this is outside the pleadings.

Mr. Mann:—I am asking it with reference to the matter of indemnification of value.

The Court:—I think the question would be permissible. I will allow it, subject to the right of Defence Counsel to cross-examine on it.

By Mr. Mann, K.C.:—

Q.—What would you say? A.—I would say that the increase in costs in 1942 would easily outweigh any depreciation in the building from 1939 to 1942.

(It now being 12 noon, Feb. 4, 1946, on application by Mr. Mann, K.C., Court adjourns to 2 p.m.)

And further deponent saith not.

H. Livingstone,
Official Court Stenographer.

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2 p.m. February 4, 1946

DEPOSITION OF DR. S. G. LIPSETT

A witness on the part of Plaintiff.

On this 4th day of February, in the year of Our Lord nineteen hundred and forty-six, personally came and appeared, Solomon George Lipsett, aged 45, research chemist, residing at 4970 Hingston Avenue, in the City and District of Montreal, who having been duly sworn doth depose and say as follows:—

Examined by Mr. J. A. Mann, K.C.:—

Q.—You have said you are a research chemist, Dr. Lipsett? A.—Yes.

Q.—And how long have you been engaged in chemistry research? A.—Since the year 1921.

Q.—That is 25 years? A.—Yes.

Q.—What is your present occupation? A.—I am research chemist working for the firm of J. T. Donald & Co. Limited, Montreal.

Q.—And that firm is of how long a standing? A.—It dates back around 1880, I would say.

Q.—And what, if any, degrees in your profession have you received, and generally what is your experience in research chemistry? A.—I received the degree of Bachelor of Science in the University of Manitoba, 1921. I was awarded the Gold Medal in Science at that time. I was Teaching Fellow in the University of California, 1921 to 1922; Lecturer in Chemistry at the University of Manitoba, 1922 to 1924, Assistant Professor of Chemistry, Manitoba Agricultural College, 1924 to 1925. I was awarded the degree of Master of Science, University of Manitoba, 1925. I spent the years 1925 to 1927 doing further post-graduate work at McGill University. I was awarded the degree of Doctor of Philosophy, specializing in Chemistry & Physics ,at McGill University in 1927. At that time I was awarded the Governor-General's Medal for research in chemistry. In 1927 and 1928 I carried out an investigation for the National Research Council of Canada on the storage of apples in Nova Scotia. I joined the firm of J. T. Donald & Co. in 1928 as research chemist, and I have been with them ever since. I became a member of the Society of Chemical Industry in 1928, and in 1937 to 1938 I was chairman of the Montreal section.

Q.—To what extent, if any, has your research work been related to the chemistry of explosions in general? A.—Since I have been with the firm of J. T. Donald & Co., I have carried out investigations on numerous occasions into fires and explosions which have occurred in the Montreal area.

Q.—Have you made any special studies with reference to the chemistry and the organisms of explosions? A.—In carrying out these investigations I found it necessary to acquaint myself with the scientific literature dealing with explosion, and I have studied all that I could find on that subject.

Q.—You have been in Court a great deal since the case began, have you not, Dr. Lipsett? A.—I have been in Court every day except January 8th and 9th.

Q.—Those were the days, I think, when we were dealing with the building costs. But with respect to the facts and circumstances, have you heard all of the evidence? A.—Yes, I have.

Q.—French and English? A.—Yes.

Q.—Have you re-read any part of it? A.—I have re-read the evidence of all the French witnesses.

Q.—And have you understood it? A.—I have.

Q.—Now, having in your mind the evidence of the facts which you say you heard and read, the question I am going to put to you, — and I don't want you to begin the answer for a moment after I put the question, — is this:—

Dr. S. G. LIPSETT (for Plaintiff at Enquete) Exam. in chief.

Will you give your professional opinion, based upon your knowledge and your scientific research, as to what happened in the east room of the Sherwin-Williams linseed oil mill on the morning of the 2nd of August, 1942?

Mr. Mann:—I would ask your lordship's permission to suspend the question, until Dr. Lortie, my other expert, gets here.

The Court:—Yes.

By Mr. Mann, K.C.:—

Q.—There is something I haven't mentioned to you in discussing the subject, and that is what is scientifically termed a pressure vessel or a pressure container. I have not discussed that with you. I would ask you to look at Rules for Construction of Unfired Pressure Vessels, published by the American Society of Mechanical Engineers, the 1943 edition, and I would ask you what authority that book has in respect of unfired pressure vessels?

Mr. Hackett:—I want to object to the way the question is put. If Mr. Mann wishes a definition of a pressure vessel, I may say I may not object to it, but I don't like the method of coming at the thing backwards. I don't know what this volume on the rules and regulations regarding unfired pressure vessels has to do with this case, and if we are in the presence of an unfired pressure vessel a definition may be relevant, but I object to putting in rules and regulations that may be in print, until I know to what they apply, and for that reason I object to the question as premature and without bearing on the issues as they are now before the Court.

The Court:—So far, the question appears to me to be irrelevant. Is there any dispute as to the nature of the vessel?

Mr. Mann:—Your lordship must have been impressed with the endeavor of my friend indicating that this is not a pressure container or pressure vessel.

Mr. Hackett:—That is my point.

Mr. Mann:—And I am endeavoring to show that this very type of tank is deemed to be a pressure vessel by the very highest authorities in the United States and Canada.

The Court:—Let me see the policy. (Court examines P-1).

Mr. Mann:—That is the whole point. It is in the policy.

Mr. Hackett:—But what I am trying to bring to your lordship's attention is this: if Dr. Lipsett is questioned as to what is a pressure vessel I will know what to do, but, if we are putting a book into the record, the author of which I don't know and whom I can't cross-examine. I shall object, and I think my friend's method is a departure from the regular practice.

The Court:—What page is this in the policy?

Mr. Hackett:—It is in the second schedule.

Mr. Mann:—The Defence to the action is that there is concurrent insurance by virtue of another policy or other policies. Now, if your lordship will look at the other policy, — and it is the only one, I respectfully suggest, that applies, — being policy No. 22, the matter, I think, will be clear.

The Court:—Then the original policy does not help us at all?

Mr. Mann:—No.

Mr. Hackett:—I want to say I do not agree with the statement my friend has made.

Mr. Mann:—It is policy No. 22 of Exhibit D-6. I say that it is the only policy that mentions anything about explosion other than the ordinary explosion, under statutory condition No. 11, of gas and coal oil, and this policy excepts pressure vessels, explosion relative to pressure vessels, in two places.

The Court:—Suppose you make the question obviously relevant by referring to what you mean, — and it would be more logical, I think, to start by asking the witness if he knows what a pressure vessel is, as distinct from a non-pressure vessel. I don't want to tell you how to make your case, but that would appear to be more logical; and then he can reinforce his answer, if he wishes, by citing appropriate authorities.

By Mr. Mann, K.C.:—

Q.—Dr. Lipsett, do you know the difference between a

pressure vessel or pressure container and one which is not a pressure vessel or pressure container? A.—I would say that a pressure vessel is a vessel adapted to contain pressure.

Q.—Have you any authority indicating any typical pressure container or pressure vessel? A.—I refer to a publication by the American Society of Professional Engineers.

Q.—That is their book I am putting in your hands. Would you refer to it, being the 1943 edition of the American Society of Mechanical Engineers' publication, and tell us first of all if that is an authority in respect of pressure vessels or pressure containers and, if so, would you point out the reference to that work's definition?

By the Court:—

Q.—You say "a pressure vessel is a vessel adapted to con-"tain pressure." Does your definition not err in one of the fundamentals of definition, that you must not use the same term in a definition as the one you are defining? I mean, it does not help me very much to say a pressure vessel is one which is supposed to contain pressure. A.—Well, I don't believe there is any doubt as to what is meant by pressure. Pressure in this case would mean a force within a gaseous space greater than the atmospheric force.

Q.—In other words, if I understand you correctly, the substance, whatever it was, in the tank, would, except for the walls of the tank, have expanded and dissipated into the surrounding atmosphere? Is that an erroneous explanation? I am trying to understand as a layman. I am not a chemist, nor is my mind very scientific, but I am just trying to see if that is what you mean. A.—That would be the normal interpretation of the term pressure.

Now, in the present instance we have a slightly different condition, in that the tank is surrounded by a jacket, and the jacket around this tank would under normal operation be under pressure.

Q.—You are referring to the steam jacket? A.—I am referring to the steam jacket. The interior of the tank would at times be under vacuum and at other times it would be under pressure.

Q.—You have told us, Dr. Lipsett, what in your opinion a pressure vessel is. Have you any authorities to support your

opinion? A.—Well, I would like to refer to the American Society of Mechanical Engineers' code on unfired pressure vessels.

Mr. Hackett:—And I would ask Dr. Lipsett if he will be good enough, before he refers to any laws or rules in response to Mr. Mann's question, to point to any definition in the book which he now holds in his hands which supports the definition he has given.

The Court:—At the moment the witnes has been asked by myself if he has any authorities to support his definition of a pressure vessel. So far, he has referred to a certain society.

Q.—Now, in response to my question, Dr. Lipsett, you will, I presume have to give me the definition of a pressure vessel as contained in such book as you say is an authority?

Mr. Mann:—And he cited the American Society of Mechanical Engineers' handbook as the book to which he referred.

By The Court:—

Q.—That is the book to which you referred? A.—Yes.

By Mr. Mann, K.C.:—

Q.—Will you look at this book and tell the Court if, in answer to the Court's question, you find anything in the book which supports your statement? Tell us if there are any pictures or definitions in that book which support your statement. I don't think you need go through the beginning of it; they are away over at the back of the book. There is a lot of stuff there that you don't have to deal with.

By The Court:—First, I think, it would be wise for the sake of the record to identify the volume which you have in your hand, doctor, so that it may be easily referred to.

Witness:—This is a book entitled "Rules for the Cons-"truction of Unfired Pressure Vessels".

Q.—And who is the author? A.—It is the report of a sub-committee of the boiler code committee on unfired pressure vessels, American Society of Mechanical Engineers, boiler construction code.

Q.—Published when and where? A.—Published in New York, 1943.

Q.—Do you know that society, Dr. Lipsett? A.—I know it by reputation. It is regarded as the most authoritative society dealing with mechanical engineering in the United States.

The Court:—Well, with that introduction I think any definition we find in there will be of interest.

By Mr. Mann, K.C.:—

Q.—Will you go on with your answer, Dr. Lipsett? A.—On Page 88 there is a diagram of unfired cylindrical vessels, showing a jacket around the body of the tank. That particular type of vessel is classified as an unfired pressure vessel according to this volume.

Q.—You speak of a jacket. What kind of a jacket would that be? A.—Well, a type of jacket similar to the one on tank No. 1 in this present case. A metal jacket is attached to the body of the tank and there is a small space between the jacket and the body.

Q.—In the diagram you are looking at, the jacket is said to be a steam jacket and it goes partly up on the outside of the body of the tank you refer to, or the cylinder, and the inside wall is the outside wall of the cylinder, and this is said to be one of the typical forms of unfired cylindrical vessels subject to external pressure: is that correct? A.—It does not say that it is a "steam" jacket at this point.

Q.—Well ,find where it does?

By The Court:—

Q.—I gather that there isn't such a thing as a definition in in the volume you have in your hand: is that so? A.—I haven't located one yet, my lord.

Mr. Mann:—I may say that the witness has not had this book before.

The Court:—Isn't there an index in the book?

Mr. Mann:—I haven't discussed the book with him at all.

The Court:—Well, as you are filling in time and as Dr. Lortie is now present, perhaps we can suspend the question of pressure vessels.

Mr. Mann:—Yes.

The Court:—You can pursue it further at a later time, if you wish.

Mr. Hackett:—I assume, of course, this is all subject to cross-examination.

The Court:—Of course. This aspect of the interrogation is simply suspended.

(The question at pp. 524-5: is read to the witness):—

"Q.—Now, having in your mind the evidence of the facts "which you say you heard and re-read, the question I am going "to put to you, — and I don't want you to begin the answer for "a moment after I put the question, — is this: — Will you give "your professional opinion, based upon your knowledge and "your scientific research, as to what happened in the east room "of the Sherwin-Williams linseed oil mill on the morning of "the 2nd of August, 1942?":

Witness:—When I was first told, a few months ago, of what happened in the plant of the Sherwin-Williams Co. on August 2nd, 1942, I was at a loss to understand how the pressure developed in tank No. 1. I knew that Filtrol was extensively used in the bleaching or decolorizing of oils. I knew that Filter Cel was quite commonly used as an aid in filtration, but both these materials are relatively non-reactive, and I was not aware, and I did not suspect, that they would show any vigorous or violent action if heated with fixed oils or essential oils like turpentine. However, I carried out experiments to duplicate on a small scale what had been done in the plant. Some of these experiments were carried out in collaboration with Mr. C. Hazen. Others were carried out in collaboration with Dr. Leon Lortie, and others were done with myself alone. At first, when these materials were mixed together in the proportions in which they had been mixed in the plant, no vigorous reaction occurred, but, after some preliminary experiments and after the proper conditions had been found, it was found possible to obtain a vigorous reaction when these materials were mixed together in the proportions used in the plant, and I was amazed at the violence of the reaction and at the velocity with which the reaction culminated.

The explanation which I shall give of the accident which occurred in the Sherwin-Williams plant is based on the results of these experiments and on other experiments which I shall recount and on the evidence which I have heard in this case.

I shall start with a mixture of turpentine, Filtrol and Filter Cel being heated in the tank at a temperature of 165 degrees Fahrenheit. A chemical reaction started in this mixture, a reaction which evolved heat. The temperature of the turpentine and of the other materials in the tank rose. At first the reaction was probably quite slow, until a temperature of about 250 degrees Fahrenheit was reached. At this temperature the reaction probably became fairly vigorous and the temperature probably rose from 250 to 315 degrees Fahrenheit in a very short space of time. At 315 degrees the turpentine began to boil. Our experiments indicate that the reaction would be very violent by the time this temperature was reached and that enough heat would be generated probably to boil off one-half of the turpentine within a space of less than one minute if the tank had been open. The tank, however, was not open, and the turpentine vapors were unable to escape and built up a pressure within the tank, except for a small amount of vapors which could have escaped through the air relief pipe. The boiling of the turpentine was so vigorous, however, that only a small proportion of the vapors could escape through this pipe, and a pressure was probably built up within the tank very rapidly. In the space of a few seconds the pressure probably rose to 50 or 60 pounds per square inch. This pressure would be exerted on all walls of the tank, including the door.

The door is an area of 200 square inches, and a pressure of 60 pounds per square inch would mean a total pressure of 12,000 pounds on the door, — that is, 200 multiplied by 60.

That such a pressure was generated within the tank is self-evident from the fact that shortly after the first signs of the accident occurred the door was blown off. The door was pressed against the tank by a retaining arm, which was held in place by a bolt passing through two lugs on each side of the tank. Any pressure within the tank would be communicated to this retaining arm and one-half of the total pressure would be exerted against each bolt. The bolt on the right-hand side of the tank, looking at it from the outside, would bend rather easily under this pressure, because the two lugs holding the bolt on this side were 4 and 1/8th inches apart, and the retaining arm would press outwards in the centre of this 4-and-1/8th-inch length. This may be seen clearly in photograph P-6-c.

Any appreciable pressure within the tank would tend, thus, to bend the bolt and push the door of the tank ajar and allow turpentine vapors to escape under pressure.

In order to obtain some idea of the amount of opening which might be formed in this way, I carried out the following experiment: — I obtained a bolt of the same dimensions as is now used on this tank, — three-quarters of an inch in diameter and about 9 inches long. This bolt was placed on two pieces of steel 4 and 1/8th inches apart, and a pressure was applied half way between these two pieces of steel. When a pressure of 6,000 pounds was applied to the bolt, — that is, a total pressure of 6,000 pounds, — the bolt bent .307 inches, almost a third of an inch. When the total pressure was 7,000 pounds, the bolt bent .425 inches, a little more than 4/10ths of an inch.

I have with me the bolt that was used for this experiment.

By Mr. Mann, K.C.:—

Q.—You have now in your hand the actual bolt? A.— Yes, — after being subjected to a load of 7,000 pounds.

Mr. Mann:—Should we exhibit that?

The Court:—You might perhaps leave that in the custody of the Clerk of the Court, for the time being. I don't know whether it will be necessary or useful to have it as an exhibit.

Witness:—A pressure of 60 pounds per square inch inside the tank would be equivalent to a total pressure of 6,000 pounds on the bolt, and this would cause the bolt to bend .307 inches and allow the door to open by this amount on the right-hand side.

Turpentine vapors under pressure would escape from this opening and cause a hissing noise.

The calculations I have made indicate that at a pressure inside the tank of 60 pounds per square inch, the amount of turpentine vapor which would escape around the door would be more than 17 times the amount which would escape through the air relief vent at the same pressure.

Now, the pressure within the tank would not remain at 50 or 60 pounds per square inch but would build up rapidly and

continuously and would be capable of reaching 150 pounds per square inch or more.

At some point, the bolt, which was bending more and more under the stress, broke and was forced out. The retaining arm was flung aside with great force, and the door was blown off the tank. The pent-up turpentine vapors within the tank escaped with great force, probably with a velocity of 30,000 feet per minute. The rush of the escaping turpentine would cause a noise probably like a multitude of electric fans or a roaring noise. On the release of the pressure, the turpentine within the tank, being very hot above its normal boiling point, would boil very violently, and the violent ebullition would shake the tank, and this would cause a rumbling noise.

The noise which was described by Frazier as a dull zoom, a boom, by Rymann as a roar, a big crash, by Asselin as a roar, a rumbling, by Boucher as "un bruit sourd", by Gosselin as a boom, "un coup", a blow, was the. . . .

Mr. Hackett:—You had better leave the translation to somebody else. I don't agree with your translation.

Mr. Mann:—You can cross-examine. Let the witness go on.

Mr. Hackett:—I want him to quote accurately and not to interpret.

Witness:— . . . . was the bursting of the door, the roar of the escaping vapors, the ebullition, and the shaking of the tank.

By the bursting of the door a large volume of turpentine vapors escaped into the room, mixed with the air in the room, and a few seconds later these vapors, together with any vapors which had escaped before from around the door and which still remained, — all these vapors went through the final stage of these events, which was a detonation.

Let us go back to the beginning of these events.

The first sign of trouble was a hissing sound. This was due to the turpentine vapors escaping around the door of the tank. This lasted for a few seconds, during which time Frazier said to Rymann, "What is it?" or words to that effect. Rymann

made some reply, and they both walked a few steps towards the east section. Then they saw fumes in the doorways. This was turpentine vapors and air which had travelled from the tank No. 1 to the doorways.

Shortly afterwards, a flash of flame was seen. There is some doubt as to exactly when this flame was seen. Only one witness, — Frazier, — states that he saw a flame before the loud noise which indicates the bursting-off of the door of the tank. Rymann says that he saw the flash and heard the sound which indicates the bursting-off of the door of the tank, at the same time. Boucher and Gosselin saw no flame. Asselin is in doubt as to whether he saw flames or not.

There is no doubt but that the hissing noise was due to the turpentine vapors escaping from around the door of the tank. These vapors would emerge at a velocity probably of about 30,000 feet per minute and at this speed would mix easily with the air in the room. In some manner this mixture of turpentine vapors and air became ignited and this was seen as a flash of flame by Rymann and Frazier. This flash of flame was the first stage of an explosion which culminated later in the final stage of the explosion, namely, a detonation.

When an inflammable or explosive mixture is ignited, the detonation does not take place immediately. The explosion occurs in three stages. In the first stage a flame moves through the explosive mixture at a slow, more or less uniform rate of speed. In the second stage the speed of the flame increases, and the flame may oscillate backwards and forwards in the explosive mixture, and there may be turbulence or a mixing up of the gases in the mixture, and finally there is the third stage in which the flame is accelerated in velocity to a great speed and there is usually a loud report and this is the stage termed detonation.

The scientific conception of an explosion is thus the movement of a flame through the explosive mixture of gases, and the different stages of the explosion are concerned primarily with the speed at which the flame moves.

When you have a mixture of explosive gases and air, the first stage of the explosion always occurs, — namely, the slow movement of the flame. The second or third stages may or may not be present.

This conception of an explosion is based upon the work of a great many investigators and is well founded by work carried out since 1881.

When an explosive mixture is ignited, a flame forms and moves slowly through the explosive mixture. This slow movement may last for from a fraction of a second to several seconds or minutes, and the rate of velocity usually is from one foot to ten feet per second.

Two investigators, Mason and Wheeler, in 1917, carried out some experiments with an explosive mixture of gases in a tube three feet in diameter.

Mr. Hackett:—I think I will have to object to what Messrs. Mason and Wheeler did, unless the witness was present at the time they did it.

The Court:—Or unless the experiment be recounted in some standard scientific work.

Mr. Hackett:—Yes, — which would enable one to check its accuracy and have some probe into its value.

By The Court:—

Q.—Is that experiment to which you have referred recounted in some scientific work? A.—Yes, my lord. I will give the reference to that.

Mr. Hackett:—I want the book.

Mr. Mann:—We will have the reference first.

Mr. Hackett:—I will submit to your lordship that, if the witness is going to tell us what somebody else did, he must either say that he was present when it was done or he must, as your lordship has suggested, bring forward some standard work which is susceptible of examination by Counsel. Otherwise, there is no control over the testimony that is being rendered.

Mr. Mann:—I want to suggest to your lordship that there is a certain novelty in my friend's objection. Your lordship has had a lot of experience and I humbly indicate that I have had

too, and I think my friend is just as competent to ask his experts to get the books and cross-examine on them as to speak when the witness is testifying on scientific authorities which he says exist.

Mr. Hackett:—That is just the difficulty. I do not conceive that it is my duty to permit the record to be filled with matters which are beyond my control, and I am confident that your lordship. . . .

The Court:—Perhaps this discussion is purely academic. The witness has a book in his hands, which is probably the one referred to.

Witness:—This particular experiment is not described in this book.

By Mr. Mann, K.C.:—

Q.—"Flame & Combustion in Gases".

The Court:—I quite understand that any scientist, just like a doctor, has to proceed, to some extent at least, on hearsay evidence. But in Court, Dr. Lipsett, the admissibility of hearsay evidence is very much restricted, and we cannot have you tell us the result of an experiment which you did not see, unless it is recounted in some book or paper which is an accepted authority on that aspect of the question. If Counsel for Defence objects on that ground, I shall have to maintain his objection.

By Mr. Mann, K.C.:—

Q.—Is there a standard authority, Dr. Lipsett, in which the experiment carried out by Messrs. Mason and Wheeler is recounted? A.—This experiment is described in a scientific paper published by these men in the Journal of the Chemical Society, London, England, which is the journal of highest repute in the chemical field in England.

By The Court:—

Q.—But where is that journal? I presume the Chemical Society of Canada, or whatever the title is, receives this journal? A.—There is a copy of it in McGill University.

The Court:—Well, I suppose, if Counsel for Defence wishes to control the witness's report, — which is well within his duty to do, — I may have to ask Dr. Lipsett to refrain from referring to that experiment until he has the volume of the society records in question, or we might allow Dr. Lipsett to proceed on the condition that for cross-examination he have with him the volume containing the report.

Mr. Hackett:—I think that is a good suggestion.

The Court:—I know how difficult it is to give a description of an hypothetical occurrence based upon an interpretation of evidence and so on, and I dislike to interrupt the witness's dissertation. At the same time, I see the weight of the objection. I suggest the witness be allowed to proceed subjct to his having with him for cross-examination the volume referred to.

Mr. Hackett:—I am going to ask the doctor if he will arrange that after the adjournment, — and I am sure the librarian at McGill will have no objection to his getting the document, — so that I may have it tonight for the purpose of keeping me out of trouble during the evening.

The Court:—Perhaps, as past president of the McGill Graduate Society, if you make application for it you will get it, Mr. Hackett.

Witness:—I once asked to borrow this particular journal and the librarian said it was not allowed outside the McGill grounds.

Mr. Hackett:—Then I will have to insist on my objection, if I have no means of controlling this.

The Court:—I suppose we could summon the librarian with a duces tecum to bring the book to Court, if you think it is sufficiently important.

Mr. Hackett:—If the doctor's testimony is going to go on and deal with things of this nature, if this is only one of a whole lot of books that are not accessible to me, I have got to insist on the objection. On the other hand, I want to find a working way out of it. I don't want to hold up the Court and I don't want to be disagreeable to Mr. Mann, and if some way can be found of

getting these books I will be willing to listen to any suggestion. I don't feel, in fairness to my case, I can permit statements to go into the record, of this kind, which I have no way of controlling.

By The Court:—

Q.—Dr. Lipsett, is this paper a lengthy one, the one which recounts the experiment? A.—No, my lord. If I remember rightly, it is about five or six pages.

By Mr. Mann, K.C.:—

Q.—You won't need the whole five or six pages for your answer, will you? A.—No; the part I am interested in consists of one or two pages.

The Court:—I am looking for a mechanical means of getting the document before the Court, if possible. Could we not ask for some qualified stenographer to proceed to the university and obtain the permission to peruse the paper and take it down? It isn't very long.

Mr. Mann:—Or it might be photostated.

The Court:—That would be quicker.

Mr. Mann:—Dr. Lortie suggests that perhaps he can get it.

The Court:—Very well. The Court will allow the witness to refer to the experiment he has just mentioned, subject to the production of the article in which the experiment is recounted, for consultation by Counsel for Defence in order that he may if he sees fit make use of it in cross-examination. The evidence of the witness relating to the experiment of Mason and Wheeler, to which he has already referred, is permitted, subject to the condition I have just mentioned. If this condition be not fulfilled, this part of the testimony will be struck. This applies only to this particular experiment.

Witness:—Mason and Wheeler describe an experiment in which they ignited an explosive mixture of gases in a tube three feet in diameter. The size of this tube is large enough to make the results of that experiment comparable to what might happen in a room.

On the ignition, a flame moved along the tube for a distance of 33 feet at an average speed of 4 feet, eight inches per second, taking in all 7 seconds to proceed the 33 feet. This slow movment of flame constitutes the first phase of an explosion.

In the second phase the flame moves faster and faster and there is considerable turbulence of the gases.

Finally, the third stage is reached, in which the flame accelerates to a terrific speed of 3,00 to 9,000 feet per second, and there are detonation, a shock and shattering effects.

This succession of events, from the ignition to the final detonation through the three stages, constitutes an explosion.

At the time the first flash of flame was seen by Mr. Frazier there was a fair volume of turpentine vapor in the air in the room. The detonation did not occur for a few seconds after the flame was seen. During this time the flame undoubtedly did not go out but moved through the turpentine vapors and air which were present, in the slow flame propagation which is the first stage of an explosion.

At the time that the first flame was seen by Frazier, or within a few seconds, the door of the tank blew off. To the turpentine vapors already in the room was added an immensely larger volume of turpentine vapors. The flame moved through the combined vapors at a faster and faster rate, and finally, in a few seconds, the detonation, or the final phase of the explosion, occurred.

By Mr. Mann, K.C.:—

Q.—That is quite a substantial and learned answer, a long answer to a short question, Dr. Lipsett, and very instructive. Now, when the third stage of the explosion had been reached, you mentioned, I think, a shattering result. Would you just enlarge on what you mean by that, if you can, as regards the effect of the detonation in that room? A.—When the detonation is reached in an explosion, there is a considerable force exerted, a very sudden force, and there is usually breakage of the walls that contain the explosive mixture of gases. If they are contained in a glass flask, the glass will break, usually. If they are contained in a metal drum, very often the metal drum will be blown apart.

Q.—And, if they are contained in a building. . . ? A.—The walls usually blow out.

Q.—You know the evidence, doctor. It is common ground that a fire followed after the final stage of the explosion. That, I think, is common ground? A.—Yes, I know that.

Q.—Now, from what did that fire result? A.—Well, the inflammable material on the third floor was set alight by the explosion.

Q.—Well, what I am trying to get at is, would there be heat? I don't think it actually is a leading question. . . .

Mr. Hackett:—I do, but go on.

Witness:—One of the phenomena which accompany every explosion is the generation of a large amount of heat. The flame which is visible to the eye is also very hot, — maybe three or four thousand degrees Fahrenheit in temperature.

By The Court:—

Q.—And, if that flame comes into contact with any combustible material, ignition occurs, of course? A.—Yes.

By Mr. Mann, K.C.:—

Q.—Dr. Lipsett, apart from the experiments of Mason and Wheeler, upon what is the scientific conclusion arrived at by you in your evidence based, or, in other words, upon what readings, experience or authoritative works, if any, is your scientific conclusion based?

Mr. Hackett:—I object to the question. The witness has testified on his own knowledge. There is one exception to the knowledge, and that exception is subject to verification. I must object to a question which is going to provoke an answer such as "Oh, everybody knows it. It is in all the books and all the "volumes." I submit it is an improper question. The man, I presume, has testified from his own knowledge.

Mr. Mann:—Where did he get the knowledge? That's all I'm asking.

Mr. Hackett:—I don't think it is relevant. I don't think it is a proper question to ask.

Dr. S. G. LIPSETT (for Plaintiff at Enquete) Exam. in chief.

The Court:—Dr. Lipsett told us, in answer to introductory questions, what experience he has had. He told us he had read all available published matter concerning explosions in their scientific aspect. He made in the course of his later testimony a specific reference to an experiment made by scientists, the result of which has been published in a scientific journal. I assume Mr. Mann's question is directed to the point as to whether Dr. Lipsett's reconstruction of the disaster, so to speak, is based merely on the expriment of Messrs. Mason et al as published in that journal, or whether it is also based on his personal general knowledge and reading.

Mr. Mann:—My object is to ask the witness what authorities and what reading he has followed for the purpose of being able to advise us scientifically, as he has done today. That is the sole object of my question, and I believe that is a perfectly legal question. I am not armed here today with Greenleaf or Taylor or any other author on Evidence, to discuss that, but I think, — perhaps wrongly, — that it is manifest I am entitled to ask the witness what authorities or books he has read upon which he bases his scientific conclusion.

Mr. Hackett:—If Mr. Mann wants to put that question, and if the Court thinks it is a proper question to ask, I must ask that the witness bring the books and authorities and other sources of information upon which he relies. We could probably find many a man that could come here and tell us that this and that library contained learned works on the subject, but that is not enough. The gentleman has come here, and he has been qualified as a man of science and has spoken because he is of that profession. I don't think he should be asked to bolster up what he has said by an omnibus reference to scientific works which he may or may not have read and which I'm sure I haven't read and which I have no means of controlling.

Mr. Mann:—I wasn't asking for an omnibus reference but a detailed reference to the works upon which his opinion is based. Your lordship said the other day, quite rightly, that opinion evidence is valuable only to the extent of the reasons behind it.

The Court:—That is not a very profound remark. It is pretty obvious.

Mr. Mann:—Yes, and applying that proposition to this case I say scientific evidence is of value only to the extent of the reasons and erudition and experience behind it.

The Court:—If you were examining a classical scholar on the exact reading of a passage in Cicero, you would not ask him what books he had read on which he was basing his scholarship.

Mr. Mann:—But here I am not confining it to one passage.

By The Court:—Perhaps I may put a question to the witness in the meantime.

Q.—Dr. Lipsett, is your hypothetical reconstruction of what happened on the 2nd of August, 1942, based solely on the experiment of Mr. Mason and his colleague to which you have referred? A.—No; it is based on a great many other experiments which I have read about.

Q.—That specific experiment was referred to by you, as I understood it, to enable you to give the precise details of the progress of an explosion, if that is not an incorrect expression. Am I right? A.—To illustrate one particular point, yes.

Q.—Now, apart from the journal in which that particular experiment is recounted, you have, I understood you to say, read a great many other works on explosion generally? A.—Yes.

Q.—And, like other scientists or men of learning, when you give an opinion on a subject you have behind you the books you have read, which may be more or less relevant to the specific question. That is so, isn't it? A.—Yes.

The Court:—I don't want any reference, Mr. Mann, to any particular book, unless the witness is going to quote from the book a passage in support of his opinion, and, if he is going to quote from it, the book should be made available to your adversary.

Mr. Mann:—I will leave it at that.

The Court:—I do not see how any books are going to help us very much, really, unless perhaps you get a situation precisely similar to this one, recounted by some expert, in the past. When you come to the nature of an explosion qua explosion, there is perhaps help to be found in a theoretical treatise

based on experiment, but, as to what exactly happened in this case, that is another thing. I don't want to restrict you, Mr. Mann, but I would like to know just why you are going to refer to various works.

Mr. Mann:—I am just thinking for a moment, my lord.

By The Court:—

Q.—Would you say, Dr. Lipsett, that your description of the stages of an explosion, — which I recall to be three, — is a generally accepted description? I mean, would the average scientist of today accept your exposition? A.—Yes, my lord, I believe that is the accepted explanation of the course of an explosion.

Mr. Mann:—I won't pursue it any further, after your lordship's last question.

The Court:—Well, Mr. Hackett knows what to do, if it is not an accepted theory.

Mr. Mann:—And Mr. Hackett is at liberty to do it now.

Mr. Hackett:—I think I will wait till I get the book.

The Court:—Have you finished with the witness, Mr. Mann?

Mr. Mann:—Yes, he is my friend's witness.

Mr. Hackett:—I am going to wait till I get the book.

Mr. Mann:—That is only part of his evidence. Can't you go on with the rest of it.

Mr. Hackett:—No.

Mr. Mann:—We have an hour to spare. My friend is waiting for the book.

By The Court:—We don't want to waste an hour.

Q.—Dr. Lipsett, you had intended, I assume, to be here tomorrow? A.—Yes.

DR. LEON LORTIE (for Plaint. at Enq.) Examination in chief.

Q.—To hear what your learned colleagues have to say on the subject? A.—Yes.

The Court:—Could we not ask the witness to step down and in collaboration with Dr. Lortie obtain the book in question?

Mr. Mann:—I will examine Dr. Lortie now, subject to my right to re-examine both of them.

The Court:—Naturally. You have the right by law to re-examine your witnesses, provided you remain within the scope of re-examination.

The cross-examination of Dr. Lipsett is suspended.

And further for the present deponent saith not.

H. Livingstone,
Official Court Stenographer.

DEPOSITION OF DR LEON LORTIE

On this 4th day of February, in the year of Our Lord nineteen hundred and forty-six, personally came and appeared. Leon Lortie, aged 43, professor of chemistry, Montreal University, and residing at 5585 Gatineau Avenue, in the City and District of Montreal, who having been duly sworn doth depose and say as follows:—

Examined by Mr. J. A. Mann, K.C.:—

Q.—When and where did you graduate, Dr. Lortie? A.—I graduated in chemistry from Montreal University in 1923 with the degree of Licencié en Chimie. That is licentiate in chemical science.

Q.—Licentiate in chemical science? A.—Yes.

Q.—In 1923? A.—1926, rather.

Q.—20 years ago? A.—Yes.

Q.—What are your degrees in chemistry or chemical science? A.—I proceeded then to Paris, where I had the degree of Doctor in Physical Sciences in 1930. I was Resident Doctor at Cornell University 1930 to 1931.

DR. LEON LORTIE (for Plaint. at Enq.) Examination in chief.

Q.—Just what does Resident Doctor mean? A.—That is, I had my doctor's degree in Paris and then I proceeded to do post-graduate work in Cornell.

Q.—Doctor of Science degree? A.—Yes. There is no degree in chemical science in Paris; it is only in physical science. Physical science means both physics and chemistry.

Q.—Will you continue? A.—I have been a professor at Montreal University since 1926.

Q.—In what branch? A.—Chemistry. I started as an instructor and then became assistant professor, and then full professor last year.

Q.—You occupy that position today? A.—Yes.

By Mr. Hackett. K.C.:—

Q.—You say 1926. Do you not mean 1936? A.—No. I was on leave of absence. I left Montreal in 1928 and came back finally in 1931.

By The Court:—

Q.—And you had been in the meantime to Paris and Cornell? A.—Yes, as a Rockfeller Fellow.

By Mr. Mann, K.C.:—

Q.—I want you in your answer to the question I am now going to ask you to leave out all consideration whatsoever of the experiment by Mason and Wheeler to which Dr. Lipsett referred and I want you to banish that part of Dr. Lipsett's evidence entirely from your mind.

I want to ask you if you have heard all of Dr. Lipsett's evidence, if you have been sitting in Court and have heard all of his evidence other than that part in the beginning when he was qualified? A.—I did hear all the evidence that he gave on the chemical side of his testimony.

Q.—You didn't hear the qualification? That was before you came in. A.—No, I didn't hear that, but I know Dr. Lipsett's qualifications very well, I think. He is a good friend of mine and I have known him personally for a long time as one of the outstanding chemists in Montreal, especially in the matter of explosions. I know he has participated in many Court cases involving explosions in stores, houses and other buildings.

DR. LEON LORTIE (for Plaint. at Enq.) Examination in chief.

Q.—I wasn't just directing my question to that. I was going to ask you this question:—Having heard Dr. Lipsett's evidence, have you any observation to make with respect to it? A.—Yes.

The Court:—That is very broad.

Mr. Mann:—Yes.

Witness:—I have heard his evidence, and I have found that Dr. Lipsett has related some experiments that he made himself and one that I made with him, and he made calculations of the velocity of the turpentine vapors escaping from the tank, the so-called tank, and then he proceeded from that to compare the knowledge gained from his own experiments and his own calculations with the evidence given on facts by witnesses, and I have found that throughout all his evidence Dr. Lipsett has given us, or given the Court, rather, a very logical sequence of events and has explained, according to the accepted theories on explosions, what happened at the Sherwin-Williams linseed oil plant on the morning of August 2nd, 1942.

By The Court:—

Q.—There was nothing heretical in his remarks? A.—No, there was nothing heretical.

By Mr. Mann, K.C.:—

Q.—And had you been subject to the questions to which Dr. Lipsett was subject, would you want to take anything from or add anything to what he said relative to the matter? A.—No, I wouldn't have anything to take away from his evidence, and I don't think I would have anything more to say, because it explains, to my mind, the explosion, the accident, that happened that morning.

By The Court:—

Q.—You, of course, have read or heard the evidence of the facts? A.—I have heard evidence on the facts by different witnesses, — Frazier, Asselin, Gosselin and others, — and I think I haven't missed any of this evidence; and I agree entirely with what Dr. Lipsett has said, what he has concluded from these facts and from his own experiments.

DR. LEON LORTIE (for Plaint. at Enq.) Cross-examination.

Cross-examined by Mr. John T. Hackett, K.C.:—

Q.—I listened with a great deal of interest to the testimony of Dr. Lipsett, and I understand that you were in the room when it was given? A.—Yes, when one of the experiments was made.
Q.—And you corroborate it in its entirety? A.—Yes, I took notes and I made a graph of it.

Mr. Mann:—You are talking about an experiment now, Dr. Lortie?

By Mr. Hackett:—I'm afraid you may not have understood me.

Witness:—Maybe.

Q.—I was talking about the testimony of Dr. Lipsett. You understand now? A.—Yes, I understand.
Q.—And I understood you to say that you have been in the courtroom here, where we are now, when Dr. Lipsett testified. Is that correct? A.—Yes, — that is, for the chemical part of his testimony, as I stated.

The Court:—The Court noted that Dr. Lortie came in after Dr. Lipsett had recounted his qualifications and experiments.

Mr. Mann:—Came in when we were discussing the Society of Mechanical Engineers' book.

The Court:—He was present when the question was put concerning the explosion in the plant.

By Mr. Hackett, K.C.:—

Q.—And you corroborate Dr. Lipsett's testimony in its entirety? A.—Yes.
Q.—And you are the Dr. Lortie to whom he referred as having been associated with him in making some experiments as to the reaction of turpentine with Filtrol? A.—That is right.

Mr. Mann:—Turpentine and Filtrol.

Witness:—I may say that at the time he made the experiments he made some with me so that I would understand exactly what was happening.

DR. LEON LORTIE (for Plaint. at Enq.) Cross-examination.

By Mr. Hackett, K.C.:—

Q.—I understood Dr. Lipsett to say that he had made some experiments in company with Mr. Hazen, who has already testified, some with you and some by himself. You, naturally, can only tell us of those he made with you? A.—That is right.

Q.—And I want you to tell me how many experiments he made with you? A.—He made one experiment.

Q.—Where? A.—At the J. T. Donald office in Montreal.

Q.—When? A.—On January 8th.

Q.—Of this year? A.—Of this year, yes.

Q.—And there was on that occasion taken a certain quantity of turpentine and there was also taken a certain quantity of Filtrol? A.—Yes.

Q.—Tell me if there were other ingredients that went into the mixture? A.—May I refer to some notes I have here?

Q.—Yes? A.—I took note, myself, of everything that went into the experiment. There was some turpentine; there was some Filtrol; there was some Filter Cel; and, of course, there were beakers in which the experiment was made, and a thermometer.

Q.—Mr. Hazen, in the outline which he gave us of the series of experiments he made, said he mixed the Filtrol and the turpentine in varying quantities. You are aware of that? A.—Yes.

Q.—May I assume for the purpose of your cross-examination that we can leave the Filter Cel aside? A.—I think so.

Q.—Will you tell the Court what was the proportion of the turpentine to the Filtrol in the experiment? A.—Filtrol to turpentine?

Q.—Yes? A.—As I gathered from evidence given here in Court and from the calculations already made by Dr. Lipsett and Mr. Hazen, the following proportions were used. These will be in grammes.

By The Court:—

Q.—The proportions will be the same? A.—Yes.

The weight of turpentine was 148.5 grammes plus four grammes of Filtrol, which are the proportions analagous to those that were used in the tank.

By Mr. Hackett, K.C.:—

Q.—That is, the proportions which you have given us are

the same that 850 gallons of turpentine bear to 200 pounds of Filtrol? A.—Yes, according to the density of the turpentine, — because I expressed it in grammes in my notes. It might be expressed in liters or in any other measure.

Q.—As his lordship has said, it is the proportions we are interested in? A.—Those are the proportions that were used by Dr. Lipsett in my presence and that corresponded to the proportions used in the tank itself.

Q.—What turpentine did you use? A.—This turpentine, Dr. Lipsett told me, was given him by the Sherwin-Williams Company as analagous to that used in the bleaching job that had been done at that time.

Q.—Was it discolored? A.—Not very much. I have no authority, no competence, to judge the discoloration of the turpentine. It might have been.

Q.—Mr. Hazen said it wasn't. So I suppose that is so? A.—I don't know really. It takes a connoisseur's eye to say whether it is or not.

Q.—Would you just outline your experiments, please? A.—The experiment was carried out in this way:—First of all, we weighed the beakers in which the turpentine was put; then the Filtrol and the Filter Cel; and this was put in a beaker which was put in another, larger, beaker, surrounded by absorbent cotton in order that the temperature might remain the same during the time of the experiment. Then it was brought to 165 degrees Fahrenheit in the room.

Q.—What was the temperature of the room? A.—The temperature of the room? We didn't measure the temperature of the room.

Q.—Around 70, I suppose? A.—Around 70, yes, the usual room temperature. This was brought to 165 degrees temperature in the room itself. Then it was carried out, carried in the yard.

Q.—Carried in the yard? A.—The beaker was carried in the yard; and we measured the temperature when he came outside, and it was 168 which we measured the temperature in the open; and then Dr. Lipsett called the temperature, and I had a stop watch in my hand and I marked it and I noted on a paper here the time and the corresponding temperatures, and then I noticed that for approximately a minute or so the temperature did not rise very much.

Q.—You extinguished the fire at 165? A.—Yes, — well, we didn't carry any fire outside. We just carried the two beakers and put it there on a concrete piece, and it was decidedly cold that day, if you remember.

Mr. Hackett:—No, I don't remember.

Witness:—But I do, — I didn't have any hat or overshoes.

Then the temperature did not rise very much until a little more than a minute passed. Then it rose gradually for approximately, — I will tell you that in approximately two minutes the temperature rose very slowly from 168 to 180, but at two minutes it started to rise much more rapidly, so that at 2 minutes and 20 seconds after the start of the experiment, outside, the temperature rose by 10 degrees Fahrenheit for almost every 20 seconds. It started to rise quite rapidly, and then, after 3 minutes and 46 seconds, it was at 270, and six seconds later it was at 300 degrees Fahrenheit, so that in that stage, for a period of six seconds, the temperature rose 30 degrees Fahrenheit, which is very rapid; and at four minutes it was boiling. It was boiling after four minutes.

Q.—Now, Dr. Lipsett told us that the boiling point in one of his experiments was 315? A.—Yes.

Q.—What was it in this one? A.—In six seconds there was a rise of 30 degrees, so that during that time when it went over to the boiling point I didn't have time to record the time, — that is, I mean, I didn't have time to take the boiling point. In four minutes it was boiling, and boiling violently, and we heard the sound of the boiling very, very easily.

By The Court:—

Q.—You mean four minutes from the time you started the outside experiment? A.—Yes. I have something else to give you, to record the full experiment, if you wish?

The Court:—Yes.

Witness:—The final temperature was found to be 360 degrees, and in 5 minutes and 50 seconds we decided the reaction was over, — that is, there was no boiling at all; it wasn't boiling any more. The temperature was 360 degrees, and then we found that 65 grammes had been lost of the initial turpentine.

By Mr. Mann, K.C.:—

Q.—What was the initial quantity? A.—148 grammes. 65 grammes had been lost. That is approximately 50 per cent, a little less than that.

DR. LEON LORTIE (for Plaint. at Enq.) Cross-examination.

By Mr. Hackett, K.C.:—

Q.—The beaker was not closed? A.—No.

Q.—So, the vapors escaped? A.—Yes.

Q.—And in the tank in the east room the vapors could only escape through the inch-and-a-half or inch-and-a-quarter vent and around the periphery of the door of which the witnesses have spoken? A.—That is true.

Q.—Now, as to my two questions, Dr. Lortie, the first question is:—Did you agitate the content of the beaker while it was being heated to 165 degrees? A.—Yes, we did, in order to mix the Filtrol and the Filter Cel with the turpentine, so that the contact would be as close as possible.

Q.—I am not asking you for the reason, — you may have mixed them before you put on the heat first, — but I want to know if after you had applied the heat you mixed them. I ask you that because. you remember, there was an agitator within the tank? A.—Yes.

Q.—If you don't recall, I don't suppose it makes much difference. Do you recall? A.—As far as I remember, when the mixture was heated there was some agitation, not constantly, but there was some agitation.

Q.—But up to the 165 was there any agitation? A.—Yes; it was during that period that I recall there was some agitation.

Q.—Then, why did you take the beaker into the yard instead of continuing the experiment in the laboratory? A.—I think that Dr. Lipsett had done the experiment there before and had had the scare of his life.

Q.—It is a great thing to live to 45 and wait till then to have the scare of your life. That rather spells a virtuous life, doesn't it? A.—I think I would have done the same, myself.

Q.—Anyway, the experiment was carried on outside? A.—Yes.

Q.—And was that the reason for banking, if I may use the term, the beaker with cotton wool and with other protective agencies which kept the lower temperature of the exterior away from the container in which the mixture was held? A.—The reason is quite simple, I think. It is that we had heated this beaker to 165 degrees Fahrenheit and, as everybody knows, when you take a hot body for a certain distance for a certain time, there is a tendency for its temperature, so that the cotton wool was used as insulating material so that the temperature would not drop too much during the transportation of the beaker from the second storey of the J. T. Donald building to the yard.

Q.—The beaker was placed in what? A.—In another beaker.

Q.—In another beaker? A.—Yes. There was a smaller beaker and a larger beaker. I don't remember the capacity of one little beaker that was put into the larger one and it was surrounded with this cotton wool and each fitted so that the two fitted together.

Q.—I may have an improper conception of a beaker, — but I thought a beaker was something that is rather narrow at the top? A.—No. We usually call it, or, sometimes, a glass, in the laboratory, and we use it for drinking purposes when we haven't got any other vesel. It is a wide-open vessel.

Q.—And you say this vessel in which the experiment was carried out was put into a larger one and cotton wool was put about it to protect it? A.—Yes.

Q.—There was the difference, of course, of the exposed surface? A.—No.

Q.—Well, the surface of the mixture was exposed to the lower temperature of the exterior? A.—The surface, yes.

Q.—May I ask you if you had never heard of this reaction before, this type of reaction? A.—No, I never heard of it before until I was acquainted with the case and then I was shown the results of the experiments carried out by Dr. Lipsett and Mr. Hazen.

Q.—You never heard of it before? A.—No.

Q.—You would be astonished to know that this reaction has been known for, well, twenty years or more? A.—I don't think I would be astonished, no, because I have seen so many things that astonish some people that don't astonish me at all, because we are ready to accept anything that is new, or, that is old and that we think is new.

Q.—The quantity or the proportion of the turpentine that escaped would naturally depend, or at least I ask you if it would depend to any extent upon the surface exposed to the exterior? A.—Well, there are many factors involved in this, one of which is the surface, of course, because evaporation is a function of the surface, but it is also dependent upon the temperature to which the turpentine or any other liquid is raised, because the vapor pressure of a liquid is a function of the temperature, — that is, the more you heat it the more you will evaporate it, — and, of course, the greater the area exposed the greater amount will also be released; and also there is another factor, — that is, the factor of time, the time that it takes to raise the temperature of a liquid

to a given temperature. That will also have a great influence on the amount of vapor that will be released in a given time. It is a question of time very much.

Q.—But, if you had had this mixture in, let us say, a pan, instead of a beaker, how would that affect it? Was it two or three inches high in the beaker? A.—It was approximately two to three inches.

Q.—Let us assume that instead of a beaker you had used a pan with an open surface and of a quarter of an inch in depth, would that have affected the amount or the proportion of the turpentine which would be thrown off in the boiling process? A.—I really don't know, and I don't want to pronounce myself on such a thing, because there are so many factors involved. For instance, there are the internal factors, the contact between the active ingredient, which Filtrol is, and the turpentine itself. You see, the area may be much larger, and it may not be brought to the same temperature in the same time, so that I don't want to pronounce myself on that question. There are too many factors involved in that.

Q.—And, when the door of the tank was opened, what in your opinion would be the consistency of the contents of the tank? A.—Well, if we are able to correlate what has been going on in the beakers and what has been going on in the tank, I would presume that part of it was still liquid, and part of it was in vapor form under quite considerable pressure, and that when the door was opened violently there might have been just the vapors issuing from the outlets or there might have been a mixure of vapors and liquid at the same time on account of the violent boiling going on in the tank, but I really don't know, — it is only a conjecture.

Q.—It is certain, is it not, that there was no pressure on the tank until the boiling point had been reached? A.—That is quite scientific, because the boiling point of a liquid is reached when the vapor pressure is equal to the atmospheric pressure.

Q.—Now, what is the transformation that takes place in the liquid as the pressure to which it is subjected increases? A.—When the outside pressure increases, the boiling point is raised accordingly. There is a definite relationship between the outside pressure and the boiling point of a liquid.

Q.—I haven't been happy in my question. What I am trying to find out is, what was the consistency, in your opinion, of the contents of the tank? A.—You are speaking of some viscosity, some viscous product or content?

Mr. Hackett:—No.

Witness:—Because "consistency" means it is rather hard or rather syrupy or something of the kind.

Q.—We can probably agree that after it has undergone the polymerization, if that be the word, the viscosity is much higher. That is not what I want to get, doctor. What I want to get is this:—What do you think was the consistency of the contents of the tank? I thought it was something like foam instead of a liquid? A.—What was the state, you mean?

Q.—Yes. What would you say? A.—There was surely a foam, — that is, there was surely a mixture of bubbles, rather, and liquid, there, if you call it foam.

Q.—I don't know what to call it. I am asking you. Up to the boiling point we had a liquid, and then we got a temperature that took our liquid to the boiling point, and there was a transformation in part or whole, and I want you to tell me what your appreciation is of how far that transformation was effective? A.—I will give you my opinion of that in this way:—That is, you had a vessel that was almost closed. As I recall it, there was an air release pipe through which some of the pressure might be released.

Q.—That is the vent? A.—Yes. As the temperature arose on account of the reaction itself, the boiling point of the liquid rose consistently, and, if there was any polymerization, the boiling point of the new liquid might have risen, itself, and then there was some vapor over the liquid, though there might not have been any bubbles at all in the liquid. There might have been no bubbles at all; it might have been just a slow evaporation. The bubbles come usually when the liquid is boiling. When you raise the pressure over the liquid, then the liquid will produce vapors and sometimes without any bubbles coming at all from the body of the liquid itself; but when the door was opened that is another question. Is that what you want to know?

Q.—It is pretty hard for me to talk your language, but I hope you will be patient with me. When Mr. Hazen was under examination he explained that the door was sprung, — that is not his term, but, anyway, he told the Court that around the entire periphery of the door fumes would be escaping? A.—Yes.

Q.—And he said that that would cause a sizzling noise? A.—Yes.

Q.—He also said that the escape of the vapor from the vent would also cause a sizzling noise?

Mr. Mann:—Who said this?

Mr. Hackett:—Mr. Hazen. And, referring to the escape around the door, he used the term "some sizzling" to show that it was quite a pronounced and audible noise.

Mr. Mann:—"Some sizzle".

By Mr. Hackett, K.C.:—

Q.—Now, what I am trying to ascertain is, what was inside the tank at that time? We know what came out, that caused the sizzle, was vapor, and now I want to know if you can tell me if the whole content of the tank, due to the heat or the chemical reaction, had become transformed into vapor or bubbles or suds or foam or whatever you want to call it? A.—That comes back to what I told you before, — that is, there was surely some liquid left and surely some vapor. There was surely some liquid left, because there is evidence that there was polymerization going on in the process and it was partly liquid and partly vapor.

Q.—Isn't it true, doctor, that, as the boiling went on, the point at which boiling could be produced was constantly being raised all the time? A.—Yes.

Q.—So that where you get a boiling at, we will say, 315, — and you didn't notice what it was in the yard. . . . A.—That was at the atmospheric pressure in the yard.

Q.—It might go up? It might be 320 degrees Fahrenheit or it might be 350, or I don't know what it might be, but I understand that that the thing that remains after polymerization, — I am speaking of the turpentine, — is something that has a boiling point of 500 Fahrenheit or 600 or something in that neighborhood? A.—It may well be.

Q.—Now, what I am trying to get at, doctor, is this:—

As the polymerization took place, the boiling point of the liqud went higher all the time, and that had a tendency, — I am putting it to you bluntly, — to reduce the pressure? A.—Well, there is the fact that in the open air at least some of the vapor escaped. Now, you cannot prevent these vapors over the liquid, even if it is polymerized, from exerting pressure within the tank.

Q.—But they were escaping from the tank through the vent and around the door, and they escaped in volume, because they filled the north and the south doors? A.—That depends on the time.

Q.—I don't want to bother you about that, — but I think you will remember that the witnesses said that the two doors were filled with, — I think one of them used the expression "a cloud"? A.—But, you see, it does not take very much of a substance to create a mist somewhere, and it doesn't weigh much, — that is, it does not take very much turpentine vapor to create a mist somewhere, and it doesn't weigh much; it consists of a mixture of turpentine vapor, or droplets sometimes, and air.

Q.—You will tell me whether there could have been a considerable escape of this through the vent and around the door of the tank, forced out as the vapor was? A.—I haven't made the calculations, myself, but I have gone over Dr. Lipsett's calculations, and I think he will be in a better position to answer that question than myself. I know that all the steps that he has taken to make the calculations are quite conservative and are taken from standard textbooks and handbooks, as to the amount of turpentine vapor that has escaped in a given time, but I didn't make the calculations myself, and he would answer that better.

Q.—Do you know how much it was? A.—I may have it in my notes, but I would like to be absolutely sure. (Consulting Notes): No, I haven't got it here.

Q.—Well, it would be expelled under high pressure, — so there must, I suppose, have been some substantial quantity? A.—Yes, indeed. It must have been at a pressure at least equal to. . . .

Q.—To the pressure within the tank? A.—No, I don't say that. I say it must have been at the pressure at which they have been released. . . . Yes, you are right, — equal to that in the vessel, when they were released.

Q.—I am coming back to the pressure and the vapors in a moment; but it did not seem to me that Dr. Lipsett dealt with all the factors when he referred to this bolt. That is the thing that has been called a pin, too, isn't it? A.—Yes.

Q.—There were lugs on the frame of the door? A.—Yes.

Q.—Lugs on the door and the arm. That made five different "couches", layers, of metal through which the bolt passed: is that your understanding? A.—Let me see here P-6-a.

Q.—What I thought was that the doctor in talking about these things had dealt with the situation as though this bolt had only gone through two lugs and the arm, whereas I think it went through four lugs and the arm? I think the doctor was mistaken in his description of the fact. Did you notice that? A.—There might be something there, but I think that the assumption was quite right, — that is, that it was subject to a given pressure of at least 6,000 pounds, that it could sustain not more than a cer-

tain pressure according to the nature of the steel used there and that it must give way at a given pressure.

Q.—I don't think that I have succeeded in bringing home to yon the point that I want to make. I understand Dr. Lipsett said that the bolt which you have in your hand, which we have called the pin. . . .

Mr. Mann:—Let us call it P-20.

Mr. Hackett:—I'm not sure whether I want it to be P-20 or not.

Mr. Mann:—But I am.

Mr. Hackett:—You can put it in tomorrow.

Mr. Mann:—I make application to put in this bolt, that was produced by Dr. Lipsett, as P-20.

The Court:—Do you think it is necessary or helpful to have it in the record?

Mr. Mann:—It is just to keep track of it, to identify it and save confusion.

The Court:—The bolt to which Dr. Lipsett referred in his testimony is now produced as Exhibit P-20.

By Mr. Hackett. K.C.:—

Q.—I understood Dr. Lipsett to say that, for the purposes of the experiment which he has described, this bolt P-20 was put through a lug, then through a second one which was supposed to be the arm of the door, and then through a third one which was another lug in the frame of the tank. Now, I was under the impression that actually the bolt or pin went through five lugs instead of three, that there were two on the frame of the tank, two on the door, and a fifth one on the arm which held it in place? A.—If I remember well, Dr. Lipsett said that the piece that was experimented on, P-20. was of the same width as that on the lug or one of the lugs; and, secondly, I wish to state that I am not an engineer, a mechanical engineer; and I thought that Dr. Lipsett's assumption was right, and if anything has got to be corroborated or discussed in this regard I am not in a position to do it myself.

DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

By The Court:—

Q.—You were not there when Dr. Lipsett made that particular experiment? A.—No, I wasn't, and I am not in a position to give any positive evidence on that, not being an engineer or a mechanical engineer.

(It now being 4.30 p.m., Feb. 4, 1946, Court adjourns to 10.15 a.m., Feb. 5, 1946).

And further for the present deponent saith not.

H. Livingstone,
Official Court Stenographer.

10.15 a.m. February 5th, 1946

DEPOSITION OF DR. S. G. LIPSETT Continued

On this 5th day of February, in the year of Our Lord nineteen hundred and forty-six, personally came and reappeared, Solomon George Lipsett, a witness already sworn and examined for Plaintiff in this case and who being now recalled and further examined under his oath already taken doth depose and say as follows:—

Cross-examined by Mr. John T. Hackett, K.C.:—

Q.—Dr. Lipsett, you told us yesterday, or you started to tell us, of an experiment that had been performed by two scientists, Messrs. Mason and Wheeler, and which had been reported in a recent number of a scientific journal. What was the experiment? A.—They ignited a mixture of inflammable gases in a tube three feet in diameter, and a flame formed in the inflammable mixture and travelled along the tube for a distance of about 33 feet at a slow, uniform rate of speed.

The Court:—The experiment, as I remember, was recounted in detail yesterday afternoon by the witness, and I understand he now has before him the journal in which it is related.

Witness:—Yes. I must apologize for taking so long in finding the reference. It was longer than I thought.

DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

By Mr. Hackett, K.C.:—

Q.—What was the nature of the combustible mixture? A.—The gas used in this experiment was methane, which was mixed with air.

Q.—What is methane? A.—It is a hydrocarbon, a compound of carbon and hydrogen.

Q.—How does that compare with turpentine? A.—It is generally regarded that the results obtained with one hydrocarbon are comparable with those obtained with another.

Q.—Is turpentine a hydrocarbon? A.—Yes.

Q.—And when we are speaking in your cross-examination, of turpentine, may we understand between you and me that we are talking of a turpentine in which there has been put Filtrol and in which there has been put Filter Cel in the proportions in which they were in the tank? A.—Now, I don't think we can take that for granted in every case where the word is used, but when we are talking about it inside the tank, well, naturally it is mixed with Filtrol and Filter Cel.

Q.—And when we are talking of your experiments we are talking of that too? A.—The experiment I carried out to find the difference, the heat generated, when these things were mixed, was done with a mixture of the three.

Q.—And your reference to any book or scientific report or paper only has bearing to the extent that there is identity between the mixtures used by the people making the experiments and the mixture that was in the tank: is that correct? A.—I don't quite follow that question.

Q.—(Question read): A.—No, I wouldn't put it that way.

Q.—How would you put it? A.—The experiment that I have just referred to and a number of other experiments, in most cases, have been carried out with the vapors of inflammable materials to determine how they react in an explosive manner in the experiments that were carried out. In deciding how the turpentine would behave in this particular instance after it got out of the tank, I would also consider its behavior as a vapor.

Q.—Can we put it this way: that the turpentine vapor which escaped from the tank was in no way influenced by the fact that it was thrown off from a mixture of turpentine, Filtrol and Filter Cel? A.—Its inflammability would be the same after it had got out of the tank and was in the vapor form as it would be in a sample of pure turpentine that had never come into contact with these materials.

Q.—That is an answer to my question if I have understood the answer? A.—Yes.

Q.—Insofar as the vapor is concerned, once it had escaped from the tank in the east room, we can consider that it was identical to the vapor that would have been thrown off had there been no Filtrol or Filter Cel in the tank? A.—Identical insofar as its inflammability is concerned.

Q.—We are not considering anything else at the moment than its inflammability? A.—No, we are not.

Q.—Would you tell me what is the name of the book from which you have read this experiment by Messrs. Mason and Wheeler? A.—This is the Journal of the Chemical Society, year 1917, published in England.

By The Court:—

Q.—And the reference to the experiment is at what page of the volume? A.—I have underlined it, — 1052.

By Mr. Hackett, K.C.:—

Q.—Would you just be good enough to read the short passage which you wish to draw to the attention of the Court? A.—I quote: "The initial speed of flame in mixtures of methane "and air is uniform also in tubes of large diameter. The flame "travelled at a sensibly uniform speed over a distance of ten "metres in a tube 96.5 centimetres in diameter and 44 metres "long."

That is the end of that quotation.

Then in a graph given on the same page there is given the velocity of movement in this tube, and for a mixture of six per cent methane in air.the velocity is 150 centimetres per second.

Q.—Now, that has to do with a mixture of methane and of oxygen found in the atmosphere, has it not? A.—Methane and air.

Q.—Methane and air? A.—Yes.

Q.—Now, what is the third element? A.—There is no other element.

Q.—But, if you just had the methane and the air you could not have had the experiment, could you? A.—Well, it was ignited.

Q.—It does not say how in that journal? A.—I don't think so.

Q.—Have you seen any reference in other litigation to this experiment or similar experiments?

The Court:—In other litigation?

By Mr. Hackett:—Yes.

Witness:—Not bearing on the distance to which a flame can travel.

Q.—Bearing on what? A.—I have seen references to evidence dealing with the stages of an explosion.

Q.—In what circumstances? A.—In an account of what is termed, colloquially, the case of the Tug Rival.

Q.—In the testimony of Professor Stacey of McGill? A.—That is right.

Q.—And I think that you probably read the deposition of Professor Stacey in that case, did you not? A.—Yes.

Q.—That had to do with a foolhardy mate on a laker who struck a match on his trousers and held it over the manhole of an oil tank to find out if there was enough gasoline to take the boat down the river without refuelling? A.—Yes.

Q.—And his cap was blown off? A.—Yes.

Q.—Some other things happened too? A.—Yes.

Q.—You said yesterday, doctor, that when the mixture in tank No. 1 had reached the boiling point. . . . The boiling point is about 310 Fahrenheit, I believe? A.—Yes.

Q.—. . . . the fumes from the mixture were expelled from the tank. I am going to deal with what you said about the forced opening around the door; I will come to that in a minute. I don't think you mentioned them, but I take it that it is common ground between us that the fumes were driven out through the vent? A.—I mentioned that there was an air relief pipe and that some fumes escaped through it.

Q.—Well, you mentioned that in your opinion there had been built up a pressure of 55 or 60 pounds per square inch inside the tank? A.—At one time, yes.

Q.—At one time? A.—Yes.

Q.—Naturally, there was a time when there was a pressure of one pound and another time when there was a pressure of two? A.—Yes.

Q.—And ,immediately there was any pressure, it began to seek egress through what I will call the vent? A.—Yes.

Q.—And, the higher the pressure, the greater the volume of fumes that were expelled through that exit? A.—Yes.

Q.—And then you went on to say that as the pressure was built up, the inadequacy of the relief which came through the vent caused, shall we say, a springing of the door? A.—Yes.

Q.—And you produced as Exhibit P-20 a pin or bolt which had been bent in some kind of test that you had made? A.—Yes.

Q.—Indicating that there would have been an opening around the door of what, — half to three-quarters of an inch? A.—Approximately three-tenths of an inch at 60 pounds pressure.

Q.—3/10ths of an inch at 60 pounds pressure? A.—Yes.

Q.—It became more than that as the bend in the bolt grew more pronounced? A.—Yes.

Q.—And what volume of vapor could escape through such an exit? A.—Well, I have calculated that at 60 pounds pressure inside the tank, with an opening of 3/10 of an inch at one side of the door, the turpentine vapors would escape at approximately 103 cubic feet per second.

Q.—And did you work out the number of cubic feet that could escape through the vent? A.—Yes, I did, and at the same pressure the calculation indicated it would be 5.8 cubic feet per second.

Q.—Did you make any allowance for the initial stage, when possibly the pressure might not have been quite as great as that at which you figured it? A.—Well, at different pressures within the tank there would be different ratios between those two figures. This is the ratio at 60 pounds pressure.

Q.—I understand that, but there was a period of time, as you have said, when the pressure was one pound, and there was another period when it was two pounds and there was another when it was ten? A.—What happened prior to that would not affect the velocity at which the vapors escaped at 60 pounds per square inch pressure.

Q.—It wouldn't affect the velocity, you say, — but it would affect the quantity, because there is a certain quantity of vapor that escapes during that period of time whether it be a minute or a second? A.—Yes.

Q.—And the velocity of the escape is affected by the pressure? A.—Yes.

Q.—And the pressure, on your assumption, was becoming greater all the time? A.—Yes.

Q.—What I want to get at is:—Have you taken into account that period of time which elapsed before the maximum pressure was reached? A.—Yes; and it has no bearing at all upon these figures, because it might take a little longer to reach 60 pounds per square inch pressure, but we would get to 60 pounds per square inch pressure just the same, and the difference in time would not be very long. The vapors were being generated in sufficient volume to raise the pressure up to 180 pounds per square inch.

Q.—Apparently I have not made myself quite clear to you. I agree with what you say, — but you have not taken into consideration the volume of vapor which escaped before the maximum pressure to which you have referred was attained, have you? A.—It has no bearing at all on it.

Q.—It has no bearing on the pressure, perhaps, but it has a bearing on the quantity of vapor that escaped? A.—No, it hasn't.

Q.—Let me put it this way:—Perhaps this will make my point clear. . . . A.—I will make a statement first, if you will allow me, and maybe it will clear it up. The amount of turpentine vapors which escaped might affect the maximum pressure that would be reached, — instead of reaching 180 pounds per square inch the pressure might only reach 170 pounds per square inch, — but it would not affect the pressure up to that point and it would not affect the amount of vapor that escaped at any one pressure.

Q.—I understand that, doctor, but I am talking about something that I have not yet been able to fix your mind upon. I want to know what quantity of vapor came from the tank into the room. Remember, I am dealing with the quantity that went to make up the cloud that filled the north door and the south door of the fire wall. Could you give me that quantity? A.—I don't think there is any way I could estimate that amount from these figures. I can tell you the rate at which it would come out, though, when the pressure inside was 60 pounds per square inch, but I don't know for how long the pressure remained at 60 pounds per square inch, nor do I know how long it remained at any other rate. I do know it was building up rapidly, but the speed was so fast that any calculation I might make on this point would be just a plain guess.

Q.—I am interested, for the moment, in the volume of vapor that escaped, and I suppose it is a fair assumption that, if the north door in the fire wall, — when I speak of the fire wall I mean the wall dividing the east room from the west room, — and the south door in that wall were filled with vapor, the east room also was filled with vapor? A.—I don't think that is a fair assumption.

Q.—Why? A.—I believe that there was a large number of cans stored in that room, behind or on the east side of the tank, and that there was a sort of passageway from the tank to both the north and south doors, one side of that passageway being more or less flanked by these cans, and when the vapors escaped from the tank they would tend to fill up the passageway long before they would fill up the rest of the room.

Q.—Why? A.—Because they would have to fill up that passageway before they could get out into the rest of the room.

Q.—Well, is it your testimony that these vapors were heavier than the atmosphere? A.—The density of turpentine vapors is greater than that of ordinary air, yes.

Q.—You remember what the testimony was on that point, do you not? A.—I don't remember any testimony on that point.

Q.—As to how the vapor presented itself in the doors? A.—Yes, I remember that testimony.

Q.—And that testimony, you find, is in conformity with what you are saying now? A.—Yes, quite.

Q.—That the vapor was heavier than the air? A.—You see, pure turpentine vapor is heavier than air. . . .

Q.—But we are not dealing with pure turpentine vapor? A.—That is just what I was going to say.

Q.—It had become a combustible mixture? A.—Yes.

Q.—Due to the presence of air or oxygen? A.—Due to mixing with the air.

Q.—And its density and weight compared to the air had been changed in consequence? A.—The density of the mixture would be very similar to that of ordinary air.

Q.—So, that being so, there is no reason to assume it would not permeate the whole interior of the east room as the atmospheric air must and did? A.—Ultimately it might have, but I don't think it came out long enough for that.

Q.—We will deal with that as we go along, — but will you agree with me that the reason you gave that it didn't, is a bad reason? A.—No.

Q.—You told me that it did not permeate the air for two reasons: first, because turpentine vapor is heavier than the atmosphere? A.—I didn't say that at all. I didn't bring in the density.

Q.—I know you didn't, but I did. I admit I was a little bit embarrassing, but we have to put up with these things.

Mr. Mann:—I don't believe you were embarrassing.

By Mr. Hackett:—I thought I was.

Q.—You admit that turpentine vapor is heavier than air? A.—Yes.

Q.—And when it becomes mixed with the air and becomes a combustible mixture, as you have said, it takes on the approximate density of the air? A.—Yes.

Q.—And, that being so, it would permeate the whole east room as did the atmosphere or air of that room? A.—Not necessarily.

Q.—All right; we will leave it at that.

The other reason you gave was that you thought it would follow an alleyway? A.—Yes.

Q.—Because there were some cans opposite? A.—Yes.

Q.—How high were the cans piled? A.—I believe they were piled very close up to the ceiling.

Q.—Then, your answer is, — and I am putting this in the interrogative, — that the vapor did not displace the cans? A.—It did not.

Q.—I agree to that. But it did go and must have gone to where the pure air was before, and when I say pure air I am distinguishing it from the turpentine vapor? A.—When vapors of a boiling liquid escape into a room, they tend to follow the drafts or natural movement of the air. They don't go into places where they are not carried. They don't move of their own free will. They are carried by the movement of the air.

Q.—Would you just tell me what the movement of the air was in the east room on the morning of the 2nd of August, 1942? A.—Around the tank the turpentine vapors were escaping with great velocity and they would create a draft around the tank, a movement of air away from the tank. This velocity of movement of the turpentine vapors would cause them to mix with the air and it would be just like having a small fan turned on at that point. Naturally, the air would go to the place where there was least resistance for this movement, and that would be along the alleyways first.

Q.—Why along the alleyways? A.—Because that would be the only place where there would be free movement.

Q.—I can understand perfectly that the vapors were not going to displace solid substances that were in the east room, — there is no controversy about that, — but, speaking of the interstices between the solid substances and the vacant air above the solid substances, would they not be permeated with the vapor? A.—It takes time to fill up a space with vapors like that. They tend to accumulate when they are generated, and they gradually spread out, and if they have lasted long enough, as you suggested, they would reach the ceiling.

Q.—They lasted long enough to go 50 or 60 feet one way and a similar distance the other way to get to the north and south doors of the fire wall? A.—Yes.

Q.—So they must have lasted some time? A.—That happened within a few seconds.

Q.—Wouldn't it be safer to say you think it happened within a few seconds? A.—I am pretty sure it happened within a few seconds.

Q.—What is the tendency of vapors when expelled from a tank into the atmosphere? A.—They tend to mix with the air.

Q.—And what other tendency is there? A.—I don't quite see what you mean.

Q.—I will tell you. We won't have any secrets between us, doctor. Of course, I don't know very much about chemistry, but I did think that when these vapors at high temperature came into the cooler temperature of the room there would be a tendency to condense? A.—There would be some tendency.

Q.—Wouldn't it be a marked tendency? A.—I wouldn't call it marked, no.

Q.—You will concede, I believe, that, if the source of supply of these vapors were cut off, the vapors would very soon cease to be apparent to the eye? A.—On the contrary, I think they would become more apparent to the eye.

Q.—Then, it is your testimony, Dr. Lipsett, that if tank No. 1 at a given point had ceased to emit vapor, had dropped into the cellar or had been hermetically sealed, the vapor previously emitted would have remained in the atmosphere for a period of time? A.—Yes, for a long time.

Q.—How long? A.—Some of it might remain in the atmosphere indefinitely.

Q.—Now, doctor, I suggest to you, — I am trying to get from you the facts in common language, — and I am instructed that vapor of the type of vapor thrown off by tank No. 1 would condense and disappear very shortly after it was emitted from the tank. I ask you if that is a scientific fact or not? A.—A turpentine vapor is dissipated in air so that it mixes with about 100 times its volume, at which concentration it would be explosive, and if it were slightly warm, not very warm, — let us say a temperature of 95 degrees Fahrenheit, — it would not condense at all; it would remain permanently as a vapor, because the concentration in the air would not be above its condensing point.

Q.—Now, doctor, let us take a summer's day in the plant of the Sherwin-Williams Co., the 2nd of August, 1942, and let us assume that turpentine vapors had been thrown into the east room in the quantity and under the pressure that you have mentioned, and that at a given moment the supply of vapor to the room was absolutely cut off. Assuming that, I ask you in all

fairness how long traces of that vapor would be apparent to the eye, after the source was cut off?

Mr. Mann:—Apparent to what?

By Mr. Hackett:—Apparent to the eye.

Witness:—That is a very difficult question to answer, but I don't think it has any bearing whatsoever on the circumstances of the case.

Q.—That may be your opinion, doctor, but. . . . A.—There is a certain mist in the air and it makes the vapors look bluish-white. If there wasn't any mist, the vapors would not be visible at all. Now, this mist will, in the course of a long time, settle out. You might just as well ask me how long it would take fog to settle out. It may remain suspended in the air for several hours after the mist had settled out, and if the air was warm there still might be a very high concentration of turpentine vapors left in the air. By "high" I mean one per cent of the total volume of the air.

Q.—I am going to put the question to you again, because I want to find out how long in your opinion the vapors that had been expelled from tank No. 1 would remain visible to the eye after the source of supply had ceased to emit these vapors, taking the conditions as they existed there on the 2nd of August, 1942? A.—I really don't know. I never carried out experiments to that point.

Q.—Then probably you will tell the Court how long the vapor which was emitted during the course of the experiments that you did carry out remained visible to the eye? A.—My experiments were carried on out of doors and the vapors were carried away by the movement of air.

Q.—Then I suppose you want the Court to understand that your experiments were not of much help?

The Court:—I think it is quite clear from what the witness said that his experiments were not directed to ascertaining how long vapors would remain visible to the eye. That wasn't one of the points he had in mind at the time, obviously. It is not surprising, therefore, that he did not make any observation on that aspect of it.

By Mr. Hackett, K.C.:—

Q.—Did you carry on all your experiments outdoors? I

understand you carried on at least one of them indoors, did you not? A.—Yes, I made some experiments indoors, but one experiment which I carried out, I might say, on a slightly larger scale, resulted in a miniature explosion, and I wasn't able to get any results from it. The other experiments. . . .

Q.—Just let us find out something about that miniature explosion?

Mr. Mann:—I don't think my friend should interrupt the witness. He should let him finish. The witness had started to say something else.

The Court:—You should let him at least finish the sentence, Mr. Hackett.

Witness:—The other experiments, which were carried out in company with Mr. Hazen, were made with small amounts of material, really too small to get any volume of mist.

By Mr. Hackett, K.C.:—

Q.—You have said that you had an explosion in, I understood, the first experiment that you carried out? A.—Not the first, but in one.

Q.—Will you just tell the Court what happened? A.—Well, I was heating a mixture of turpentine, Filtrol and Filter Cel.

Q.—How were you heating it? A.—It was in a glass container, and that in turn was in a bath of hot water, and I was heating the water with a burner.

Q.—"Burner" means an open flame? A.—Yes.

Q.—An open gas flame? A.—Yes.

Q.—And what happened? A.—The reaction between these materials occurred too fast for me to turn off the gas flame.

Q.—And would you just fill in the connecting link? A.—All of a sudden the turpentine began to boil very vigorously. Vapors were emitted, which flooded the atmosphere nearby. Some of these vapors, apparently, reached the gas flame. There was a miniature explosion, and the vapors flashed back and the turpentine in the glass dish caught alight.

Q.—It was rather a disturbing experience? A.—Well, it is not supposed to be done.

By The Court:—

Q.—It wasn't the intended result of the experiment, anyway? A.—No.

DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

By Mr. Hackett, K.C.:—

Q.—Now, if I understand what you have said, you had a gas jet heating a mixture? A.—Yes.

Q.—The mixture contained the same proportions of turpentine, Filtrol and Filter Cel as were in the tank on the 2nd of August, 1942? A.—That is right.

Q.—And at a certain time the contents of the container or miniature tank began to boil? A.—Yes.

Q.—And that threw off turpentine vapors? A.—Yes.

Q.—And they went into the air and became ignited by the. . . .

The Court:—The gas flame.

Q.—(By Mr. Hackett): . . . . the gas flame? A.—Yes.

Q.—And the fire followed the vapors back into the container: is that correct? A.—Yes, the flame travelled back to the turpentine in the original container.

Q.—And, if you had not had the gas fire there, you would not have had the explosion? A.—Probably not.

Q.—But, coming back now to what I was talking to you about a few moments ago, doctor, when I asked you how long the turpentine vapor would remain in the air, we can agree, I believe, that there would be at all times in the circumstances obtaining in the east room on the morning of the 2nd of August, 1942, a process of condensation of the vapor? A.—There would probably be a certain proportion of it that would condense.

Q.—As it came into contact with the cooler surfaces there, such as our friends the cans that you referred to a little while ago? A.—Yes.

Q.—The floor? A.—Yes. There would be possibly a small amount of condensation.

Q.—The walls? A.—Yes.

Q.—The neighboring machinery? A.—Yes.

Q.—In fact, any cooler surface with which it came into contact? A.—Yes.

Q.—And that vapor, as you have told us, is a combination of turpentine and the air? A.—There was a mixture. What vapor are you referring to?

Q.—I am referring to the vapor that came from the tank under pressure and was later diluted by the air and thus became what I think you called a combustible mixture? A.—Yes; it behaved like that.

DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

Q.—Now, what is a combustible mixture? A.—It is a mixture that will ignite if a source sufficiently hot is introduced.

Q.—What do you mean by "a source sufficiently hot"? A.—Some source of ignition, like a match or an electric spark.

Q.—Now, I understood you to say yesterday, — and I think we can agree that you were following pretty much the testimony of Professor Stacey in the Barge Rival case, — that in an explosion there are three distinct phases? A.—I wasn't following Dr. Stacey's evidence at all.

Q.—Well, how many phases did you say there were in an explosion? A.—Three.

Q.—They are. . .? A.—The first stage, of slow, relatively uniform propagation of flame; the second, acceleration of the speed of the flame, with turbulence; and the third, very high velocity of flame movement, which is the stage called detonation.

Q.—Detonation? A.—Yes.

Q.—Now, those are the three stages of an explosion? A.—Of an explosion?

Q.—Yes? A.—Yes.

Q.—Now, what are the necessary elements of an explosion? A.—You must have an inflammable or explosive mixture. You must have a source of ignition.

Q.—So, you might have any quantity of inflammable mixture, but if you didn't have something to set it off you would not have an explosion? A.—That is quite right.

Q.—So, fire is the essential to an explosion? A.—Not necessarily.

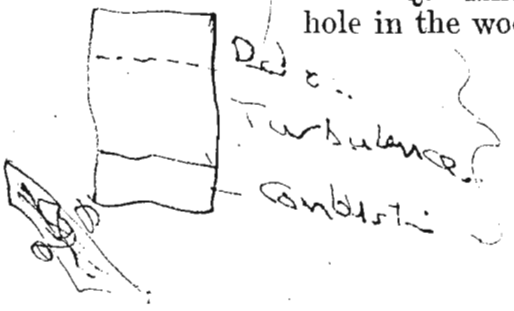
Q.—No? A.—No. You can ignite an inflammable mixture of turpentine and air by a hot piece of iron that is not even glowing.

Q.—That is just another form of fire? A.—No.

Q.—Well, if I take a hot piece of iron and stick it through the door of this courtroom, I make a hole, and I suggest to you that the hole is burned by fire? A.—I think you would find it very difficult to make a hole in it with a piece of iron at, say, 484 degrees Fahrenheit.

Q.—I am not going to discuss the temperature with you, Dr. Lipsett, but in other days I had some experience in those matters, and I know that one of the ways of putting a tire on to a wheel was to take a hot point and pierce the wooden area that was to be covered by the steel band, and the piece of steel was heated and a hole was burned through the wooden area that was to be surrounded by the tire? A.—That seems quite reasonable.

Q.—And that was a hot piece of iron, and we burned a hole in the wooden. . . . I just forget what to call it. A.—Rim?



DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

Q.—No, that isn't it, but we will use the word "rim"..... in the wooden rim, before the tire was adjusted? A.—Is that a question?

Q.—Yes, I intended it to be? A.—Well, I really don't know what you did.

Q.—I am asking you if a hot piece of steel, applied to wood, for instance, will not burn a hole through it? A.—I can only answer that question if you will tell me something about the temperature of the piece of steel.

Q.—I can only tell you that the steel was heated in an ordinary blacksmith's forge and was taken out and used to pierce the wood? A.—Yes; that would probably pierce wood.

Q.—And the piercing process was a burning process? A.—That is quite true.

Mr. Mann:—I wonder if we are interested in investigating the operations of a blacksmith's shop, the piercing of wood, and so on?

The Court:—I think I see what learned Counsel wants. Mr. Hackett wants to know the exact nature of an explosion, and I suppose he will suggest that if fire is necessary to an explosion the fire must have occurred first and therefore the Defendant is completely exonerated. That seems to be the possible line of argument: if there was no fire there was no explosion; the fire must have preceded the explosion and therefore the Defendant is not liable. I don't think it takes a very subtle mind to grasp that that is what Mr. Hackett is getting at.

Mr. Mann:—No, it doesn't, but I suggest, my lord, we are wasting a lot of time on the tactics employed by blacksmiths in building wheels. I know Mr. Hackett has had some experience, and I have had some experience, in a blacksmith's shop, too. I know what a red-hot poker is and I know it isn't. ....

Mr. Hackett:—I submit Mr. Mann will have ample opportunity to tell the Court many things he knows, but this is not the time, and in the meantime, if the Court will allow me, I will continue the cross-examination of the witness.

The Court:—I don't think the questioning up to now is objectionable.

Mr. Mann:—But it is getting a little involved and we are losing time, and I think it could be shortened.

Mr. Hackett:—I suggest if Mr. Mann has an objection he make it. If not, I suggest he keep still.

The Court:—If he has an objection, it is dismissed. If he hasn't, there is nothing to be said.

By Mr. Hackett, K.C.:—

Q.—Will you tell the Court, Dr. Lipsett, how you define or call the type of explosion which you have said in your opinion took place at the Sherwin-Williams plant on the 2nd of August, 1942? A.—I'm not quite sure I know what you want me to say.

By The Court:—I want to be sure I understood what the witness said a minute or two ago, and if you will allow me, Mr. Hackett, I will ask a question:—

Q.—I understood you to say, Dr. Lipsett, a little while ago, that the element of ignition in an explosion need not be what the layman calls "fire", — it might be an electric spark or even, you said, if I understood you correctly, a hot piece of iron? A.—Yes.

Q.—Not necessarily sufficiently hot to be glowing or red-hot: is that what you said? A.—Yes.

Q.—So that a piece of iron heated to a degree not sufficient to make it red-hot might be a sufficient source of ignition, so to speak? A.—Yes; it is well known that a mixture of turpentine vapors and air can be ignited by a source of ignition that is at 584 degrees Fahrenheit, and if a piece of iron were at that temperature it would be far below red-hot or below red heat.

By Mr. Hackett, K.C.:—

Q.—When you say it is well known, where do you find that fact? A.—In the code for inflammable liquids, for one place.

Q.—Do you have it with you? A.—Yes.

The Court:—Is that point disputed?

Mr. Hackett:—I don't know.

The Court:—It sounds like one which would be admitted.

Witness:—I don't think there is much dispute about that.

Mr. Hackett:—I don't know, and it is just because I don't know that I am going to find out.

Witness:—I made a slight error. I should have said 484, not 584, degrees Fahrenheit.

By Mr. Hackett, K.C.:—

Q.—Would you let me see the book, please? A.—Yes.

By The Court:—

Q.—According to your testimony, it is an accepted scientific fact that turpentine vapor will be ignited by any object which is hot to the degree of 484 degrees Fahrenheit, — or am I making it too general? A.—It may be ignited at that temperature provided it has not cooled off by radiation, if the hot body is sufficiently large or if it encloses the turpentine vapor.

By Mr. Hackett, K.C.:—

Q.—Are you aware of any such body in the east room on the morning of the 2nd of August? A.—As a matter of fact, the tank itself during this reaction which occurred could heat up beyond that temperature. It would be a body large enough to be a source of ignition of this type.

Q.—Now, coming back to the question I asked you, what kind of an explosion, according to you, took place at the Sherwin-Williams plant? How do you define that type of explosion? What do you call it? A.—Would your question be answered if I define an explosion?

Q.—You can do as you please? A.—I don't quite see what you mean when you ask me what kind of an explosion.

Q.—Is there more than one kind of an explosion? A.—I have never seen them classified.

Q.—Are all explosions of the type that you have defined here? A.—Well, they are all covered by the three stages which I mentioned before. I suppose you could classify explosions as small ones or large ones, or depending on what type of material was involved, but I don't quite see what type of classification you ask for.

Q.—Then it is your testimony that all explosions must consist of an inflammable mixture and of an ignition? A.—Yes, I think that is right.

Q.—No escape from that, — nothing else? A.—I don't know of any way you can have an explosion without that.

Q.—How about dynamite? A.—I beg your pardon, — the term "explosion" is used in a great many different ways, and I was mentally reserving it in this case to explosions concerned with inflammable vapors and air. Aside from that there are quite a number of different types of explosions.

Q.—I am asking you to do away with all reservations and tell me what kinds of explosion you know of?

The Court:—Do you think it is relevant?

By Mr. Hackett:—Yes.

Q.—Will you tell me that, doctor? A.—There is the type of explosion such as with dynamite, in which air is not a factor. The material itself after detonation expands violently and the rapid expansion is the cause of the explosion.

There are the so-called explosions of boilers in which steam is being generated, for example, and owing to some defect in its material the boiler ruptures. Strictly speaking, that is not an explosion. It should be called, more properly speaking, a pressure rupture.

Then there are what are commonly called explosions in such things as flywheels. When a flywheel is revolving rapidly it may burst into fragments. The average layman would say it exploded. That again is quite distinct from what we are dealing with here.

Q.—Then, Dr. Lipsett, do I understand you to say that whatever took place within the tank is not properly called an explosion? A.—Properly, it would not be called an explosion.

Q.—Why? A.—I would term it a pressure rupture.

Q.—But why would it not be an explosion? A.—In the scientific sense of the term, I would not consider it to be an explosion. A layman might say the tank exploded and be perfectly right.

Q.—You are telling me a number of things, but you are not answering my question. I want to know why you would not consider the eruption that took place inside the tank an explosion? A.—Because in the literature which I am accustomed to read, if a vessel bursts because of some slow generation of pres-

sure within it, we very rarely call that an explosion. It is usually referred to as a rupture.

Q.:—Then, the force that blew down the walls and lifted the roof of the company's plant was something distinct from what happened within the tank? A.—It was caused by vapors which came out of the tank.

Q.—That is an opinion to which you are entitled, but it is not an answer to my question. I have asked you if the force which pushed down the walls and lifted the roof was something distinct and different from the eruption that took place inside the tank and blew off the door? A.—Yes.

Q.—And there were missing from the event within the tank several elements that are necessary to an explosion, were there not? A.—Yes.

Q.—One of them was air? A.—Yes.

Q.—You did not have an explosive mixture within the tank? A.—I don't think you did.

Q.—And you did not have a fire within the tank? A.—No evidence of a fire within the tank.

Q.—There couldn't be a fire within the tank, could there, Dr. Lipsett? A.—I don't think so.

Q.—You don't think so?

The Court:—That is as far as you will get a scientist to go, I imagine.

By Mr. Hackett:—No, my lord, it isn't.

Q.—Doctor, I don't think you were in the tank, but I put it to you as a man of science: could there have been a fire within the tank, under the conditions that you are familiar with, on that morning? A.—It is impossible to rule out every possible possibility, but I am willing to grant you that there was probably hardly any chance at all that there would be a fire within the tank.

Q.—You cannot conceive of there having been a fire within the tank? A.—Hardly.

The Couht:—That is good enough for me Mr. Hackett.

Mr. Mann:—It is good enough for me too.

By Mr. Hackett, K.C.:—

Q.—How long in your opinion was the content of the tank

in going from a temperature of 165 degrees Fahrenheit to a greater temperature, up to the temperature at which it threw off the vapors? Just give me your opinion as you go along? A.—The evidence in the case seems to indicate it took about half an hour.

Q.—Well, I'm afraid you haven't read the evidence very carefully, because, if my memory fail me not, Mr. Rymann said that he looked, and Mr. Asselin also, that he looked at the thermometer just a few minutes before and that the temperature of the contents of the tank was 165 degrees Fahrenheit? A.—Yes, you are right. I was thinking of the time the steam went off.

Q.—The time that Asselin turned off the steam? A.—Yes.

Q.—Have you any answer to my question? A.—I said you are quite correct.

Q.—But I was only correct insofar as I corrected you, but my question was, how long was the content of the tank in going from 165 degrees up to the point where it was throwing off the vapors? A.—Well, we can only go by the evidence that has been submitted. The last time when the thermometer was looked at was by Mr. Rymann, apparently, and it would be from that time until the hissing sound was heard?

Q.—How long did that take? A.—That might be five or ten minutes, possibly.

By The Court:—

Q.—Would that be consistent with your scientific conception? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—And your experiments? A.—There is nothing inconsistent between my experiments and the results that happened.

Q.—Yes, when I cross-examined Dr. Lortie I asked him if the content of the tank was agitated from the time that the Filtrol and the Filter Cel and the turpentine were put together in the tank until the heat was applied.

The Court:—That was in Dr. Lipsett's experiment.

By Mr. Hackett:—Thank you, my lord.

Q.—That was in your experiment. Dr. Lortie wasn't quite sure. Do you remember? A.—The mixture was continuously

stirred from a temperature of 165 until it reached practically the boiling point.

Q.—From the time it reached 165 until it reached the boiling point? A.—Yes.

Q.—Was it agitated during the heating period from the temperature of the room up to the 165? Possibly you don't recall, and I don't know that it is important. A.—It was at times.

Q.—Now, I asked you some moments ago if you knew of any fire in the room, the east room, after turpentine fumes had been emitted from the tank, and you suggested that the tank itself might be hot? A.—Yes.

Q.—Do you remember that the tank itself was completely enveloped in asbestos? A.—Not completely. The door and a number of fittings were exposed.

Q.—And it is your serious suggestion that ignition might have taken place from the door? A.—I think it is quite possible.

Q.—You recall that in the course of your testimony yesterday you said that the flame was seen before the door left its moorings? A.—Was seen before or just about the same time.

Q.—So, then, there was flame and fire in the room before the tearing-asunder of the door? A.—The evidence is contradictory on that point.

Q.—But, you see, you are not troubled with the burden of appraising the evidence. There is evidence in the record, — whether the Court accepts it or not is a matter which you and I cannot control, — but there is definite evidence in the record that there was fire in the east room before the door came off the tank?

Mr. Mann:—I object to the form of the question. There is not one suggestion of evidence other than that there was a flame seen in one of the doors.

The Court:—Mr. Hackett, if you replace the word "fire" by the word "flame". . . .

Mr. Hackett:—I shall not, my lord, with great deference.

Mr. Mann:—I object to Counsel putting in statements that do not appear in the evidence. The evidence is definitely that everything was normal in the east room. The first sign of fire or flame was in the gray matter or bluish vapor on the doorway. My friend should not put in something that is not in the evidence. "I saw a flash like fire" or "I saw a flash of flame", — that's

what the evidence was, but not that there was fire in the east room.

Mr. Hackett:—I am not dealing with testimony, after the event, of employees. I am going to read to your lordship the statement that was made to the manager of the plaintiff company by his own superintendent.

The Court:—That is an exhibit in the case?

Mr. Hackett:—Yes, Exhibit D-1. Here are the words of Frazier, the superintendent:—"While discussing it I heard a "sizzling noise in the bleaching room. Was going to walk over to "investigate and just as I walked towards the place I glanced at "the north side and saw fumes or vapors, then saw fire and called "to the men to get out."

Now, that is signed by Mr. Frazier, the superintendent, in the presence of Mr. Moffat, the manager of Plaintiff.

Q.—And I ask you, if you read. . . .

Mr. Mann:—We haven't finished arguing the objection, and my friend shouldn't put any question to the witness until the objection has been decided.

The Court:—If I read that correctly, Mr. Hackett, it does not imply that the fire was in the east room.

Mr. Mann:—The man was in the west room when he saw this thing. He didn't say it was in the east room. How could he see into the east room when the door was full of vapor. He saw fire at one of the doors, but he didn't see it in the east room, and that is why I object to the question. He couldn't see it in the east room. There was no fire in the east room.

The Court:—It is common ground that the bleaching room is the east room?

Mr. Mann:—Yes. That is where the bleaching was going on.

Mr. Hackett:—And the filters were in the west room.

The Court:—"While discussing it I heard a sizzling noise "in the bleaching room", the east room. He was then in the west room?

Mr. Hackett:—Yes.

The Court:—"Was going to walk over to investigate and "just as I walked towards the place I glanced at the north side "and saw fumes or vapors, then saw fire and called to the men "to get out." There is nothing in that that indicates to me that he saw fire in the east room.

Mr. Mann:—And that is my objection.

(The question, Page 577, is read).

The Court:—I don't find definite evidence in that part of the record, definite evidence which shows me there was fire in the east room. If you have any other reference to make, Mr. Hackett, I will be glad to consider it. As I interpret that statement it does not necessarily imply fire in the east room.

Mr. Hackett:—My lord, the evidence of the witnesses on that point is that it was in the east room. It was in the east room that the sizzling took place.

The Court:—That the sizzling took place, yes.

Mr. Hackett:—It was as they went toward the door to the east room that they saw the mist, the vapor, and it was as they saw that that the flame occurred in that room.

The Court:—In the vapor, which, as I understood it, was in the doorway between the two rooms.

Mr. Mann:—And in the north door at that, — I invite your lordship to examine P-7, — at an angle in the north door.

The Court:—It is certainly too strong to say there is definite evidence there was fire in the east room. It may be possible to deduce, from the testimony, there was fire in the east room, but there is no definite statement to that effect. To that extent, Mr. Hackett, your question is not permissible.

DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

Mr. Hackett:—I will say this to you: that this whole matter centres around the east room, and I cannot say with too much insistency that to suggest that the fire was anywhere else than in the east room, when that was the only place that was being talked of, the only place under discussion, is something which is not borne out by the proof.

The Court:—You are going a little too far, aren't yon, in interpretation?

Mr. Hackett:—No.

The Court:—When I come to deliberate on this case, I may possibly follow the deduction you have made, but my present impression is that the flame was seen in the cloud of vapor which itself was in the doorway, that there was a flame seen in the doorway between the east and west rooms. That is the impression I got. That is my present interpretation of the evidence, not my final interpretation necessarily, because I haven't sufficiently studied the evidence so far. Perhaps your question will be acceptable if you modify it to take into account that Mr. Frazier, the superintendent of plaintiff company, said he saw fire in the doorway ,or however you wish to put it.

Mr. Mann:—That satisfies my objection. It was in the north doorway at that.

The Court:—Perhaps the easiest way would be to reframe the question entirely.

By Mr. Hackett, K.C.:—

Q.—I say to you that there is definite evidence in the record that there was fire seen in the doorway separating the east room from the west room before the door to tank No. 1 was blown off, and I ask you if that modifies your opinion? A.—My opinion about what?

Q.—In general? You have suggested, and I suppose it is the basis of your opinion, that the heat of the tank itself was the source of the fire that set off the combustion explosion that blew down the walls and lifted the roof? A.—I don't believe I said that, and I don't mean to say that. I put it as a possibility, but there are several other possibilities. I don't know which one is the more probable.

DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

Q.—What are the other possibilities? A.—One of the common causes for igniting inflammable vapors and air is sparks from electric motors or sparks from switches or from machinery. It is also possible for vapors of this type, which are created in moderately large volume, to travel along with currents of air to places where there are naked lights. There was an elevator shaft there. I am not speaking hypothetically. Many cases are known where vapors of that type have travelled considerable distances before they became ignited. Generally speaking, I think it is common ground that if you have a large volume of inflammable vapor mixed with air set loose in a room it will usually find a source of ignition some place. It very rarely gets away without being ignited. Usually the source of ignition is immaterial in the case.

By The Court:—

Q.—Immaterial? A.—Immaterial.

By Mr. Hackett, K.C.:—

Q.—How can you say, doctor, that vapors escaping almost always take fire? A.—I said, escaping in volume.

Q.—In volume? A.—Yes.

Q.—How can you say that? A.—If you have a tank, such as in this case, which is generating vapors quite rapidly and filling alleyways that are 25 or 50 feet long and many feet wide and many feet high full of an inflammable mixture of turpentine vapors and air, it would be a miracle if they did not explode.

Q.—That is a pretty broad statement of fact, — but nevertheless there must be ignition before you have an explosion? A.—I grant you that.

The Court:—May I ask if there is any dispute as to the fact that an explosion, at some stage, occurred? Does the Defendant contend that no explosion took place at all?

Mr. Hackett:—No, my lord; there must have been an explosion..

The Court:—There must have been an explosion?

Mr. Hackett:—Yes.

The Court:—And there must have been ignition of the gaseous cloud, somewhere?

Mr. Hackett:—Yes.

The Court:—That is common ground?

Mr. Hackett:—I never like to speak for Mr. Mann.

The Court:—At least, it is not contested?

Mr. Hackett:—I am free to admit that those walls and the roof were lifted by an agency that is commonly called. . . .

The Court:—Explosion?

Mr. Hackett:—Combustion explosion.

The Court:—Combustion explosion?

Mr. Hackett:—Yes.

By Mr. Hackett, K.C.:—

Q.—Would the fact that Frazier, the superintendent, saw the fire at the north door, and that Rymann, the foreman, saw the flash at the south door, in any way modify your opinion?

The Court:—Are you still referring to the witness's opinion that the tank itself was a possible source of ignition?

Mr. Hackett:—Yes.

The Court:—There is still a loose thread I see hanging. Perhaps I might ask a question to tie it up.

Mr. Hackett:—Would your lordship let the witness answer the question I have asked, first?

The Court:—Of course.

Witness:—I consider it a possibility that the tank could have ignited the mixture of turpentine vapors and air. I would not even want to classify it as a probability. And I don't think that possibility depends on where the flash of fire was seen.

DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

By Mr. Hackett, K.C.:—

Q.—Then can we, for the purposes of this discussion, in your opinion, eliminate the possibility of ignition having come from the heat of the tank? A.—I don't think you can eliminate it.

Q.—Why?

By The Court:—I think he would go so far as to say that it is not a probable cause but he would not eliminate the possibility.

Q.—Would that be a fair statement, doctor? Is it one of the probable causes of the ignition or is it not? A.—I really don't know whether to raise it in class and call it probable or not. It is a fair possibility, and that is about all I would like to say. But there are other possible causes, such as electric sparks.

Mr. Hackett:—His lordship is going to ask you a question in a moment and he has let me go on first, doctor.

The Court:—I think that clears up the thread I thought I saw hanging.

By Mr. Hackett, K.C.:—

Q.—Now, what are the other possibilities, — and I want you to name them all, — that you have in mind, that you considered?

Mr. Mann:—I thought he had done that.

Mr. Hackett:—Don't think bad thoughts, Mr. Mann.

Witness:—Well, the volume of turpentine vapors and air which filled part of the east room may have followed downstairs or gone down the elevator shaft or through holes in the floor to the ceiling or to the room beneath and there become ignited by naked lights or by possible short circuits.

Q.—Or possible open jets, as far as you know? A.—Yes.

By The Court:—

Q.—Or a person smoking a cigarette? A.—Or a person

striking a match to light a cigarette. All these things at times cause explosions.

That is one. I have other possibilities.

By Mr. Hackett, K.C.:—

Q.—Before you go on to those. . . .

Mr. Mann:—Let the witness finish.

By The Court:—

Q.—Had you finished that aspect of your answer? A.—I have other possibilities to mention.

Mr. Hackett:—I was going to ask the doctor if he would permit me to ask a question on the first possibility before he went on to the second.

By The Court:—

Q.—You have mentioned a possibility on the floor below. Would you allow Counsel to pursue that possibility before you take up another? A.—Yes, my lord.

By Mr. Hackett, K.C.:—

Q.—Now, doctor, you told us yesterday that the fire might follow back. In the possibility that you outlined a moment ago, of a flame on a lower floor or of somebody lighting a cigarette there, is it conceivable that ignition from that source could follow back to the third floor? A.—That is quite conceivable. If it once ignited in the way I suggest, if it did, it could follow back and create an explosion on the third floor.

Q.—Was that the point that you made yesterday, when you said that if the vapor, or whatever it was, was burning, it could follow back to the tank? A.—I don't think I made any reference to follow back, yesterday.

Q.—Well, then, my memory is defective, but I think we will find, when your testimony is written out, that you made some reference to the fact that the ignition would not cease, that it would continue and go back and be ready to take up the volume of vapor that came out when the door was blown off? A.—The flame moved through the mixture of gases. I did not say back,

because there is no "back" in cases like that, because it just keeps moving wherever the mixture of inflammable gases and air happens to be.

Q.—Possibly my language was a little awkward, but what I understood you to say was that the flame, the fire, would persist in the atmosphere as long as there was this combustible material there and that if the volume of it were greatly augmented by a rush from the tank, it would explain the explosion? A.—Yes; once the flame starts in a mixture of air and inflammable gases it will continue to burn, by moving through the explosive mixture, until the whole explosive mixture is consumed, and, if conditions are suitable, that movement of the flame may result in detonation or it may not.

Q.—Now, I think I asked you the question that I wanted to ask on the first possibility, and I hope that I haven't thrown you off unduly. If you will enumerate the others, I will listen. A.—The great danger of letting loose inflammable vapors in a building is the fact that they travel around. If you spill a few gallons of kerosene, it more or less remains in the same place and it is very difficult to ignite, but if you let loose a lot of vapor, as we have in this case, it fills the atmosphere ultimately and it finds its way into all the nooks and crevices, including switches and insides of motors, and, if there happens to be an electric spark of sufficient magnitude there, you will get an ignition. That happens quite frequently. There was a machine on that floor, I understand, being used for cleaning seed. If a nail happened to get in there and friction sparks were created, that also might ignite the vapor. There are a great many possibilities. Sparks from motors are quite a probable cause in a case like this.

Q.—In any event, turpentine as a liquid is not inflammable? A.—It is, in the ordinary sense of the word.

Q.—I don't want to be too "ordinary". I understand that these fuels like gasoline and naphtha and the essential oils like turpentine do not burn in the liquid form, that it is only the emanations from them, it is only the vapors mixed with air, that are combustible? A.—That is the scientific explanation of why turpentine burns. You will perhaps recall that in years gone by it used to be used as a fuel in lamps, like kerosene.

Q.—And as a matter of fact you could subject turpentine to an atmosphere of a thousand or 1,500 degrees Fahrenheit and nothing would happen, if the fumes did not come into contact with flame or some other source of ignition? A.—Would air be present in that case?

Q.—No? A.—In the absence of air no ignition would occur.

Q.—So, to get ignition and get the essentials of the kind of explosion that lifted the roof and blew out the walls of this building, you have to have, over and above the contents of the tank, air and fire? A.—You have to have air and a source of ignition.

Q.—Air and a source of ignition? A.—Yes.

The Court:—I think "source of ignition" is more exact than "fire". I wouldn't call a piece of iron, heated to a degree less than glowing, "fire", I may not be correct scientifically, but I would not call it fre.

By Mr. Hackett, K.C.:—

Q.—Just on that point, take a coal fire, for instance, built of good anthracite, after the gases have burned off, the coals constitute a fire, although there is no flame: is that not a fact? A.—Yes.

Q.—So flame is only an incident or an accident of fire? A.—But in a case like that the coals would probably be red-hot though there may not be any flame.

Q.—They might be red-hot but not necessarily? A.—There are a great many definitions of "fire". It is a word of many meanings. Now you are using it to represent a fire in a furnace. That is a specific type of fire.

Q.—And you have another kind, — you have the resistance coil of the electrical equipment which is used for cooking and used in your laboratory. It provides heat? A.—Technically speaking, I don't think the term "fire" is used unless chemical reaction is going on, and an electrical coil when it is heated by electricity does not change its composition, — it is not consumed.

Q.—I do not wish to repeat unnecessarily, but you said yesterday at what is the third page of the extract I have of your deposition and of which extract Mr. Mann has a copy:—"When "you have a mixture of explosive gases and air, the first stage "of the explosion always occurs, — namely, the slow movement "of the flame." (page 775).

Now, that, of course, is always predicated, again, on the presence of the flame? A.—It always occurs once ignition has been effected.

Q.—But the explosive gas in the air can't possibly explode until it is ignited? A.—That is correct.

DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

Q.—Can you say what was the form of the contents of the tank at the moment before the door went away? A.—I believe that they would be a liquid, — that is, a liquid containing suspended in it 200 pounds or almost 200 pounds of Filtrol.

Q.—There were 200 pounds of Filtrol and 50 pounds of Filter Cel? A.—But part of it had been filtered away, though most of it was left. Part of the contents had been filtered away. There wouldn't be the full 200 pounds.

Q.—How much of the contents of the tank had been filtered? A.—About 160 gallons.

Q.—160 gallons had been taken out? A.—Yes.

Q.—And how much had escaped through ebullition? A.—At the time that the door blew off?

Q.—Yes? A.—It is impossible to give that figure exactly, but probably only a few per cent of the total.

Q.—What do you mean by "a few"? A.—Less than five.

Q.—And have you considered the rising boiling point of the mixture in the tank? A.—Yes; I have taken into consideration all the facts.

Q.—You have told us that the boiling point of turpentine is about 310 or 315? A.—Yes.

Q.—What is the boiling point of polymerized turpentine? A.—I don't know. I have never determined it.

Q.—I am speaking of the boiling point of the polymerized turpentine, the material that is the residue after this reaction. It is a great deal higher, isn't it? A.—I believe it is.

Q.—600 or 700 or something like that? A.—I don't think it is as high as that. I don't know exactly.

Q.—I asked another learned man, and that is what he told me, whether you agree with him or not? A.—I don't know.

Q.—Of course, that would have an influence on the emanations? A.—I don't think so.

Q.—Well, on this basis: there is no pressure until the boiling point is reached. That is true, isn't it? A.—Yes probably not, considering that the vent was open, the air relief pipe was open.

Q.—And if the boiling point of turpentine is 310 and the boiling point of the substance which results from the admixture of the Filtrol and the Filter Cel and turpentine is several hundred degrees higher, it would seem to me necessarily to have an effect or bearing upon the pressure? A.—I don't think that very much, or more than half of the turpentine, gets polymerized.

Q.—What I want to know is whether you took into account the fact that the boiling point of turpentine which has

been subjected to the reactions of Filtrol is much higher than the boiling point of turpentine? A.—I don't think that statement is correct. When this reaction occurs, approximately 50 per cent of the turpentine boils off as vapor, and, as far as I have been able to find out, those vapors have a boiling point practically the same as turpentine, whether they are polymerized or not.

By The Court:—

Q.—Those "vapors"? A.—Yes.

By Mr. Hackett, K.C.:—

Q.—It just shows my ignorance. I wasn't aware that vapors had a boiling point. I thought that vapors were the product of boiling? A.—Well, you can talk about the boiling of a material no matter what form you happen to be considering it in at that moment. Naturally, the boiling point I am talking about would be of the liquid formed by the condensation of these vapors.

Q.—The condensation, of course, only took place outside the tank? A.—Yes. These vapors that come off when this reaction occurs come off at a temperature between 315 and 390 degrees Fahrenheit and that indicates that the boiling point of the liquid from which they are derived is between 315 and 390 degrees Fahrenheit. After they have boiled off, there is a residue left which is approximately 50 per cent by weight of the turpentine which was used at the beginning, and this residue, according to the chemical literature, is supposed to have a high boiling point. I have never determined it.

By The Court:—

Q.—That is, when it is what you call.... A.—Polymerized. I judge from the results of the experiments that the vapors that come off may be an isomer of turpentine.

By Mr. Hackett, K.C.:—

Q.—What does that mean? A.—It means a substance having the same chemical formula exactly but in which the bricks of atoms are arranged slightly differently.

DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

By The Court:—

Q.—What does "polymerize" mean, exactly? A.—It is used to indicate a molecule which doubles up on itself or triples up.

Q.—I see, — "poly"? A.—Yes, — several molecules of the same type stick together and form a large unit and its molecular weight is a multiple of the original.

By Mr. Hackett, K.C.:—

Q.—And it has a greater resistance to heat? A.—It usually has a higher boiling point.

Q.—I suggest to you, doctor, that the moment the chemcal reaction took place between the turpentine and the Filtrol the liquid in the tank was transformed and it required a much greater heat to keep up the pressure than before the transformation? A.—I don't think that statement is at all correct. In the experiment I carried out, 50 per cent of the turpentine vaporized and passed off as a vapor and, while it was doing so, the temperature of the mixture rose from 315 to approxmately 390 degrees Fahrenheit, in some cases a little higher and in some cases a little lower, and that is approximately the normal distillation range of turpentine itself.

Q.—And then immediately subsided? A.—The boiling subsided after 50 per cent of the turpentine had boiled off.

Q.—That was an instantaneous effect, was it not? A.—That took between one and two minutes.

By The Court:—

Q.—I just want to make clear the meaning of the word 'polymerize' in its application to this case. The turpentine becomes polymerized not when the Filtrol and Filter Cel have been added to it, but when part of it has been changed into vapor by heat; is that correct? A.—No; it is the other way around, I have not made a detailed scientific study of this reaction, but I did gather this much, en pasant: that when turpentine is heated and comes in contact with the Filtrol it begins to polymerize, — that is, the different molecules of it begin to agglomerate.

Q.—So it requires both the heating and the mixture of Filtrol? A.—To cause a large reaction.

Q.—And it does not necessarily reach boiling point before that process begins? A.—No. That is the reason it begins to boil. That reaction creates heat and raises the temperature of the whole mixture.

DR. S. G. LIPSETT (for Plaint. at Enq.) Cross-examination.

By Mr. Hackett, K.C.:—

Q.—Would you say whether the heat that was applied, — and in one part of the evidence it says 150 and in another 165 degrees, — whether the heat applied from a flame did anything more than hasten the chemical reaction, whether if one had had patience and time it would not have resulted ultimately by the mere association of the elements? A.—From the experiments carried out by me, and with the materials available, in this particular case, it would appear that, if the mixture was not heated to about 165 degrees Fahrenheit, nothing would have happened.

Q.—I recall that Mr. Hazen told us that there was an immediate, — at least, I think it is my recollection. . . . A.—I can tell you what he said.

Q.—Did he not say there was a rise in temperature immediately the ingredients were brought together? A.—You see, when we first started our experiments we used a far greater proportion of Filtrol to turpentine than was used in the plant. We used ten times as much.

Q.—More than that? A.—Maybe more than that. And when we used that excessively large amount of Filtrol. . . .

Q.—2 to 5 were the proportions first? A.—I can give them to you exactly.

Q.—And then 2 to 10? A.—The first experiment was carried out in the ratio of 200 pounds of Filtrol to 50 gallons of turpentine instead of to 850.

Q.—2 to 5? A.—200 pounds to 50 gallons, — that is right, 2 to 5.

Q.—And the next was 2 to 10. But my recollection is that Mr. Hazen. . . .

Mr. Mann:——He is in the middle of an answer. Let him finish.

By Mr. Hackett:—Go on, doctor.

Witness:—This is what happened:—It was mixed at room temperature, 75 degrees Fahrenheit. The mixture rose to 122 degrees Fahrenheit.

Q.—Right away? A.—Yes.

Q.—Without any heat? A.—Yes; but then it stopped, and if it hadn't been heated any further it probably would have cooled off.

DR. L. LORTIE (for Plaint. at Enq., Recalled) Cross-ex. con't.

Q.—That is just the point. You got a little restless when it got there and you gave it a "boost" with a flame, and my suggestion is that if you had waited you would have got the same reaction without the aid of any torch or anything? A.—Well, I wouldn't like to say we couldn't, because we never waited long enough.

Q.—But these fumes that were thrown off by the tank could not explode until they got into the atmosphere and that mixture could not explode until they were ignited? A.—That is right.

Q.—And that fire, flame, ignition, that agency that caused the explosion. was outside the tank? A.—The ignition was not inside the tank.

Mr. J. A. Mann, K.C.:—No re-examination.

And further for the present deponent saith not.

(It now being 12.30 p.m., Feb. 5, 1946, Court adjourns to 2.15 p.m.)

H. Livingstone,
Official Court Stenographer.

2.15 p.m., February 5th, 1946

DEPOSITION OF DR. LEON LORTIE (Continued)

On this 5th day of February, A.D. 1946, personally came and reappeared, Leon Lortie, a witness already sworn and examined for Plaintiff in this case and who being now recalled and further examined under his oath already taken doth depose and say as follows:—

Mr. Mann:—There was some discussion with respect to the authorities upon which the opinions of the experts were based, and with the greatest respect I think that they should have been referred to, my lord, but there may be later on, and there may not, some necessity of my putting these in for examination or cross-examination or something of the kind, and I would like to ask your lordship for permission to do so if it becomes apparently necessary, in rebuttal. I don't want to burden the Court with them now, but it may become necessary, and I am

merely lodging a caveat, so to speak, and asking permission to deal with them later if it becomes necessary.

Mr. Hackett:—That is totally unsatisfactory to me, and I submit, with great deference, that it is not the way that is provided by the Code for the trial of a case. If Mr. Mann wants to rely upon authorities, as he calls them, or if his witnesses want to rely upon authorities, the time to do that is when witnesses are being heard in chief, and I submit that the case should be conducted in the ordinary way. I don't, insofar as I may have anything to say about it, acquiesce in any caveat or in any situation hereafter in which the Court may be asked to consult volumes with which I will not have the opportunity of cross-examining witnesses.

The Court:—I certainly haven't the intention of consulting any scientific works in the deliberation of this case except insofar as they may be specifically referred to and quoted by witness in the box. My conception of the law with regard to reference to textbooks or other printed matter by an expert witness is that he may cite from a work which he states to be a recognized authority in his branch of the subject. If he proposes or wishes to support his opinion by such a citation, the book must be made available and the reference specifically pointed out and if necessary copied into the deposition or otherwise produced. I do not think it necessary, nor do I think it legal, to ask a witness upon what he bases his general scientific knowledge of a subject. It would be quite improper to ask Dr. Lipsett or Dr. Lortie or any other learned scientist how he has made up his mass of scientific learning, from what books he has made it up. If on some particular aspect of the science he says, "My opinion is corroborated by "such and such a book of such and such a year of publication, "which is recognized as an authority", he may refer specifically to it and quote from it, provided the book is available to the adversary's Counsel so that he may cross-examine intelligently upon it. Otherwise reference to scientific authorities, in my opinion, is illegal.

Mr. Mann:—I was asking your lordship for permission to do it later, if necessary.

The Court:—If you apply for that permission in rebuttal, on some aspect of the matter which has already been touched upon in chief, I shall be obliged to refuse your application. If there is some new point brought up by the Defence, that is another thing.

DR. L. LORTIE (for Plaint. at Enq., Recalled) Cross-ex. con't.

Mr. Mann:—I doubt very much if it is going to be necessary unless there is something new. In lodging my caveat my purpose was to put the books before the experts and ask them what was their opinion. I assure your lordship I have no intention of doing it in any way that is illegal.

10

The Court:—If you wish to produce authorities you will have to do it in your case in chief, unless it is on some point brought upon in cross-examination or defence, some new point.

Mr. Mann:—We will leave it at that.

The Court:—And you don't need any caveat for that.

Mr. Mann:—It was to recall the witnesses or one of them
20 I asked for the caveat. I asked for permission to recall Dr. Lortie or Dr. Lipsett for that purpose if necessary. A great deal will depend on the cross-examination of Dr. Lortie.

The Court:—I will consider any application to recall a witness before your case in chief is completed but after that I would look very reluctantly at the possibility of reopening the enquête in chief.

Mr. Hackett:—I take it the matter is closed, but I suggest
30 to Mr. Mann, if he wants to produce any book upon which anybody relies, the time to do it is when he is making his case.

The Court:—Or, within the restriction I mentioned, in rebuttal.

Cross-examination continued by Mr. John T. Hackett, K.C.:

Q.—Dr. Lortie, you were present this morning when I
40 cross-examined Dr. Lipsett? A.—I was.

Q.—And, inasmuch as you told us yesterday that you corroborated his evidence, I do not deem it my duty to go over with you the ground that I traversed this morning with Dr. Lipsett. Do I understand that you corroborate his cross-examination as well? A.—I do, as well as his evidence in chief.

Q.—You have been aware that there was a vent connecting the tank with the outer atmosphere of the east room? A.—Yes.

Q.—And it has been stated that there was no pressure created in the tank until the contents came to a boiling point? A.—Yes.

DR. L. LORTIE (for Plaint. at Enq., Recalled) Cross-ex. con't.

Q.—Nevertheless, there are emanations or fumes thrown off as the liquid comes to a temperature higher than that of the room ,are there not? A.—Yes, there are.

Q.—And they would find their way out through the vent? A.—There may be a process of what we call diffusion.

Q.—Diffusion? A.—Yes. May I add something?

Q.—Yes? A.—That is, when you heat a tank or when a tank is brought to a temperature higher than the room temperature, the vapor will be expanded, and this will create a process of diffusion through the vent.

Q.—There is an English word, "simmer", which I think means a temperature less than boiling and something above the temperature of the room? A.—Yes.

Q.—And in that process vapors are thrown off? A.—Yes.

Q.—Now, I want to know if in your opinion there would be a combustible mixture at the mouth of the vent before the boiling point was reached? I am speaking always, of course, of tank No. 1 in the east room. A.—Possibly.

Q.—I had assumed it would be possible, — but what would be the likelihood of it? A.—It is possible that there is, and that depends on the concentration of the vapor in the air. If it is within the limits of inflammability or explosiveness, then there will be an explosive mixture.

Q.—Just what do you mean when you say within the limits? A.—It is standard knowledge again that in order to explode a mixture, usually you have a lower limit and a higher limit, and within those limits it is called an explosive mixture. It may not necessarily explode, but it may explode.

Q.—Well, that is true of all combustible mixtures, is it not? You have the elements which make them combustible.

There is, in this particular instance, the vapor of turpentine, which by itself is not combustible. It only becomes combustible, as I understand it, when it becomes mixed with or diluted by air? A.—That is not absolutely correct, because turpentine and any combustible, — such as the ending "ible" means, — may burn, providing there is some oxygen. Then you have an explosive mixture.

Q.—But the turpentine vapor, pure and unadulterated, is not inflammable? A.—It will not ~~burn without~~ air.

Q.—It will not burn without air? A.—That is right.

Q.—And the oxygen in the air has got to go to it before it becomes a combustible mixture? A.—Before it forms a mixture with the air.

14.

DR. L. LORTIE (for Plaint. at Enq.; Recalled) Cross-ex. con't.

Q.—I don't want to get into niceties of language, — but it is the connecting together of these elements that forms a mixture that is combustible? A.—That is right.

Q.—And that mixture, combustible though it be, will not explode or burn unless there is the third element present? A.—I would not be prepared to go as far as that, because it will be sufficient to have a body hot enough to bring the mixture to what we call the ignition temperature, — it is possible to have that, — and you remember there was reference this morning to a fire or to something that was glowing, for instance, and that was not fire. As far as the filament in an electric bulb is concerned, it is not burning but it is incandescent. The body doesn't even need to be incandescent. It only needs to be brought to a temperature which is equal to the ignition temperature of the particular mixture that you have in mind or that you have present.

Q.—But you have got to have a burning of the combustible mixture as a prelude to explosion? A.—Oh, yes.

Q.—That is the essential of the explosion? A.—I would put it this way:—Take, for example, such an event as this one, in which there was definitely an explosion, — I think we are on common ground when we say that there was an explosion, — and explosion, as was said this morning and many times before by Dr. Lipsett, is composed of three stages: first, slow, uniform movement of the flame, then followed by a turbulent motion of the flame, and then followed by detonation; so that I gather that once you have a detonation, then you have, before this detonation in an explosive mixture, not in the case of an explosive like dynamite but in the explosion of an explosive mixture such as the one that was present in this case, since you had detonation you had, before, flame.

Q.—I am not for the moment questioning you as to the origin of the ignition, — but before you can have the explosion there must be flame? A.—There must be flame, yes.

Q.—Well, is there any escape from it? A.—No, there must be flame.

Q.—And flame is fire? A.—Flame is fire. This is a chemical reaction between a combustible body and another that sets it on fire, whether oxygen or chlorine or any other agent that brings it to incandescence.

Q.—Yesterday, before you succeeded Dr. Lipsett on the stand, something was said about the flame, as I understood it, following back toward the tank which was the source from which the vapor was escaping. Now, taking that as a fact, I want to know what is your picture of the interior of the east room. Frazier saw flame, saw fire, in the north doorway of the fire wall.

DR. L. LORTIE (for Plaint. at Enq., Recalled) Cross-ex. con't.

Rymann saw flame in the south doorway of the fire wall. Now, if these men were not misled by their senses, is it your opinion that there was a flame throughout the east room from the north door to the south door? A.—I don't know.

Q.—I know you don't know, — I wasn't there and neither were you, — but we are trying to reconstruct a situation, and, just as you don't know that, there were other things also which you don't know but about which you testified. We are trying to reconstruct the situation in that east room, and I ask you if you consider there was flame spreading from the north door to the south door? A.—From the evidence given by Frazier and Rymann, I think, both saw flames in two different places. I understand that is what you are asking me. There are possible explanations for this. First, this motion of the flame is quite rapid, as given in Dr. Lipsett's evidence yesterday afternoon, — it will travel a few feet in a second, — and then a few seconds in an event like that don't mean very much when they see a thing. They may not have looked at the same time. The flame may have travelled from one place to another. It may have travelled from the north door to the south door or, vice versa, from the south door to the north. I don't know. This flame, in my opinion, is the first stage of the explosion. Now, it might have travelled from this place toward anywhere else, become turbulent and then resulted in detonation.

Q.—You see, I'm not quite on that point.

We have the door of the tank sprung at one place 3/10 of an inch and ultimately 2/3 of an inch, and we have the vapors emanating therefrom at high velocity, 30,000 feet a minute. Now, that being so, and these vapors mixing with the air and creating a combustible mixture. . . .

That is what they create, isn't it? A.—Yes.

Q.—. . . . and Frazier seeing the fire at the north door, and Rymann seeing the fire at the south door, in the fire wall, I am asking you, on that state of facts, is it your opinion that there was a continuous flame from the north to the south door?

Mr. Mann:—I don't want to delay the proceedings, but I want to know where Rymann said he saw flame at the south door.

The Court:—He saw a flash.

DR. L. LORTIE (for Plaint. at Enq., Recalled) Cross-ex. con't.

Mr. Mann:—But he doesn't say where. I know of no place in the evidence where he said where he saw it. Perhaps he did, but I would like to know where it is. I may be stupid, but I don't remember him saying that. He said, "I took a step and I saw a flash of flame." No doubt Frazier saw it at the north door, but there's nothing to show where Rymann saw it, as far as I remember. Perhaps that might be established now.

Mr. Hackett:—I am reading from Rymann's statement, D-2:—"Saw steam coming around the north door and figured "would walk to the south door to see what was the matter."

Mr. Mann:—There's a period there.

Mr. Hackett:—The doorway was full of vapors."

Mr. Mann:—Period.

Mr. Hackett:—"Saw a big flash like fire."

Mr. Mann:—Period. There are three periods there.

Mr. Hackett:—Now, if that is not the south door, I don't know what it is.

The Court:—Let me look at D-2.

Mr. Hackett:—Yes, my lord.

Mr. Mann:—He doesn't say where he saw it or when he started to walk or anything else. He just saw it.

The Court:—This is presumably a statement in chronological order, and this is what I read on the point in question, — they were standing in the neighborhood of the filter press, — I am quoting:—"Henry stopped the pump. We waited until every-"thing stopped. . .", — that is, the operation of the filter press,— ". . . and then figured would change the cloths in the filter. All "of a sudden we heard a sizzling noise like a steam valve break-"ing. Saw steam coming around the north door and figured would "walk to the south door to see what was the matter. The doorway "was full of vapors. Saw a big flash like fire. We had to get out "by fire escape."

DR. L. LORTIE (for Plaint. at Enq., Recalled) Cross-ex. con't.

Mr. Hackett:—I suggest, my lord, that that statement found in D-2 is a statement that he, Rymann, saw fire in the south door, and on that hypothesis I have asked the question.

The Court:—That would be one reasonable interpretation, I think.

(The question, Page 596, is read):

Witness:—My answer to this is this:—I would like to refrain from interpreting the evidence, but I would like very much to know if Mr. Frazier and Mr. Rymann saw the same thing at the same time in two different doorways, that is, exactly at the same time.

By Mr. Hackett, K.C.:—

Q.—All I can tell you in answer to that, Dr. Lortie, is that you have said you are corroborating absolutely, uphill and down, as broadly as can be, the evidence of Dr. Lipsett, — and Dr. Lipsett has said that he has sat in Court, he has heard the evidence, and he has read the depositions of the witnesses who testified in French, and on that he has based his opinion. Now, on the same information on which Dr. Lipsett's opinion was expressed, I ask you to answer my question? A.—Well, there may have been a little difference in time between the two things, and then, — I am answering for myself now, — this is the way I understand the evidence: that one might have seen a real flame and the other might have seen a reflection. For instance, if I am looking at these two doors (in courtroom No. 12), there might have been a fire somewhere here (Indicating right-hand) and I might see the fire, and I might see something that looks like reflected light from the other door. It might be that.

Q.—You see, doctor, you told the Court just a minute ago that you did not want to interpret the evidence. I think you were wise. You are dealing with a man who said he saw flame at one point and you are dealing with another man, who said he saw fire at another point? A.—A flash of fire.

The Court:—Didn't Rymann say a big flash?

By Mr. Hackett:—"A big flash like fire".

Witness:—If we are going to interpret this evidence on the face value of the words, then it fits in very well with what I

was saying just now. I don't think these people have very much regard for the meanings of words.

Q.—But, you see, doctor, you are now pleading the case, and, with great respect, that is not your function.

I am asking you whether or not, in your opinion, on the statement I have just read to you, there was a continuous flame between the north and south doors? A.—I told you I didn't know.

Q.—Well, I suppose, on the same basis, you can say you don't know anything about what happened there because you weren't there? A.—Of course, yes.

Q.—Then, on the basis of your common sense and on the basis of your profesional integrity, I ask you for your opinion on the matter? A.—For my opinion on what happened at that time?

Q.—No, doctor, my question is very simple. We have Mr. Frazier, who said that he saw a fire in the north door. We have Mr. Rymann, who said that he saw a big flash like fire in the south door, at practically the same time, and I am asking you, assuming that these men have told the truth, if it is your opinion that there was a continuous flame or fire between the north and south doors of the east room? A.—It is possible, but, as I told you, I don't know.

Q.—I know you don't know. I am merely asking you for your opinion? A.—It is possible.

Q.—I know it is possible, but I am asking you for your opinion, doctor. That's what you are here for: to express your opinion. You don't know what happened any more than I know what happened. But you have come here as a man of science to express your opinion on facts which for your purposes are admitted? A.—Yes.

The Court:—Well, we have one degree. He says it is possible. Could we not go a little further?

Mr. Hackett:—I think we will go a little further, if your lordship will just wait a minute.

The Court:—Yes.

By Mr. Hackett, K.C.:—

Q.—Doctor, would you say that it is likely? A.—"Likely"? Yes. You see, what I am trying to say is that an opinion on such

a thing is not arrived at very rapidly and it takes into consideration a number of factors. That is what we usually do when we study not only a Court case but any scientific case. We have got to look for a number of factors that might come into the picture and change the situation quite considerably. A scientist seldom says "Yes" or "No".

By The Court:—

Q.—You have said that it is possible, and I think you have said also that it is likely? A.—It is likely.

Re-examined by Mr. J. A. Mann, K.C.:—

Q.—Dr. Lortie, you were asked by Mr. Hackett, — I am not quoting exactly what he said but I have no doubt he will correct me if I am wrong, — if it were not possible that vapors at the mouth of the escape vent might have become in the nature of a combustible gas. Was that what you were asked? A.—Yes.

Q.—And I think you said that was possible? A.—Yes.

Q.—How does that apply to the door of the tank, if the same question were asked you? A.—When the vapors were issuing from the door that was sprung open to some extent, then around that place there was also possibly an explosive mixture.

Q.—Now, there is just one more question. I think you said that the first of the three elements resulting in final detonation, or what is commonly called or colloquially called explosion, was the propagation of flame through the gases? A.—Yes.

Q.—You mentioned that as being the first element? A.—Yes.

Q.—The second element being a turbulent or further violent propagation of flame through the gases? A.—Yes.

Q.—And the third element being the detonation or concussion, or shattering, I think it was said by Dr. Lipsett? A.—That is, which produces a shattering effect.

Q.—Which produces a shattering effect? A.—Yes.

Q.—In view of the cross-examination relative to Rymann, on Exhibit D-2, as to his stating that he saw a flash like fire when he was walking towards the south door, — having in mind that he does not say he saw fire but that he saw a flash like fire, the evidence of Frazier, who said — and upon which you were cross-examined, — that he saw a flame or fire in the north door, — I don't care which, a flame or fire in the north door, — and having in view the migratory nature of flame in explosive gases, are you able to say what might have happened with respect to that

flame within the east room as between the north door and the south door? A.—It surely originated somewhere, and it propagated itself within the explosive mixture to another place. That is the nature itself of the first two stages of the explosion, first uniform and then turbulent.

Q.—Now, is there any distinction in your mind, — always sticking to the language of the cross-examination, — I want to know if there is any distinction in your mind between the words, —they have been variably used,—"caught on fire" and "ignited"? A.—No; these are two words that mean the same. One is the scientific word, — "ignite", — and the other one is the popular expression. They mean the same thing. One comes from the Latin, and the other one is from an Old English root probably, I think.

Mr. Hackett:—No further questions.

And further for the present deponent saith not.

H. Livingstone,
Official Court Stenographer.

Mr. Mann:—I wish to recall Dr. Lipsett. Will your lordship grant me that permission? A.—Yes.

DEPOSITION OF DR. S. G. LIPSETT (Recalled)

On this 5th day of February, A.D. 1946, personally came and reappeared, Solomon George Lipsett, a witness already sworn and examined in this case and who being now recalled and further examined under his oath already taken doth depose and say as follows:—

Examined by Mr. J. A. Mann, K.C.:—

Q.—Dr. Lipsett, with the permission of the Court I have recalled you, to ask you if you will state what in your opinion are the leading authorities on the chemistry and propagation, if I may put it that way, of explosion of combustible gases, and I limit my question merely to asking you what are in your opinion the leading authorities on the subject and, in addition, have you got them in Court for the examination of opposing Counsel?

Mr. Hackett:—I object to the question.

The Court:—I don't think you need go any further unless Mr. Mann justifies the question.

What is the use of that question, Mr. Mann? Suppose Dr. Lipsett gives me a list of three, five, ten or perhaps fifty of them, I am not going to read them. Counsel hasn't time to read them.

Mr. Hackett.—And wouldn't understand them if he did.

Mr. Mann:—And I haven't time to read them.

The Court:—Dr. Lipsett has referred to one scientific work only, not so much as an authority as on account of an experiment therein related on which he bases in part his evidence. You have now asked him to cite the authorities which constitute his scientific background as an expert on explosion.

Mr. Mann:—No; I haven't the slightest intention of asking him one other question. Quite frankly, the object of my question is this: my friend may have, and probably will have, scientific witnesses. I want to cross-examine my friend's scientific witnesses on what I have at least evidence are the leading authorities. That is the object of my question.

The Court:—I don't profess to be an infallible authority on the law of evidence, but I have given some consideration to the matter, and it appears to me that the only relevance of a question as to the accepted authority of an author is when you are examining or cross-examining a witness who states that he bases his opinion in part or finds his opinion corroborated in part by a certain author, if you want to examine or cross-examine him on that author you may do so. If you want to raise the point that a contrary opinion or some contradictory theory is expressed by that author, you have first to ask such witness if he accepts that author as an authority. If he does, then you may proceed to deal with the author. If the witness says the work of the author is not an accepted authority, then you may bring someone in rebuttal to say it is an authority, and then I would have to decide whether it is to be regarded as an accepted authority or not.

Mr. Mann:—I will put my question in an entirely different form. I will leave the first part of the question (p. 884) exactly

as it is and add, "Upon what have you based the scientific evi- "dence which you have given in this Court?" and I will ask the witness to limit his answer to such books, authorities, papers or periodicals as he has in Court with him. Now, I think that meets the suggestion in what your lordship has just said.

Mr. Hackett:—I object, my lord, to the question. I am not in a position to cross-examine a library or any part of it. Dr. Lipsett has stated his opinion clearly and intelligently. I have done what I could to test the accuracy of his information and the value of his opinion, and I submit that permitting him to say, after that questioning, whatever may have been its value, that he relies upon some books that I haven't read and cannot at this time read and digest, is a violation of the rules of evidence and of the ordinary procedure in this Court.

Mr. Mann:—I was stopped when I tried to ask this very question at the beginning, and, with the greatest respect, if I had been intelligent enough, — perhaps I wasn't, — to put the question in the form in which I have now put it with your lordship's very valuable help, I then could not have been stopped, legally stopped, and that is why I ask your lordship's permission to re-ask the question. I think probably I was wrong in trying to embrace the whole universe of scientific literature on explosion, but I do not think I am wrong now in embracing the literature upon which this witness's opinion is based and from which he will say he draws corroboration of what he has said. and I have that literature here now to place before the Court. Yesterday my difficulty was that I didn't have the authorities here. Now I have them here and I ask permission to put the question. That is my question.

Mr. Hackett:—I don't want to make this a game of battledore and shuttlecock. My friend was stopped yesterday because he did not have the document before his witness that he might substantiate the passage to which he referred and might afford me the opportunity of looking at the work.

The Court:—That was a different matter. It was a specific experiment that was referred to in a particular book, and it was only proper the book should be produced.

Mr. Hackett:—It was only different in that way. I have now finished the cross-examination of this witness and my friend

is now seeking an omnibus benediction of what he has said, on books that I have not seen and on which I cannot cross-examine him.

By The Court:—

Q.—Have you in the course of your testimony, Dr. Lipsett, put forward any proposition which is novel in a scientific way, and when I say novel I mean something that has been accepted or partially accepted within the last twenty years, we will say? A.—No, to the contrary.

Q.—Well, what I am getting at is, in your opinion the propositions included in your evidence or presumed in your evidence are propositions which any well-trained scientist would accept: is that correct? A.—Yes.

Q.—I am not speaking of your opinion as to what happened in this particular instance, — because you have interpreted certain evidence, — but the propositions which lie behind that opinion are in your opinion propositions that a well-trained scientist would accept? A.—Yes.

The Court:—I see no reason or utility in producing any specific passage. If Dr. Lipsett had put forward some novel proposition and wished to support it by some scientist of reputation, that would be a different matter, but in his own words he states that what he is basing himself upon are the generally accepted propositions of that particular branch of science of which he has been speaking. In those circumstances, I do not think it is necessary to refer to any works at all.

Mr. Mann:—I will rely on your lordship's suggestion that if necessary I may be able to make in rebuttal the proof I am trying to make, and therefore I will desist from any further questions at that moment.

That is the Plaintiff's case.

And further for the present deponent saith not.

H. Livingstone,
Official Court Stenographer.