Minutes of evidence of the departmental committee appointed to inquire and report whether the following diseases can properly by added to those enumerated in the third schedule of the Workmen's Compensation Act, 1906 : namely: (1) cowpox, (2) Dupuytren's Contraction, (3) Clonic spasm of the eyelids, apart from nystagmus, (4) writers' cramp.

Contributors

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e Office.

DEPARTMENTAL COMMITTEE ON COMPENSATION FOR INDUSTRIAL DISEASES.

MINUTES OF EVIDENCE

OF THE

DEPARTMENTAL COMMITTEE

APPOINTED TO

INQUIRE AND REPORT

WHETHER THE FOLLOWING DISEASES CAN PROPERLY BE ADDED TO THOSE ENUMERATED IN THE THIRD SCHEDULE OF THE

WORKMEN'S COMPENSATION ACT, 1906,

NAMELY:

(1) Cowpox; (2) Dupuytren's Contraction; (3) Clonic Spasm of the Eyelids, apart from Nystagmus; (4) Writers' Cramp.

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INDUSTRIAL DISEASES COMMITTEE.

MINUTES OF EVIDENCE,

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MINUTES OF EVIDENCE.

FIRST DAY.

At the Home Office, Whitehall, S.W.

Saturday, 12th October 1912.

PRESENT:

MR. ELLIS J. GRIFFITH, K.C., M.P. (*Chairman*).

Sir THOMAS CLIFFORD ALLBUTT, K.C.B.
His Honour JUDGE RUEGG, K.C.
Dr. THOMAS MORRISON LEGGE.
Mr. ARTHUR LOCKE (*Secretary*).

Dr. EDGAR LEIGH COLLIS, M.B., called, examined by the Chairman.

1. Will you please inform us of your qualifications?—Bachelor of Medicine of Oxford, and one of His Majesty's Medical Inspectors of Factories.

2. For how long have you been on the Home Office staff?—For nearly four and a half years.

3. What has been the district that you have principally gone over?—The two medical inspectors have to travel over the whole of the United Kingdom.

4. You were asked to make a report on this special disease, were you not?—Yes, in consequence of an application made by Mr. Wardle, the secretary of the Amalgamated Society of Operative Lace Makers, who have their head-quarters at Nottingham. He noticed that a number of his members when coming for invalidity payments, in taking their money, took it with hands that were contracted, and he himself having one of his own hands slightly affected, became interested in the subject, and made investigation, during which he collected particulars of 48 cases, which he set out in a table which has been placed at our disposal. He then made an application that this disease, when it affects lace workers, should be placed in the third schedule of the Workmen's Compensation Act, 1906.

5. That was the beginning of the inquiry, was it?—That was the commencement of the inquiry. My colleague, Mr. Robert Eatock, who is His Majesty's Inspector of Factories at Nottingham, and myself, made the inquiry together. He was associated with me in the inquiry, because, as you are aware, the industry of lace-making is chiefly carried on in Nottingham and the surrounding district.

6. Then you conducted this inquiry jointly, did you?—Yes, we did. We visited together the factories, I taking the medical aspect of the disease, while Mr. Eatock investigated it from the mechanical side. For instance, he took the pulls on all the machines and the shape of the handles, while I was examining the conditions of the hands of the men.

7. You had two principal objects to ascertain: first of all, whether this disease was more prevalent amongst lace workers than other workers; and secondly, whether there were immediate steps to be taken?—Yes, those were the two objects we kept before us.

8. Then you and Mr. Eatock made a joint report?—Yes.

9. And that has been submitted to the Chief Inspector of Factories, sent to the Secretary of State, and it has been circulated, has it?—I believe it is now being circulated both to the masters and to the operatives.

10. This is the report that you prepared which we have before us?—Yes.

11. This really contains the result of your inquiries?—It does.

12. It can usefully be added to the appendix as an account of this inquiry?—Yes, it might.

13. Is there anything else you would like to tell us beyond what appears in this report?—I think some of the points might be represented from a slightly different aspect, which may help to make them more clear.

14. First of all a general description of the condition; that is the first point?—Yes, a more general description of the condition than is given in the report may be useful. Dupuytren's contraction is primarily due to the formation in the palm of the hand of fibrous tissue; this fibrous tissue is similar to the tissue which forms in a cicatrix or scar caused by a burn or other external injury, and possesses the peculiarity that after its formation it draws or contracts. In Dupuytren's contraction fibrous tissue forms immediately beneath the true skin of the palm of the hand, and extends along the line of the tendons or guides which, by contraction of the forearm muscles, draw down or flex the fingers. When at a later stage this fibrous tissue contracts, it draws down or flexes the fingers, and this flexion remains, because fibrous contraction is permanent, and not, like muscular contraction, a temporary condition. That may put it in rather more popular language than that of the report.

15. Will you tell us how many people you examined?—1,360 operatives at work employed in various processes in the lace trade were examined, and among these 90 cases of the condition in various stages were seen. [It is a coincidence that there were 90 hospital cases also.] The distribution of these 90 cases is shown in Table I., whilst 35 other cases were brought to our attention by Mr. Wardle. Mr. Wardle had prepared a list of 48 cases, but 13 of those were seen by us in the factories, and the remaining 35 were seen by us when Mr. Wardle got them together for me to examine.

16. How long do you say the disease takes to develop?—Even under conditions favourable to its development, Duypuytren's contraction takes about twenty years in developing, and when considering the prevalence of the disease in the lace trade, as shown in Table I. of our Report, I think all those examined under 40 years of age should for statistical purposes be neglected. If this is done, the figures in this table show that 11·7 per cent. of those aged 40 years and over employed in the Levers branch were affected, 13·1 per cent. in the curtain branch, 13·4 in the plain net branch (but in this branch only two cases had progressed beyond the second stage), 6·4 per cent. in other processes (all in the first stage), 1·2 per cent. in the tin-plate workers, and 0·4 per cent. in granite cutters. I should say that the last two trades are quoted because inquiries relating to other diseases were being conducted simultaneously in these trades, and the opportunity was taken to examine the hands of the operatives for this purpose also.

17. (*Judge Ruegg.*) Do I understand that we are inquiring at this stage into the advisability of including this disease generally, or only including it in so far as it relates to the lace workers? The reference to us is generally as to the inclusion of the disease?—Our report has particular reference to its prevalence in the lace trade.

18. (*Dr. Legge.*) Still, you became alive during your inquiry to the possibility of its occurrence elsewhere?—Most certainly, and references are given in the report to its occurrence in other trades. But I am unable to state statistically, except in the two instances I have just quoted, the extent to which it does occur in other trades where manual operations are carried on.

19. (*Chairman.*) It is more prevalent in this trade than any other?—As far as my investigations go, I do not know of any other manual occupation where the palms of the hands are so frequently made subject to localised pressure by using machine handles.

20. (*Judge Ruegg.*) Still, it may occur in any occupation where there is laborious manual occupation?—If I might suggest, if you consider the advisability of scheduling the disease here and name the processes in the lace trade in which this report shows it is specially prevalent, in the other trades the onus of proof would lie upon the workman before he could make the claim.

21. I am afraid that would be impossible. The onus of proof lies on the workman now in every case to show that it comes within the scheduled disease?—Yes, but if a man has Dupuytren's contraction and he was working at one of the processes named in column 2, it would be unnecessary for him to do otherwise than prove he has got it.

22. I quite follow, as is now in some cases of diseases?—Yes.

23. It is shifting the onus?—Yes.

24. (*Chairman.*) That is the whole point, is it not, the shifting of the onus?—Yes.

25. (*Judge Ruegg.*) For example, take Dupuytren's contraction in miners?—It might be a sequela of beat hand.

26. (*Sir Clifford Allbutt.*) You have entirely given your attention, I suppose, to collecting positive instances; you have no collection of negative instances, that is to say, of persons not engaged in the use of the hands in this particular way. The disease is quite common, of course, in the leisured classes?—You will see in Table I. that there are some people who are employed in the lace trade in other processes. Those individuals, though using their hands, were not using them on the machine levers in any way. They were such people as bobbin winders, that is to say, the people who were winding the thread on the bobbins and threading them. There were fitters, people who carried the things about the factories, and the men who were employed in punching out the cards for patterns.

27. With any strain on the hand?—Where the machinery is doing the punching there was no particular strain upon the hands.

28. No particular strain?—No. These people in the column headed "In other processes in the lace trade" (five cases) were at an advanced period of life, and all were in the first stage.

29. This occurrence of the disease in persons employed in other processes is a point that we shall have to bear in mind?—Yes.

30. Immediately you introduce two kinds of causation, you are getting into a difficulty. Now, as to predisposition?—I personally came to the conclusion during the inquiry I was making that although there might be a predisposition in individuals, localised pressure was always the determining cause.

31. But how are you to know the predominant cause, as to whether it were due to gout or something of that sort in a person who has never used his hands in this fashion at all?—I have rather come to doubt the occurrence of these cases where there has been no pressure at all on the palm of the hand.

32. They are not uncommon I should have thought?—My final conclusion was that there was always a history in the background, perhaps even forgotten by the individuals, and I know such a case where on inquiry it was found that there had been in past years localised pressure on the palm of the hand.

33. Of course, one cannot exclude it from any history. It would be impossible to prove negatives in that way; but in shaking hands with people who are in classes of life where the hands are not used in manual labour I have very frequently found a contraction?—Yes. I found one case exactly like that while I was making the inquiry. I shook hands with him and I felt the condition.

34. I thought it was fairly common?—He had been in an engineering shop, and he told me his hands had had rough usage. But I have not seen a case or found the history of a case, except perhaps some of those that were in the hospital (and hospital cases are not very good to quote as illustrations of what you suggest), where there was not great probability of there having been rough usage of the hands.

35. Then have you not come across cases—I think I have, and not a few—in which it occurs in both hands, although only one may, or may not, have been used mechanically?—I have not in my mind for the moment any such cases; but no doubt your experience is wider than mine.

36. (*Dr. Legge.*) The photographs show it, do they not?—Yes, where there has been rough usage of the hands. Sir Clifford Allbutt is speaking of the cases where it occurs in both hands, though the injury may only be traced to the hard usage of one.

37. Is that not the case with lace workers?—They use both hands.

38. But not equally?—Quite as equally as the prevalence of the cases in the two hands shows. Table II. shows it is distinctly more prevalent in the right hand where one hand alone was affected. There are 47 cases in the right hand to 10 in the left. That would be about what one would expect, considering that most people are right-handed and the extent to which the right hand must be used in excess of the left. You see both hands were affected in 63 cases.

39. (*Chairman.*) Your view is that localised pressure of some kind is not only the determining cause, but is the only determining cause?—That is the conclusion I came to, although I must say when I started the investigation it was not my opinion; in fact, my opinion naturally was that which I have been taught and brought up to, namely, that it might occur idiopathically without any irritation at all. But I quite came to the conclusion that in every case localised pressure must be exerted to determine it.

40. (*Judge Ruegg.*) May I ask what induced you to change your opinion?—Because I never found a case, when I came to speak to individuals, where I did not get a definite history of injury.

41. But I assume that your examination was chiefly confined to workers?—It was chiefly confined to workers.

42. (*Sir Clifford Allbutt.*) That, of course, is my difficulty. Do you put it as any higher than a contributory cause?—I do. I have questioned others outside. Naturally when one is interested in a subject like this, one takes an interest in the condition of

anybody one comes across who happens to be affected, and I have found one or two in the upper classes, and I have always found there was a history of hard usage. But those cases are so few that I do not quote them in the report. They are not sufficient to go upon, but they naturally strengthened the opinion I had previously formed.

43. (*Chairman.*) Take gardeners. You found some cases amongst them?—Not myself. Dr. D'Arcy Power quotes the pressure on the palm of the hand in digging, and states his opinion: "it is by no means "uncommon in gouty and rheumatic gardeners as "they become advanced in years."

44. Do you say it is confined to people engaged in manual labour?—No, it is not confined to people engaged in manual labour; but I think personally it is confined to individuals the palms of whose hands have been subjected to injury some time during their lives. On this point I think considerable support is given to this opinion in the facts stated by Arbuthnot Lane that the disease is almost entirely limited to the male sex. Out of 90 hospital cases you will notice only 11 are females, and of those 11, 6 were under the age of 20. Even out of these 6, 2 were definitely stated to be congenital cases. I do not see why there should be this disproportion between the occurrence of the condition in the two sexes if we had to consider that such diatheses as rheumatism and gout are the important determining cause, which must exist much more evenly between the two sexes. The proportion, taking those over 20 years of age, of 5 women to 80 males seems to be about the proportion we might anticipate if occupation with rough usage of the hands was a determining cause.

45. The occupations in the hospital cases are very various, are they not?—Very various.

46. (*Sir Clifford Allbutt.*) What is your percentage of congenital cases; it is very small, is it not?—Yes, it is small.

47. It is perhaps negligible, is it?—Not quite negligible. In the records of 90 hospital cases information is given of four congenital cases, and during this inquiry one case, aged 42, with both hands involved, was seen, in which the condition was known to be present in early youth. I suppose if one wished to theorise on the point of how congenital cases occur, they might be due to intra-uterine injury, such as may result in the amputation of a limb.

48. (*Chairman.*) Of course the pressure in these different occupations varies tremendously, does it not?—Yes.

49. (*Sir Clifford Allbutt.*) There is something in the kind of pressure?—Yes, I think the localisation of the pressure.

50. Would any pressure whatever cause it, or must it be a pressure of a particular kind, a particular kind of tool for instance?—I do not think it would matter whether it was wood or iron which was exerting the pressure.

51. (*Chairman.*) But a brush would be enough, would it?—If the pressure were sufficiently heavy. Some people would react more than others as they obviously have in the lace trade. I think undoubtedly there would be a predisposition. The examination of the cases shows that. So that you may say a less pressure would cause it in one individual than would be required in the case of another individual.

52. There were bill posters and painters among the hospital cases. The cause there apparently would be the brush?—It might be the brush; but feeling doubtful on that point, in dealing with the hospital patients I have not included such occupations as those, as cases in which the occupations would expose them to chronic localised pressure. But I think there are several trades among the hospital cases which in our report we have treated as not specially exposed to localised pressure in which after all such pressure may occur. Besides the bill posters and painters, there was a signal fitter who probably has to work signal levers up and down when fitting them. But I am not absolutely sure on that point. Printers also might have localised pressure in their work.

53. (*Judge Ruegg.*) What would probably be the particular operation which would subject a printer to pressure?—He might be a hand printer, or he might in some cases be starting and stopping the printing machines, in which case there might be levers, as there are in the lace trade.

54. (*Dr. Legge.*) Do you think in the case of the printer, keeping the hand in a contracted position in taking up the type would be sufficient to account for it?—That would exert no localised pressure on the hand, and would place it in the same category as the clerical workers.

55. (*Judge Ruegg.*) Just following out that question I happened to be told by a lady who visited cotton factories—I think it was in Lancashire—that there are people called twisters who continually twist the thread round their fingers, who suffer from a similar contraction?—Yes. I have not seen any of those cases or followed the exact way in which the individual in question carries on his work. It is a little hard for me to give an opinion there. I have not had a definite case brought to my attention, so that I could see the individual at work.

56. (*Chairman.*) Are there conditions which are analogous to Dupuytren's contraction—for instance, arthritis, beat-hand and hook-hand?—Difficulty of diagnosis would scarcely arise where contracted fingers occurred associated with some general disease. I have seen a case of contracted hand due to rheumatic arthritis. The general condition of the patient made the diagnosis clear. Hook-hand, also, occurs in certain nervous diseases, but the absence of fibrous bands in the palm of the hands and the presence of the general disease would clearly distinguish such cases from the condition of Dupuytren's contraction. Contracted fingers may follow upon an acute injury such as a suppurating wound or a whitlow, but in these cases also there are no bands arising from the palm of the hand. In beat-hand it is quite possible that if the inflammation started in the centre of the palm a fibrous band might start and contract as a sequela, and you would get Dupuytren's contraction.

57. (*Dr. Legge.*) Suppose the Committee decided on scheduling the disease, could we exclude such cases by careful wording of the condition?—I do not think you could exclude the sequelæ of miners' beat-hand. You might exclude cases in which there is no fibrous band in the palm of the hand; but a description, defining it as arising in connection with the fibrous band, would include the sequelæ of miners' beat hand, would it not?

58. Yes, but could you suggest a wording that would meet your view?—"Contracted hand"—that is to say, "permanent contraction of one or more fingers "produced by fibrous bands in the palm of the "hand."

59. Were all these 90 cases that you found, cases of contracted fingers?—They were all cases with fibrous bands in the palm of the hand; but the fingers were not contracted in all.

60. In how many were the fingers contracted?—61 had only the fibrous bands; 23 had some flexion at least of one finger, and belong to what I call group 2; 8 had more pronounced flexion of the fingers; and 28 belonged to group 4, in which one or more of the fingers is totally flexed.

61. Permanent contraction?—Yes.

62. And were they incapacitated from work, or how many that you saw were incapacitated?—Those I saw at work were carrying on their employment and were not totally incapacitated. All the cases which I saw that were grouped in class 3 and class 4 are shown in Appendix I. There were 35 cases in all. Of these nine said that their condition had no effect upon their working efficiency, and one man complained not of the effect upon his working efficiency, but that he now could not earn money as a clarionet player, which he used to do in the evening. All the remainder said that their earning capacity was more or less affected, and in some cases they had been compelled to leave the trade on that account.

63. Could you give us the number?—Of those who left the trade?

64. Yes?—There were 25 that had some incapacity out of the 35, and five left the trade on account of the hands. That is out of the 35 in stages 3 or 4.

65. That is out of 1,400 workers you examined?—Nearly 1,400. These include the five who were incapacitated and left their trade, whom I did not see at work. I examined 1,400 all at work; but these five were individual members of the union who had left their trade in past years and were receiving compensation from the union and whom Mr. Wardle brought to my attention, and probably represent all or nearly all in Nottingham who have gone on compensation.

66. (*Chairman.*) As far as your report is concerned, the figures and the facts dealing with the lace workers are the result of your own observation?—Entirely.

67. And with regard to the other occupations, they have been supplied to you in the main; is that right?—The other occupations were extracts taken from various published works which I quoted.

68. (*Sir Clifford Allbutt.*) I know that anything like definite facts are very difficult to get. There must be a certain amount of surmise, but there is a considerable speculative element in your 69 per cent. For instance, your six railway porters and the machinists. Does that mean girls making shirts, and so forth?—You see all I could get was such information as you get from the hospital notes, and they are so imperfect.

69. There is a considerable speculative element in it?—There must be. Hospital notes are not always too well kept.

70. (*Judge Ruegg.*) I think the terms of your inquiry were whether the disease was more prevalent amongst lace workers than other operatives. I understand you have no hesitation in saying it is more prevalent?—No hesitation at all.

71. But any comparison of the percentages between lace workers and other classes I suppose is almost impossible?—I can do it only in those classes of cases I have given you. I examined the hands of the tinplate workers and granite cutters myself. They are fairly large numbers in those cases. Over 1,000 granite cutters were examined, and I examined 652 tin plate workers.

72. When you told us that according to your inquiries the disease took as long as 20 years to develop, I suppose you were again referring to the ordinary lace workers?—I was referring to the histories I got from the lace workers.

73. Lace workers only?—Yes. You will see from Table I. the distribution in ages of the cases amongst the lace workers.

74. In the case of a wound, a trauma, I suppose it might develop much more quickly?—It might develop much more quickly, although in some cases they were a long time in developing.

75. In some cases that would clearly be so?—Yes; they might be much quicker after an acute injury.

76. I suppose it would be the duty of the certifying surgeon to give a certificate in these cases as in the cases of other diseases?—Yes.

77. Are there any symptoms by which he could distinguish or might distinguish this disease caused, say, by gout, and caused by pressure?—No.

78. I have to consider the working of this matter in the courts. Do you think in a given case, assuming the disease existed in a bad form, it would be impossible from any indication of the condition of the hand itself to say whether it was caused by gout or whether it was caused by pressure?—Personally, I look upon gout as only a predisposing cause. If you ask whether it can occur without the aid of injury, idiopathically, in the case of a man who does not use his hands at all, and has a gouty diathesis, my answer is no.

79. Then again, there would be no way of determining, except perhaps the balance of probability, as to whether that pressure occurred in work or from other causes, such as the man being a rowing man, or anything of that kind?—Exactly.

80. There is no way?—No. In the lace trade in particular, they all join so early that the probability of pressure from any other employment previously followed is extremely small. They are all apprenticed very early as lace minders; it is a closed trade.

81. It might possibly even arise from a relaxation?—Yes.

82. In a cricketer, for instance?—I cannot think of any way in which a cricketer would get such a localised pressure. The relation in the special cases we are considering is shown by reference to Table II. in our report, in which you will see that the annularis or ring finger was proportionately more frequently affected in the lace operatives than in the ordinary individual outside; that is to say, in the cases of inpatients of the three London hospitals, contraction of the little finger occurs proportionately more often, and Arbuthnot Lane says, speaking of the condition, that the disease commences in the little finger. He makes a definite statement that it does. My experience of the cases I saw in the lace trade was that a much larger proportion of them started at the base of the ring finger. You will see this by referring to the plate. If you take No. 6, I think the two hands there show you very definitely this relation to the commencement of the trouble. You will see how the contraction is starting in the base of the ring finger rather than in the base of the little finger.

83. What inference do you draw from that?—That the way handles are manipulated in the lace trade is rather this, if I may show you. If you take Plate I. on one of these machines, and imagine yourself standing in front of this machine, and handling the lever marked P, which is standing about 5 ft. 6 ins. from the level at which I am, the lever stands *so*, and there are these several levers along the length of the machine. That thread breaks *there*. I stopped the machine and turned out the catch bar to mend the thread. The lever has to come down *there* through a third of a circle. If I took it full and pulled it down, I should be in such a cramped position that I could not get my lever down, so that the habit in the trade is to take the lever *thus* (*explaining*), putting the pressure straight into the base of the ring finger.

84. That is why you think it more often commences there with lace workers?—Yes, and exactly the same with the left hand. They always put it in the position Mr. Eatock has described, that of holding a sword at low guard.

85. There is another thing I want particularly to ask you about. At what stage of this disease do you think working incapacity ensues?—Becomes affected?

86. Yes. I see you describe them as first, second, third, and fourth stages?—I never found any individual who, as a rule, showed any incapacity short of the third stage. In the first stage there would obviously not be any. In the second stage one might have expected a little incapacity; but the bending of the fingers was so slight, that nobody ever made any complaint to me. There were only a few of those in the third stage who were incapacitated, and even in the fourth stage there were some who were still at work.

87. But do you not think if this were scheduled as a disease under the Compensation Act, many would find incapacity perhaps earlier than they do at present?—Men vary, of course, and always will vary in that respect.

88. That is a matter we can draw our own inference about, I suppose?—I must say with regard to the old men I saw busy in the lace trade, one man who was working there has a family in which there are a large number affected. He had four sons in the factory, the youngest of whom was 49, and at the factory they told me the father was still as good a workman as anybody they employed in the place.

89. But at present he must work to live or receive no wages. It might be if this disease were scheduled he would have at all events a bare living without work. That might have some effect?—Of course he could have his old age pension now.

90. Do you think it would be possible that the certifying surgeon should give a certificate as a precautionary measure in this disease?—He might find a man in the second stage and say, "You will very soon "be in the third stage, and you will be incapacitated; "I will give you a certificate now."

(*Sir Clifford Allbutt.*) I do not know that I quite catch the point.

(*Judge Ruegg.*) That the certificate may be given as a precautionary matter, that it does not at the moment incapacitate him, but very soon will. It is a precautionary certificate. When they find a man developing some symptoms of lead in the Potteries, the certifying surgeon gives what they call a precautionary suspension, and it is very hard upon the men sometimes because they get no compensation.

(*Sir Clifford Allbutt.*) That is the point I wanted to understand, but I was not lawyer enough to do so.

(*Witness.*) That is only where we have special factory regulations giving that power to the certifying surgeon.

91. (*Judge Ruegg.*) You have it in lead?—Yes, for the protection of the individual.

92. Do you think it would be wise for this Committee to consider the advisability of allowing a precautionary suspension or suspension for precautionary reasons?—I do not think so, because the suspension for lead is because the man may recover. In this case you may suspend a man for ever and he will be no better.

93. There is no recovery?—No.

94. No amelioration of the condition?—No. Probably in many cases it would progress even if he left his work.

95. In other cases it might remain stationary?—It might remain stationary. The man whose hands are shown in the first of the illustrations first noticed his condition 20 years ago, and it has not moved since then.

96. But he is a worker?—Yes, he has worked the whole of the time. All these hands are those of workers.

97. (*Sir Clifford Allbutt.*) They are all lace workers?—Yes, all lace workers' hands. You will be able to see any of those four sets of hands at Nottingham. In one of the other cases quoted in Appendix 2 the man only noticed his condition, I think it was, four years ago when I saw him first, and he has been compelled to leave the trade, it has come on so rapidly.

98. (*Judge Ruegg.*) You see the matter in which I am chiefly concerned is the administration of this Act in the county courts. Do you think difficulties of this kind would be likely to arise: that the certifying surgeon might give a certificate of disablement, and, as you know, his certificate is conclusive *quo ad* the disease only?—Yes.

99. Then the question might arise, as it does in other diseases, "Yes; but was this contracted in the "course of the work?" In the words of the Act, did this particular disease from which this man was unquestionably suffering, for the certifying surgeon says he has it, arise under the employment? Do you apprehend that might be in some cases a question of very great difficulty for a court to decide?—I apprehend that if the man's employment was not included in the processes in column 2 there would be great difficulty. For instance, if the process of lace machine minding were stated in column 2, there would be no question. In other diseases the difficulty would be very great, and the onus of proof would lie entirely on the worker.

100. You mean then that if it is confined to the lace industry you do not think there will be any great difficulty, but if it is to be general you think in certain cases there may be difficulty?—That is so. As regards the lace trade, the probability of a case occurring which is not due to the occupation is small. Possibly cases may occur, but no great injustice will be done to the trade.

101. I am afraid I did not quite follow the illustration that you were giving just now, that your experience was that in lace workers this disease manifested itself in what you call the ring finger, the third finger. Do you mean that that would be valuable as a diagnosis of whether the disease was of industrial origin or not?—In the lace trade it would be of some value.

102. You use it for that purpose as a diagnosis?—As of some value in diagnosing.

103. Not conclusive?—Not conclusive, but if it were found that the contraction started at the ring fingers I think it would help very considerably.

104. (*Chairman.*) The fact that by catching hold of the lever in the way you describe, the pressure is in fact brought to bear just at one point, and that when you look into the actual cases you find it at the same point again, is something more than a coincidence; it is a strong presumption; that is the way you put it?—A strong presumption.

105. (*Dr. Legge.*) In the description of the disease you suggested, "permanent contraction of one or "more fingers produced by fibrous bands in the palm "of the hand," do you think one ought to add the point you laid such stress upon "from localised pressure"?—If by that means we can exclude other cases, I think, yes.

106. Take, for instance, the point of a trauma and a scar development. That is a different thing from what we are considering, namely, Dupuytren's contraction?—A difference in causation, though it may simulate it in result.

107. And if one were to add "localised pressure," it would exclude such causes as a scar the result of a cut?—Yes, especially if you were to add the words "chronic localised pressure."

(*Judge Ruegg.*) I strongly object to the word "chronic." Why exclude trauma if it is an industrial accident?

108. (*Dr. Legge.*) I take it you want to have some degree of contraction indicated; but does your wording "permanent contraction of one or more fingers" help at all, because even if it is bent the slightest bit it will still be contracted. Do you want to have it "contracted beyond a right angle"?—In the lace trade, as I have suggested, until it reaches what I have called the third stage, I never saw a case in which it affected a man's earning capacity; but I suppose it is conceivable, if applied to processes in other trades, even a slight flexion of the finger might affect his earning capacity.

109. But we have to guard, I think, against the possibility, if you are going to allow a claim for compensation for the slightest degree of flexion, of an employer examining his workers to see whether any had this condition, and dismissing them before there was incapacity?—Yes; he might dismiss cases in the early stages if he found out they had it, or he might protect himself by refusing to engage a man whom he found had the early stages of the disease. It would be bound to be open to that.

110. (*Judge Ruegg.*) Do you think any lace worker suffering from the disease who leaves for any reason, would find difficulty in getting employment again?—That would have to be taken into consideration.

111. (*Dr. Legge.*) But if only a severe degree of the condition is scheduled, do you think it is wise to try and define the actual degree of the contraction?—I think it would be advantageous if it could be done, but Judge Ruegg will, no doubt, know better than I that, if you tried to define the amount of flexion of the finger, it would lead to difficulty in court.

(*Judge Ruegg.*) I am quite sure experts would differ upon it.

112. (*Sir Clifford Allbutt.*) Women are not occupied in this way at all, are they?—No, they never mind lace machines. It is done entirely by men. It is rather a closed trade in Nottingham.

113. It is heavy work?—I think women could do it, but the men would go on strike if women were brought into it.

114. (*Dr. Legge.*) You went into the question of the surgical treatment of this condition?—Yes.

115. Is it favourable?—It is not favourable. With regard to two persons mentioned in Appendix 1, who had submitted to operation, you will see as regards one, that is No. 5, his right hand was operated on in 1907, and the left hand was operated on in 1909, and when I saw him in the commencement of 1911 the condition was recurring in both hands. The only other individual in this table who was operated on is No. 7, and in his case his little finger had to be amputated. When I was going through the notes of

the hospital cases, all admitted for operation, I found notes of the results of the operations. It is an important point to keep in mind that the hospital cases were practically all in stage 4, and the results of the operations were by no means always successful. There were several cases where fingers had to be amputated, and the application of fomentations and such like at a later stage of the healing of the wound was suggestive that all was not going well. Then another treatment has been introduced, namely, injecting fibrolysin under the skin, but Sir Clifford Allbutt would be able to speak better than I can on that. It has been suggested recently, but I have seen no published statistic of the results.

116. (*Judge Ruegg.*) I gather you regard the disease as not curable?—Yes. Some operations have had very good results, but the tendency to recur, and the proportion which do not do well, is such that you could not put any responsibility on the man to submit to operation.

117. (*Chairman.*) Do you mean tendency to recur if the man goes on at work again after the treatment?—No.

118. Whatever he does?—Yes, if the wound does not heal cleanly and there is any suppuration.

119. (*Sir Clifford Allbutt.*) In this case of the precautionary certificate you were asked about, how far in your opinion does the thing progress of its own inertia? Supposing a man gives up that occupation and turns to something else which does not cause this pressure, how far does it inevitably go on?—I think when once the fibrous bands have become well established, for instance I should say stage 2 on plate 7, if he gave up his trade to-day that case would inevitably go on. With that amount of contraction in the palm of the hand I should say that case is pretty certain to go on. From what the men, some of whom had left the trade, told me it seems to go on inevitably, more rapidly if they stayed in the trade, but to go on inevitably even if they left the trade.

120. Is it easy for a man who has been engaged in this duty to take up any other occupation?—Practically impossible. Of course I mean not to earn the same wages.

121. (*Chairman.*) At what age, speaking generally, do they become incapacitated by this disease?—One can only take the ages of those who were incapacitated to ascertain that fact, and there were five of them. The approximate ages of leaving the trade of the five men who had done so on account of their hands were 67, 58, 49, 64 and 50.

122. It is easy enough for us to get the average. It is somewhere between 55 and 60?—Yes.

123. (*Judge Ruegg.*) But the result will be that the employer will have to pay compensation for life?—Yes.

124. (*Chairman.*) From that age?—Yes.

125. Is it possible successfully to malinger?—I do not think it is possible, because the finger has to be permanently flexed so that it cannot be pulled out. There must be the fibrous bands in the palm of the hand.

126. (*Judge Ruegg.*) It is much more difficult to malinger than some of the already scheduled diseases?—I think it is one of the most difficult things. Even if a man is under an anæsthetic you cannot press out his hands.

127. (*Dr. Legge.*) But I think it is necessary to define the degree?—Yes; I think it would be very valuable to fix the extent if it were possible to do it.

128. (*Chairman.*) Have you anything more to say as to its occurrence in other trades?—It is claimed in a report I have from Holland that the disease occurs amongst glass-blowers. The report has been translated, and there is an illustration showing the condition.

129. (*Dr. Legge.*) That is the result of a succession of slight burns?—Yes.

130. Do you say this injury corresponds to the disease we are considering?—Yes, it is exactly the same.

131. Not merely analogous, but exactly the same?—Exactly the same. The fibrous bands are not shown because the fingers are flexed.

132. (*Judge Ruegg.*) Would your definition of this disease include or exclude that case?—My definition would include it unless we get "chronic pressure" in. There you see there are the effects of "chronic pressure" and burns together.

133. I do not know that that would do. Did you propose in your definition to put in "chronic pressure"?—No, I think Dr. Legge's suggestion is better.

134. (*Dr. Legge.*) "Localised pressure"?—"Localised pressure."

135. (*Judge Ruegg.*) Do you think that would be better?—Yes.

136. Do you think that would include that case?—They speak of the way in which it occurred in the text: "Continually handle the hot blowing tubes." It is heat.

(*Judge Ruegg.*) That would exclude it.

(*Chairman.*) It is important to note that in the case from Holland it is said: "In this way, by the repeated "formation of *scars*, the flexors (muscles) of the fingers "contracted."

137. This information bears on other ways in which it can be caused?—Yes.

138. (*Sir Clifford Allbutt.*) With the lace machine handles, you get numbers of infinitely small lesions which scar, and scar, and scar, and the same principle is at work in the Dutch case. There is a very large number of small lesions?—Yes.

139. (*Chairman.*) Could the Dutch case be called one of Dupuytren's contraction?—I should say most certainly.

140. The same general words include both sets of symptoms?—Yes.

141. (*Sir Clifford Allbutt.*) Except one might go a little further, and ask when there is a series of small injuries, which have developed into a scar, how far this scar will take on any activity of its own, and proceed to farther, and farther, and farther contractions independently of any further lesions?—I suggest it does. For instance, in the case of my own hand I never set out to ask what started the condition until I was making this inquiry.

142. Whatever produced that, has not been at work since?—No. It was when I was making this inquiry that I noticed it, and I had not rowed for 20 years. It has been lying dormant.

143. (*Chairman.*) With regard to your 20 years point, under Plate 6 you say: "A. C., aged 54, who had "worked 37 years in the levers branch. Condition "first noticed 20 years ago, since when it has not "advanced." I suppose Mr. A. C. told you that he had noticed it 20 years ago?—Yes.

144. And it is exactly the same now as it was 20 years ago. That is the kind of information that is given?—Yes.

(*Sir Clifford Allbutt.*) Then comes in the speculative question, as to how far gout will accelerate or modify the process.

145. (*Chairman.*) It is very wonderful that it should be stationary for 20 years, is it not?—I chose that man to have his hands photographed to exemplify the length of time during which it may remain so. It was not altogether usual.

146. And he was in the first stage?—Yes.

147. Is there any form of words in which you can say a man is going from the first to the second stage?—The only way is to put it, "when one or more digits "become flexed," but a slight flexion of the digits in no way impairs the working capacity. Using the word "flexion" would not be sufficient, and such words as "semi-flexed" would be no use legally.

148. (*Dr. Legge.*) "Flexed downwards into the palm." I think it is possible to find some form of words?—I think medical men can find some form of words, the question of their legal fitness is for others.

(*Judge Ruegg.*) Might it not be better to leave it as "Dupuytren's contraction," and leave the courts to find out. After all, it would have to be not only Dupuytren's contraction but Dupuyren's contraction causing incapacity for work. Those would be the things to be proved before compensation would be payable—

Dupuytren's contraction, and Dupuytren's contraction in such a stage as caused incapacity.

149. (*Chairman.*) During the last 20 years this man was suffering, you could have said at once, "This is the "first stage of this disease." You would have known it was there the whole of the 20 years?—If he was correct in his statement, it was the same 20 years ago as when I saw it.

150. I think Dr. Legge was asking about workmen being dismissed. There is an interval of 20 years there in which the employer might say, "I do not require your "services," and escape any liability?—Yes.

151. How did you take the various pulls of the lever?—Mr. Eatock will explain in detail, but I may say that we used a weight measure with a spring balance, and we attached this (*producing instrument*) by a band over the lever. This is made for weighing work-people. By pulling we found out the utmost that was required in pulling the lever over.

152. (*Judge Ruegg.*) The standard of the pull varied very much?—There was a very great difference, from 5 to over 100.

153. And I gather that you are not without hopes that easy precautions might be taken which would lessen the liability to this disease?—I think there is very great probability if the employers have their attention called to the matter, that they will take some steps to make the machines easier, and the handles of the machines better for the men's palms.

154. (*Chairman.*) You saw nothing to account for a certain number of the workmen contracting the disease and others not—nothing in the difference of care or anything of that kind with which the work was done?—No, nothing at all.

155. And not that it was commoner in men employed in any particular part of the works, or at any particular machine, or anything like that?—The men frequently mentioned that they noticed the condition commencing when they were working a very heavy machine, which in many cases they had left on that account and moved to another machine to avoid working such a heavy one.

156. Is there a great difference in the percentage of this disease found in some lace factories as compared with others?—Yes, there was, particularly I should say in Nottingham itself. I saw many more cases in Nottingham than I did in Long Eaton, probably due to the fact that the trade is newer in Long Eaton, and younger people are employed, which means that there are a greater number seen under 40 than over, and also the fact that they had newer machines which ran easier and were better worked. As to South Scotland, where the trade is a much newer trade than it is in Nottingham, I made inquiries and received information that I should find a very small proportion of the men who were over 40. Therefore, the proportion of cases was hardly worth going to examine many hundreds of cases for.

157. (*Judge Ruegg.*) The scheduling of the disease may affect occupations in my district. Could Dupuytren's contraction be confused with beat-hand?—Not until the beat-hand becomes Dupuytren's contraction.

158. When it *is* Dupuytren's contraction?—A person with Dupuytren's contraction might get beat-hand too. There is no reason why a person working with a contracted hand should not get an inflamed palm of the hand.

159. But would medical men be able to say clearly, "This is beat-hand and the other is Dupuytren's contraction," or is there a possibility of confusion?—One is acute inflammation, and the other is chronic.

160. Beat-hand?—Is acute inflammation.

161. It passes away?—It passes away and is all right after a time. It is curable, and is done with.

162. Whilst it exists is there any chance of confusion?—No; beat-hand is an acute condition.

163. You think any medical man could tell?—Yes, I think so. I do not think there should be any difficulty in distinguishing an acute case of beat-hand and a chronic condition of Dupuytren's contraction.

164. (*Sir Clifford Allbutt.*) I suppose you could not say whether the improvement of these machines and the mitigation of the pull has made any difference to the incidence of this affection. There has not been time enough, I suppose, to say?—Only in so far as this, that the workers in Long Eaton were less affected on the newer machines which were better looked after; but many of them had been many years at Long Eaton.

(*Chairman.*) We are very much obliged to you for your evidence.

The witness withdrew.

The Committee adjourned.

SECOND DAY.

At Nottingham.

Saturday, 26th October, 1912.

Present:

Mr. ELLIS J. GRIFFITH, K.C., M.P. (*Chairman*).

Sir Thomas Clifford Allbutt, K.C.B.
His Honour Judge Ruegg, K.C.
Dr. Thomas Morrison Legge.

Mr. Arthur Locke (*Secretary*).

(*Before proceeding to take evidence the Committee, with Dr. Collis and Mr. Eatock, visited lace factories to see the machines and the method of manipulation in the three principal branches of the trade—Levers, Curtain and Plain Net.*)

Mr. Robert Eatock, called, examined by the Chairman.

165. You are one of His Majesty's Inspectors of Factories?—Yes.

166. What is your division?—Nottingham.

167. Does that include Long Eaton?—No; Long Eaton is in Derbyshire.

168. But you went to the Long Eaton factories in connection with this Inquiry?—Yes.

169. How long have you been Inspector?—Just under 13 years.

170. As we know, you are the joint author of this Report which has been submitted to us on Dupuytren's contraction?—Yes.

171. To which part of this Report did you specially give your personal attention? — To the mechanical

part: the pull necessary to actuate the levers, and the shape of the handles.

172. Did you establish any relation between the occupation and the prevalence of this disease?—We had a difficulty in attempting to establish such a relation, on account of the frequency with which the men move from machine to machine, or from factory to factory, and we could find no evidence that the machine at which we found the men at the time was the same as when the condition started.

173. You could connect no particular machine with the disease?—No. In the Lever's branch we found that 7·9 per cent. of the operatives working at machines with a comb-bar pull of 75 lbs. and over were affected, and only 2·8 per cent. of those who were working at machines with a comb-bar pull of under 75 lbs.

174. So that you did establish a relation between the pull on the catch-bar and the disease?—We think it had something to do with it, although they may not have been working at that particular machine at the time the condition was set up. We could not get any reliable information as to what machines they had been on, or what length of time, and so on. So that, as we found the men, we took the machine on which we found them at the time. In the Curtain branch we found 10·3 per cent. were effected with a catch bar pull of 40 lbs. or over and 8·3 per cent. if the pull was under 40 lbs.

175. Were you able to make any inquiries into their past history with regard to these machines?—They could not give us anything reliable.

176. So that really your investigation was based upon the condition of the man, and the machine upon which he was working, at the the time when you were making this inquiry?—Yes. In the plain net branch we found 8·6 per cent. were affected if the comb-bar pull was 75 lbs. or over, and 5·6 per cent. if it were under 75 lbs. In the curtain branch, of course, the comb-bar is fixed.

177. Did you come to any conclusion about the shape of the handles; that they had anything to do with it, apart from the weight of the pull?—Yes. I think the shape has a good deal to do with it. We state in Appendix No. 2 the relation. Taking those aged 40 and upwards, we found that for the A-shaped handles none were affected. For B-shaped handles 13·7 per cent.; C-shaped 2·0 per cent.; C (1) 4·5 per cent.; for D, 13·0 per cent.; and for E, 23 per cent.

178. Which of those did we see first?—That was an E type on the plain net machine; but there are very few of those in use, and we could not say that it is a dangerous type of handle at all; besides the men frequently change. Some of the plain net men at any rate were formerly curtain hands, and although we found some affected there, I do not think we can say that that type of handle caused the disease.

179. Do you call it the ball shape?—Yes; that is illustrated on plate 4.

180. Apart from the shape of the handle, does the position of the lever have anything to do with it?—Yes, we think that must have a material effect.

181. You know the place you and I were at last. It is higher up?—Yes, with the lever practically horizontal and just above the head of the operative. That would be what I should call a very good type of lever.

182. So that given the same weight, the effort would be very much less in handling that lever than handling levers in other positions that we saw?—Yes. If you can have a horizontal lever in such a position with a downward pull, you could handle a much greater weight.

183. And the length of the lever?—Yes, that is a material element.

184. You have investigated how far the pull could be lessened, have you not?—I made some suggestions.

185. Of course there is the obvious one of lubrication, is there not?—Yes. For instance, if the cradle on a catch-bar is properly lubricated it runs easier. One illustration of that I mention in the Report, where the pull was immediately reduced by 5 lbs., from 60 lbs. to 55 lbs.

186. You have made a recommendation that the shape of the lever should be different—an inverted stirrup shape?—Yes; I have suggested an inverted stirrup handle. That is particularly on the catch-bars. With regard to another type of handle, the pull-up handle, say on the comb bars, I do not think I would make that suggestion. I think the D type of handle would be quite safe. Another suggestion I made was to have compound levers wherever possible so as to give a mechanical advantage.

187. We noticed this morning that where there was a compound lever the pull required a less effort?—Yes.

188. Do you think the starting wheels have anything to do with this disease at all? Were you able to test that?—No. I tried one, an ordinary go-through machine, 171-inch. The spring balance we had only recorded up to 300 lbs., and just as I got to 300 it moved the machine. I did not try any of the others. Generally the curtain machine is the heaviest machine. The plain net comes next, and the Lever's is the lightest machine.

189. (*Judge Ruegg.*) What is the conclusion you come to; that the wheel has any effect on the hand or not, or that it is due entirely to the levers?—No, I think the wheel has some effect. They stop the machinery, if they get a sudden breaking of the thread, to prevent a lot of damage. They immediately put their weight on this wheel, and brake it as soon as possible, to prevent any damage of the fabric.

190. Might that not possibly account for what one of the men showed us this morning, that the palm was affected in both hands? One of the men had not the fingers affected, but he had a hard substance in both palms. He was the first man we saw. He said, "Why should I get it in both?". Of course they brake the wheel with both hands?—Yes.

191. Might that not possibly account for the fact of having—I do not know whether it was an incipient form of the disease—but at all events, some hardening of the palm in both hands?—It might be possible.

192. He rather suggested that it could not be due to the levers, because he had it in both hands?—That was on the plain net branch, and they use the lever with the right hand always, never with the left.

193. That is what he was suggesting?—The left hand is for pulling out the catch.

194. This man suggested to me, "How do you "account for my having this hardness in both hands?" Can you account for it?—No, I cannot.

195. You do not think that braking the wheel is sufficient?—I think it might be. That is a medical question which I do not think I can answer. That it has some effect I feel sure.

196. The braking of the wheel?—The braking of the wheel.

197. (*Chairman.*) As a matter of fact it would affect both hands equally?—Yes.

(*Sir Clifford Allbutt.*) There is a distinction between a horny skin in the hand and a thickening of the fascia, is there not? It was a little hasty, but when that man showed his hand, my impression was that in his left hand he had only a horny skin which was moveable. On the parts below, in the case of malady which we are discussing to-day, there is adhesion within. You cannot push it backwards and forwards. On the left hand of that man I thought one could take a horny mass and rub it round and round.

(*Judge Ruegg.*) You did not think it was incipient Dupuytren's contraction.

(*Sir Clifford Allbutt.*) No; I thought what was on the other hand was.

(*Chairman.*) So that outwardly they presented the same appearance?

(*Sir Clifford Allbutt.*) Yes.

(*Chairman.*) And that is the real test. One is moveable and the other is immoveable.

(*Witness.*) The friction would cause that.

(*Sir Clifford Allbutt.*) It would depend where the customary pressure was. These horny masses in his case were *here (indicating just beneath the basis of the fingers)*. It would require a little careful watching to see how he used his hand. But it struck me if he had

a horny mass where probably the stress came on his left hand, it was due to this round wheel.

(*Witness.*) The starting wheel.

(*Sir Clifford Allbutt.*) It is only a suggestion.

198. (*Chairman.*) The factories that we saw this morning were on what is called the tenement system?—Yes.

199. That is to say, there are various occupiers in various factories, in the same building under the same roof?—Yes.

200. What is the custom as to the power?—That is generated by an engine belonging to the owner of the building, distributed through vertical shafts to each floor, and taken off by bevelled wheels and horizontal shafting along each floor.

201. Then the tenant of the tenement pays an inclusive rent for the use of the tenement and for the power?—Yes.

202. What is the position generally of the occupier of the tenements we saw to-day? Is he generally a working operative himself or not?—Not always. A good many of them are. A good many of them were formerly twist hands.

203. Did we see this morning tenants, or were they foremen?—We saw some working occupiers this morning. The first one was not really a working occupier. He does not work a machine now. I think he ceased about five or six years ago. At the second shop we went into one of the partners was working the machine regularly. In the third shop he does not.

204. If there is an inclusive sum paid for the use of the power, the heavy running of the machine would not injuriously affect the tenant, would it?—No.

205. Do you think that has anything to do with our investigation?—I am afraid it has something to do with the lack of proper care of the machine.

206. (*Judge Ruegg.*) There is no incentive to save?—Exactly. In other works I have been to, where each machine was separately driven by electric motor, and the occupier had to pay direct for the power consumed, he was very careful to take periodic tests to see that they did not absorb more power than they should do, and they were constantly watched by a man thoroughly competent to do so.

207. I suppose these men who are the occupiers of tenement factories are generally men of small means?—Not generally, though many are.

208. Would you say they are a class apart, men of exceptionally small means compared with occupiers of factories in general?—No. I do not think so.

209. I am just considering the burden which the inclusion of the disease may put upon them. Do you think they are capable of bearing it?—I think so; they would insure of course. I might say here there are a great number of machines obtained on the hire system in the trade.

210. They are not the owners of their machines as a rule?—No, not always; they advance a few hundred pounds.

211. And in most cases they have been workmen?—Yes, in a lot of instances.

212. And I suppose one might say they are not men of any considerable means as a rule?—Not at present.

213. Do you mean that in Nottingham times are rather bad?—Very bad indeed.

214. You are satisfied that in all these branches of trade in Nottingham at the present time the trade is really bad?—Yes, at present it is. In the curtain and plain net the slackness has only recently come about. In the levers trade they have been bad for some five or six years.

215. Do you find since this subject has been mooted that there is any strong objection on the part of the employers to the inclusion of this disease; do they feel strongly on the subject?—No, I have not found that except with a few. I think they are all pretty well agreed that if the working of the machines does cause injury it ought to be scheduled, but they are not prepared to admit that it does cause the disease.

216. Do you think there is a probability that they would get rid of the workmen who had an incipient stage of this disease if it were scheduled?—I think most probably they would hesitate in starting a fresh twist hand.

217. If that is so, it almost follows that the person who is got rid of would have great difficulty in getting another situation in similar works?—Yes.

218. I see in the lecture delivered by Sir James Paget, he says this—I do not know whether it is quite a question one should ask you—"This disease is often characteristic of gout," and he goes on to say, "Any "man who is in the habit of pursuing an occupation "which involves constantly the grasping of anything, "especially with the little and ring fingers, is very "likely to get this thickening and subsequently con-"traction of the palmar fascia." Have you considered that in regard to other occupations?—No. I personally have made no investigation into other occupations.

219. He speaks of the occupation of wire drawing; do you know anything about that?—Yes, I have been amongst the wire drawers.

220. Sir James Paget says: "A large proportion "of the older men occupied in wire drawing and key "making suffer from this"?—I never knew of it. I have had some nine years in Warrington, and it was never brought to my notice. I never heard of it; but in wire drawing the wire is drawn through the palm of the hand.

221. I do not profess to know anything about it myself?—I have never heard of the disease amongst those workers.

222. Still, I suppose, there is no doubt it is contracted in other forms of manual labour?—Yes, I believe so; for instance, gardeners.

223. Something was said on the last occasion about cotton twisters, who twist the cotton in their hand, always keeping their fingers in a certain position. Do you know anything about that?—I have never heard of that. I had nine years in the cotton industry in the Manchester district, and I never heard of the disease.

224. I do not know if you can answer this, but it seems to me to be important. Sir James Paget says:—"The tendons of the right hand might be con-"tracted to ever so great a degree, and the distortion "consequent might be in proportion, but, if the integu-"ments over the contracted segments were sound, it "was necessary to suspect gout." That opens an enormous question?—It is rather out of my line.

225. But it is a matter I want to consider more carefully than anything, namely, as to whether there is any way of diagnosing this disease as due to gout or as due to pressure.

(*Chairman.*) That is rather an indication that there is.

(*Judge Ruegg.*) Yes: Sir James Paget rather suggests there is a way in which you can eliminate the question of gout.

226. (*Sir Clifford Allbutt.*) You do not want to give us any expert opinion about the anatomy of the the thing, do you?—No.

227. Is the position of the lever essential to a particular machine? Overhead levers were mentioned. Is that an easy alternative, or does it depend on the particular machine whether it should be overhead or not?—That overhead handle is a very rare one. I do not think there are any being made now.

228. It is more or less obsolete?—Yes, I think it is.

229. Then that might be dismissed?—Yes.

230. That has been to the disadvantage of the workmen, then?—Yes.

231. Is there any difficulty about fitting compound levers to all machines?—No.

231*a*. Is it in your drawing?—I sent in a drawing of a compound lever. There is no difficulty in fitting them on to the curtain machines and plain net machines. In fact, most of the machines are fitted now.

232. It does not take up any more space, or very little?—No. I do not see why they could not be adopted on the catch-bars of the levers machines. Something of that sort could be done.

233. You are not prepared to give us any estimate of the ordinary prevalence of this disease amongst mankind?—No.

234. Are you prepared to give us any evidence of the particular prevalence amongst these workers—the percentage?

(*Chairman.*) We have that in the Report.

235. (*Sir Clifford Allbutt.*) There is a difference between an injury and effects of excessive use, is there not? Any excessive use of your fingers does not amount to a lesion. It may be a fatigue, but it is not a lesion?—Yes.

236. As I understand, and as I put to a witness last time, this is a multiple of tiny lesions which accumulate and make these scars underneath the hand; no excessive use of the hands would produce this kind of thing?—No, I understand not.

237. It is the particular stress which injures the part?—Yes.

238. (*Chairman.*) Do they get these machines from the locality?—Yes, Nottingham and Long Eaton.

239. (*Judge Ruegg.*) They are made here?—Yes.

240. (*Chairman.*) You were nine years at Warrington and four years here?—Yes.

241. During your time at Warrington and your time here you examined a great number of factories that had nothing to do with lace-making in any shape or form?—Yes.

242. It is the use of levers of this kind more common in what I will call lace factories than it is in the other factories that you have examined?—Yes.

243. During the time you were at Warrington you were really not aware of this disease at all?—No. Until 1910. I had never heard of it.

244. With regard to this process, is the lace-making process distinguished from the other processes in the other factories that you inspect, by reason of this catching of some sort of handle or lever?—It is the constantly catching hold of the handle and lifting heavy weights.

245. Is there anything else that would differentiate the two classes of factories that you know which would have any bearing on our investigation?—No.

246. (*Judge Ruegg.*) There must be other industries in which the workers have to pull levers?—Yes, but not to the same extent as the lace industry.

247. Can you tell us some of those industries?—An ordinary engineer will have to work handles; for instance, on his lathe or his drilling machine.

248. Have you inspected such factories?—Yes.

249. Have you found the disease there?—No, never.

250. Not even individual cases?—No.

251. Of course your attention has never been directed to it?—It is a different weight.

252. (*Chairman.*) That is the difference; there is more weight?—They do not impinge on the palm of the hand, either. They have less weight, and they catch it by the fingers and thumbs.

253. Wherever you are, although of course primarily you only want to see that the factory laws are observed, if there are any diseases amongst the men they are always brought to your notice, are they not?—Yes.

(*Chairman.*) We are much obliged to you.

The witness withdrew.

Dr. LAWS, called, examined by the Chairman.

254. What are you?—I am Bachelor of Medicine of Edinburgh University.

255. And you are a Fellow of the Royal College of Surgeons, England?—Yes.

256. You are Senior Surgeon to the Nottingham and Midland Eye Infirmary?—Yes.

257. And formerly you were assistant editor of the "Ophthalmic Review"?—Yes.

258. Of course you have made a study of eye diseases for a number of years?—Yes.

259. Will you tell us in as popular terms as you can command the relationship of nystagmus to this clonic spasm?—It seems to me that the clonic spasm is a habit which the sufferer from nystagmus gets in his efforts to control nystagmus. If you have a man who is just beginning to get the movements of nystagmus you will see him jerk his head and blink his eyes, and it steadies him for the moment, or may succeed in steadying him, and it seems to me the blinking becomes a habit with him in his endeavours to get a steady position. It is a very variable symptom. Some do not get it at all. Apparently they have not discovered it as a means of steadying their eyes. In some it is almost more marked than nystagmus itself.

260. Before you can have nystagmus, do you have the spasm?—I have never seen it independent.

261. You use it as one of the effects of nystagmus. That is the way you use the term clonic spasm?—Yes.

262. Can you get cured of nystagmus, and clonic spasm remain?—I think one often sees cases where no trace of nystagmus can be elicited.

263. And yet they have the habit?—Yes.

264. Have you come across many cases of clonic spasm?—Yes, many of them.

265. Have you ever come across a case where there has not been, in the history of the patient, nystagmus first?—I do not think I could say.

266. You could not recall one?—No, I should not think that I have; but I would not speak quite positively.

267. With regard to clonic spasm, after the purely nystagmic symptoms have disappeared, what do you say about the condition of the man suffering from clonic spasms? Are they involuntary, or can they be controlled?—I think they can undoubtedly be controlled. If you insist on a man keeping his eyelids still, he can do it. If you tell him, "I cannot "examine you if you do not keep your eyelids still," then he will usually do it.

268. Have you observed that the spasms become less frequent when you are talking to the man in the ordinary way than when examining him as a doctor?—Yes, that is quite evident if you try it.

269. Supposing a man is suffering in this way, what is his condition with regard to being able to do work?—I do not think that the blinking in itself is a hindrance to his work. I think it generally means he has still some remnants of nystagmus; and that nystagmus, although it may be in abeyance when one is looking at him, is liable to develop again.

270. Is it painful in any way?—The blinking?

271. Is clonic spasm painful to the patient suffering from it?—I do not think so.

272. Does it last for a long time? I mean in the cases that come before you is it a matter of months or years?—There are cases where it has seemed to persist for years after no sign of nystagmus could be elicited.

273. Is it a curable disease?—I should think it wears itself out, as nystagmus does.

274. I suppose patients have come to you suffering from this clonic spasm?—Yes.

275. Have they in time been cured without reversion to it, or have they been cured for a time and then it has come back again?—I think it comes back, as nystagmus comes back, when they are subjected to the conditions which produce nystagmus.

276. What are the conditions which will bring clonic spasm back?—I think it is when they return to work and begin to get nystagmus again. I have never dissociated the two from one another at all in my experience.

277. Forgive me for putting it in a popular way; but first of all the man has nystagmus and then he has clonic spasm?—He may or may not get the spasm.

278. Supposing clonic spasm comes, it is owing to previous nystagmus?—Yes.

279. Then the nystagmus may be cured and clonic spasm persist for a time?—Yes.

280. And that again may be cured?—Yes.

281. But the clonic spasm will not return again to the patient unless he has nystagmus recurring?—I think not.

282. So that really, as it were, this is a disease which follows nystagmus. That is the conclusion you come to. It does not invariably follow, but it could not be found unless there has been previous nystagmus?—I should not call it a disease; I should call it a symptom of nystagmus. That is the more correct way of putting it.

(*Judge Ruegg.*) That is, the real thing—nystagmus—is a scheduled disease.

(*Sir Clifford Allbutt.*) And this is part of it?

283. (*Chairman.*) Then would you say that while there is clonic spasm there is nystagmus? You say it is a symptom of nystagmus. If you see clonic spasm in a man, do you say that that is a symptom that the man is suffering from nystagmus?—Yes; a symptom showing he either has or has had nystagmus.

284. (*Judge Ruegg.*) You would call it a sequela of nystagmus?—Yes, I think so.

285. (*Dr. Legge.*) But in your opinion is it not more an associated condition than a sequela?—Yes, it is associated with it.

286. (*Chairman.*) There is a great difference between the two, of course. Must it be concurrent with, or may it exist by itself, apart from nystagmus? That is really the point?—Yes. I think it may persist after all tangible signs of nystagmus have gone.

287. (*Dr. Legge.*) It may be both a sequela and an associated symptom?—Yes, that is what I should say.

288. (*Sir Clifford Allbutt.*) I have been told quite informally that colliers, on account of certain conditions of their life, are rather apt to throw their heads back and blink with their eyes in this manner?—Yes, I think throwing their heads back is an effort to steady their eyes, because there is no doubt that nystagmus is most marked looking upwards and less marked looking downwards.

289. I will put it in another way. Do colliers suffer from this blinking who have not had nystagmus?—I do not think so.

290. It is wholly dependent on nystagmus?—That is the impression I have got from my experience. I have never tabulated the cases.

291. You think it is wholly independent of errors of refraction?—I do not think it is. I think a high error of refraction predisposes to nystagmus. I think a man who sees indistinctly is more liable to get nystagmus than one whose acuteness of vision is good.

292. This is perhaps a little off the point, but you speak of nystagmus as being curable. That is so, is it?—All the symptoms will disappear if a man leaves his work.

293. That is, on giving up the work?—Yes.

294. In some months, or a year or two?—It is extremely variable. It is one of the difficulties of nystagmus that it is such a variable disease.

295. After giving up the work the nystagmus is curable and passes off?—Yes.

296. Supposing he still retains some clonic spasm as a habit which would in itself be negligible, would it indicate to you that he was not fit to go back to his work lest the nystagmus should return; that his eyes were too weak in that particular?—I do not myself regard it as a symptom showing that he cannot return to work. This is a sort of rule of thumb line that I follow; that if I can elicit no signs of nystagmus I tell him I think he might try his work again. I do not regard blinking as necessarily preventing him going to work. Of course I do not mean to say he would not get nystagmus if he goes back to work. But I think if he has no present symptoms of nystagmus he might work for some years without getting a fresh development or before he gets a fresh development.

297. We have been sometimes urged on what seems to be a very abstract point that a man may have nystagmus, that is to say the disability, without oscillation of the eye-balls?—Yes, it is quite possible, because some men are much more sensitive apparently to the effects of nystagmus than others. Those are the cases in which you have difficulty in finding any trace of nystagmus. They complain of the symptoms, but you cannot find the signs.

298. Then, of course, the obvious point is whether any flickering of the eye-lids of this kind might suggest the disability of nystagmus, even when you could not by any means at your command detect or perceive oscillation?—Yes, I think one would take the blinking as to a certain degree evidence that he had nystagmus.

299. (*Chairman.*) Had, or had had?—Had, or had had. I do not think it is strong evidence that he still has it; but there is undoubtedly some value to be put on the blinking as evidence of nystagmus.

300. (*Sir Clifford Allbutt.*) I asked you the question rather in case you had anything to volunteer about it. I quite understand that it is an abstract question. Putting it broadly, if you exclude nystagmus, it is quite an inconsiderable matter?—Yes, I think so.

301. (*Judge Ruegg.*) Nystagmus is almost entirely a miners' disease?—It does occur in a few other trades.

302. Can you mention any other trades in which it occurs?—I think compositors have shown it occasionally.

303. Distinct nystagmus?—I believe so.

304. Have you had any such cases?—No.

305. (*Judge Ruegg.*) I think I am correct in saying that it is scheduled in the Workmen's Compensation Act as a miner's disease.

(*Chairman.*) "Miner's nystagmus"?

(*Judge Ruegg.*) No, it is not called that. It is scheduled as nystagmus, but against it is the word "mining." I only meant in that sense. I do not think it is conclusive that the name of the trade which is put against the disease is "mining" in the Act?—For all practical purposes it is a miner's disease.

306. Is it due to insufficient light?—That is one of the factors, I think.

307. It is said that work with an ordinary safety lamp produces it, but that where the mines are lighted by other and better lighting it is rarer?—Yes, if he has enough vision and he can fix his eyes, he is less liable to get nystagmus.

308. Is clonic spasm a separate disease or not?—I should say certainly not.

309. Then, if you are right, we already have it in the Act?—Yes.

310. It is an incipient sign of the disease coming on, do you say?—I do not think it is ever the first sign. They complain of other symptoms before they get the blinking.

311. When you get the blinking, then you have nystagmus?—Yes.

312. Then, when the other symptoms of nystagmus have passed away, this one symptom may remain?—Yes.

313. Do you mind telling me what are the other symptoms of nystagmus?—The patient complains of objects dancing in front of him, and dizziness, especially when he stoops, and of indistinct vision. He cannot recognise people until they come close to him, and there is pain often across the brows.

314. (*Chairman.*) All the things you mention now, of course, are subjective symptoms, are they not?—Yes.

315. Is this the only objective symptom; is not there the movement of the eye-balls?—Yes, the quivering of the eye-balls. We should call that medically a sign. The others are symptoms.

316. And that you can discover yourself, of course?—Yes.

317. And although the flickering of the eyelids may be put on, have you ever known any cases?—That is the difficulty about it; it may be simulated.

318. But the other cannot be?—The other cannot.

319. All these other symptoms that you have been telling us of may pass away, and the spasm of the eyelids may remain?—Yes, I think so.

320. Would you say, assuming it is a symptom of the disease, it is the last symptom to pass away?—I think it is. In some cases it seems to persist for a long time.

321. In your opinion, would it in itself incapacitate for work?—No, I do not think so.

322. Assuming the other symptoms have passed away, that by itself would not incapacitate for work?—I do not think so at all.

323. But would you recommend a man who is under your care to go back to the work of mining when he has got this symptom?—Yes, if I could find no sign of actual nystagmus.

324. There is no treatment for nystagmus except coming out of the mine and working in the open, is there?—The general health may have something to do with it.

325. Apart from general health?—No.

326. Do you think, then, that the whole matter can be met by adding nystagmus or its sequelæ to the schedule? Would that cover it all?—I think I said I should not regard the blinking alone as anything to debar the man from going to work.

327. Perhaps not, but would it cover the disease, or whatever it may be called, if the words of the Act were "Nystagmus or its sequelæ"?—Yes, it would then bring it into the schedule.

328. But you think it might be dangerous to put it in, because it would give an opportunity of claiming compensation if only this symptom was left which, in your opinion, need not incapacitate for work?—Yes, it would greatly increase the difficulty. You would have to certify whether a man is fit for work or not before allowing him to go on compensation for a symptom which he can counterfeit.

329. Are you aware that the opinion you hold about this not being a separate disease is not universal? Others entertain a different opinion; that it may be a distinct disease?—At the hospital here they have the same opinion as I have.

330. Is this a large mining district?—We are on the south border of a large mining district. We are south of the Notts Coalfield.

331. And you treat a great many miners?—Yes, we get a great many in the infirmary here.

332. (*Sir Clifford Allbutt.*) You would call this blinking of the eyelids rather a habit than a disease?—Yes, that is my view of it. It is certainly much more pronounced in the nervous individual.

333. (*Judge Ruegg.*) In your opinion, in such cases as that, it would be a symptom of incipient nystagmus?—Or of past nystagmus.

334. If it were past nystagmus, he might have a certificate?—Yes.

335. (*Chairman.*) It comes to this really, that it is a sign of past nystagmus?—Yes, I think it is.

(*Judge Ruegg.*) An objective symptom of nystagmus.

336. (*Chairman.*) Then if he goes back to mining, it will probably be followed by actual nystagmus again?—Yes. I think any man who has had nystagmus and goes back to mining will have it again in time, but practically they can often work for years.

337. (*Judge Ruegg.*) It appears that the difficulty arises with the Certifying Surgeon. Would you say that the Certifying Surgeon who finds a man suffering from this spasm, and that alone, would be right in refusing a certificate for nystagmus if he could find nothing else, although the man is a miner?—Yes, I think he would. If I could find no nystagmus, I would let the man go back to work. I should say he was fit for work.

338. Supposing you found the spasm, and no history of past nystagmus, would you say it would be wise as a precautionary measure that he should not continue his work?—It is difficult to answer that.

339. I mean would you probably say, "He has got "this symptom, and if he continues to work it will "develop (if that is the correct expression) into "nystagmus"?—Yes, I should think he was a man who would be likely to develop nystagmus. I should take it as indicating that he would be more likely than another.

340. This spasm of the eyelids you find existing sometimes in persons who are not engaged in mining, or in fact any manual labour, do you not?—I have never come across it except in miners.

341. I only throw it out?—I do not know that I would say that. I think there are nervous people who blink a good deal. I was not thinking of it as a disease symptom at all at the moment.

342. As far as you know, the mere blinking does not interfere with the man's power of working as a miner at all, does it?—No. I think many people of a nervous type do blink more than others.

343. (*Sir Clifford Allbutt.*) I want to interpose a little point. The word "spasm," of course, would be colloquially used?—Yes.

344. I am not sure that the word "spasm" is correct medically. You are an expert in this matter; but there is a spasm of the eyelids known as blepharospasm?—Yes.

345. We are excluding that absolutely, are we not?—Yes.

346. That is involuntary, is it not?—Yes.

347. But there is a voluntary element in this that we are speaking of now?—Yes, it may be controlled.

348. It is like all habits, it becomes automatic, but in its origin it is voluntary?—Yes.

349. The blepharospasm is different. It could not be mistaken for the other affection; it is quite different, is it not?—Quite different. It has nothing to do with clonic spasm.

350. (*Chairman.*) Nor with nystagmus either?—No.

351. (*Dr. Legge.*) Do you know of wry-neck as associated with nystagmus?—I know certain movements of the head one gets with it, but I have never seen any persistent change.

352. There is no lifting up of the shoulder?—I do not think so. One gets movements of the head rather similar to nystagmus—jerking—but not continuous turning of the head to one side.

353. Then I take it you do not believe in a palpebral nystagmus?—No, I do not regard it as anything apart.

354. And you make it an invariable rule to exclude from employment in the mine those whom you find so suffering from nystagmus?—Yes, but I have no authority for making that statement.

355. There is a general consensus of opinion, whether it is right or wrong, that that is the best course to take?—No, I would not make myself responsible for anyone else in that. It is only a sort of rough practical rule that I have adopted myself. It is very difficult to say when a man is suffering from nystagmus; and if one has to have a standard—it seems to me that that answers the purpose—that when one can no longer produce any movement of nystagmus by any test one can apply in the consulting room, it is generally a practical thing to let him go back to work.

356. Do you mean in the mine itself?—Yes.

357. But is that the generally accepted view? Is it not customary to say that when once a man has had nystagmus he ought never to go back to work in the mine?—Yes, that has been said, and it is quite true that he will get nystagmus again undoubtedly if he goes on long enough. I think that is quite certain.

(*Judge Ruegg.*) I think I know of several cases in my own district where the men have gone back to work.

358. (*Dr. Legge.*) I know they do go, but it is stated in all the text-books that once nystagmus is shown they ought not to go back. I am rather glad to hear you say he need not be kept away?—It may be a hardship to keep a man from his occupation merely because he may ultimately suffer from nystagmus again.

359. (*Judge Ruegg.*) It never leads to anything more serious than nystagmus itself; it never leads to blindness?—No.

360. Repeated attacks would all be cured in the same way—namely, by abstention from work in the mine?—Yes; but nystagmus may get so bad that it is not cured in the course of his life, and you see men go on working until their eyes are in constant violent movement, and they probably do not ever get rid of it.

361. (*Dr. Legge.*) In your opinion, if clonic spasm is sufficiently serious to call for interference, do you think there would always be nystagmus present?—Yes, I think so.

362. I mean, sufficiently serious to cause disability?—Yes. I do not think in itself it ever causes disability.

(*Judge Ruegg.*) That is what I understood the witness to say, that in itself he does not think it does cause disability, but it is one of the last symptoms that passes away.

(*Dr. Legge.*) It is voluntary, while the other is involuntary.

363. (*Judge Ruegg.*) You think it is voluntary?—I think it is voluntary in its origin. It is a voluntary effort to get over nystagmus, but it becomes a habit.

364. (*Chairman.*) Have you ever had a private patient suffering from this disease, or have you seen anybody at the hospital?—Yes, some miners come to one privately.

365. Apart from miners, have you ever seen a rich man, a private patient, suffering from nystagmus?—There is a nystagmus that is different from miners' nystagmus, which is due to disease of the eye.

366. (*Sir Clifford Allbutt.*) What is called idiopathic. It is a common sign of nervous affection?—Yes, that is another type again, and there is a type which is due to eye disease.

367. (*Judge Ruegg.*) When it is idiopathic, is it sometimes accompanied by the spasm?—No; I have never seen it accompanied by the spasm of the lids.

368. The spasm is a peculiarity of miner's nystagmus?—The nystagmus I speak of, due to eye disease, is usually consecutive to some defect in vision.

369. Still, I think it is important if you can answer it. Is what we have been speaking of, clonic spasm, a peculiarity of miner's nystagmus?—Yes, I think it is.

370. (*Chairman.*) As I understand it, although a man is suffering from clonic spasm, you say he can go back to the mine?—Yes.

371. Although he has the last remaining symptom of having had or having nystagmus?—Yes.

372. And although you think after he has been there a certain length of time he will get nystagmus again?—Yes.

373. (*Judge Ruegg.*) If this is, as well as being one of the symptoms of past nystagmus, one of the symptoms of approaching nystagmus, I gather you may have it before the other symptoms of nystagmus are defined?—I do not think so. I do not think it is an early symptom of it.

374. I understood you to say that you found it in the early stages, and you found it after nystagmus had disappeared?—What I meant was that a man is not always suffering from spasm when he has got nystagmus. The movements are not always present. If he feels the movement coming on then he would blink.

375. Would you help us on this practical question. I understand the difficulty has arisen where the Certifying Surgeon who finds a man has got this spasm, but has not the other definite symptoms of the disease, refuses a certificate and says: "I cannot give you a certifi-" cate entitling you to compensation." Supposing this were scheduled as a disease, would it be sufficient (at all events before nystagmus is defined) that the first symptom is present, that is to say, the spasm, and would he get his certificate? What do you say to that?—I think it would be a bad policy. It would open the way to such easy deceptions and malingering. They already know this symptom of spasm of the lids.

376. Is it your experience that there is much malingering with reference to this disease?—I do not know what the proportion is. Perhaps, from the cases which are sent to one, one gets an exaggerated idea of the number of malingerers, because the cases which are suspected are sent to one for an opinion.

377. Do you mean since 1907?—Yes.

378. Since the Act gave compensation?—Yes. One gets them mainly from the insurance companies, who have an idea that a man is really able to work.

379. (*Chairman.*) Have you ever had a case of a man who has had nystagmus, and had clonic spasm, who has gone back to the mine and come back again suffering from nystagmus?—I think so.

380. You have not one in your mind?—No.

381. That will probably be the cycle according to you?—Yes, I think that would be.

382. And I take it he would retain the clonic spasm until the nystagmus came back to him. If a man is suffering from clonic spasm and goes to the mine, he is not likely to be cured even of the spasm, is he? It would go on?—No.

(*Dr. Legge.*) It is very important, and if you would look up your notes and let us know of any such case, it might be valuable.*

383. (*Chairman.*) Yes, and how soon he comes back. As I understand it, if a man comes to you, who has had nystagmus, and who at the end of it has clonic spasm, and a fluttering of the eyelids is the only symptom present—if the eyeballs are not moving—then you say, "You have recovered from nystagmus, but you will suffer from spasm?"—Yes.

384. That is really what it comes to?—Yes.

385. (*Judge Ruegg.*) And if it were thought right, that would be covered by "nystagmus or its sequelæ," except that you hardly regard it as a sequela. You regard it as largely voluntary?—No; I only say it can be produced voluntarily.

386. (*Chairman.*) It is in order to save the eyeballs, as I understand it?—Yes.

387. It is involuntary and automatic at first, and then it is continued after the necessity has passed away?—Yes.

388. And it becomes a habit really?—It becomes a habit.

389. But you can at once tell whether there is nystagmus present by going in a dark room and seeing whether there is a movement of the eyeball?—Yes.

390. (*Judge Ruegg.*) Would you say that, with a man who is cured of nystagmus and has a spasm, the disease was more likely to recur than with a man who had been cured of nystagmus and had not a spasm?—Yes, I should.

(*Chairman.*) We are much obliged to you.

* The witness afterwards wrote:—I have no real *evidence* to give on this matter; it would require a long statistical inquiry to get it, and my attention has not previously been specially directed to the point; but my opinion is that he would be likely to have a recurrence sooner than one who had no clonic spasm; not because I think that the clonic spasm in itself predisposes to nystagmus, but that those who present the lid spasm in a marked degree are generally of nervous type and such persons are more prone to nystagmus than others.

The witness withdrew.

Adjourned for a short time.

Mr. W. G. Underwood (the Nottingham Lace Manufacturers' Association, Plain Net Section), and Mr. L. Smith (Levers Lace Manufacturers' Association), called, examined by the Chairman.

Mr. Smith first gave evidence:—

391. I do not know which of you gentlemen would like me to ask a few questions of you first?—I sent the paper along, and was asked to represent the two associations.

392. You represent the Levers section specially?—Yes.

393. Of course, you know the scope of this inquiry—you know, generally speaking, what we are inquiring into, as to whether this Dupuytren's Contraction should be scheduled or not?—Yes.

394. How long have you been connected with this branch of the trade?—For 22 or 23 years.

395. In what capacity? Have you ever done any actual work yourself?—I have never worked a machine as a twist hand, but I have frequently worked it for half-an-hour or an hour at a time.

396. Just occasionally?—Yes.

397. When did you first know it was suggested that Dupuytren's Contraction was a disease that was rather common in the trade?—I did not know it was rather common until we got the report. I heard something of this inquiry perhaps a matter of a year ago, when Mr. Wardle took it up.

398. But up to a year ago you had never heard anything about it?—No.

399. So that you had never known that this disease was in any shape or form connected with the trade?—Not at all.

400. During the last 12 months have you made any inquiries?—I have not heard of any cases at all.

401. You are still of the same opinion?—Yes, that it is not common.

402. So that from your point of view at any rate it would not be a very serious thing. If your facts are right, an additional insurance would not be at all heavy?—Possibly not.

403. Of course, if you have never heard of a case, you cannot give us any evidence except simply negative evidence?—That is so. I may say when first I went out from school I went into a commission house, and at that time I went into practically every factory, both in Nottingham and Long Eaton, and I have never seen a case in all my experience, which is rather a wide one for an employer perhaps.

404. What is your exact position now?—I am a manufacturer.

405. A manufacturer yourself?—Yes.

406. And you speak on your own behalf and on behalf of some association?—On behalf of both associations.

407. Which include practically the whole of the employers in this district?—Yes, directly or indirectly.

408. You are giving your evidence not as an individual employer, but in a representative capacity?—That is so.

409. And your evidence, speaking as an individual person who has had 22 years' experience of the trade, and on behalf of your associated employers, is that you have not seen a single case of this disease?—I have not.

410. And not a single case of Dupuytren's Contraction has been brought to your notice during all this time?—Not a single case has been brought to my notice; only I have heard of it.

411. During the last 12 months?—Yes.

412. Nor your associated employers, on whose behalf you speak?—That is very difficult to answer, for this reason, that we are a very large body, and at no general meeting has this matter come up. But so far as we have been able to gather in the short time since this report came out, we have had a meeting of both associations, a sectional meeting of the Levers in one association, and a meeting of the council of the other association, and none of the gentlemen round the table knew of a case except one, which he had never noticed until this report came out. He said, "I have a case in my shop, I am told." That is the only case which has come to my knowledge since the report came out.

413. Just one case?—Just one case. There may be others amongst those councillors who were not present, but I do not know.

414. Whatever be the name of the disease, which of course is beyond question, you never knew the employees were affected by contraction of their hands or fingers, or anything?—Not at all.

415. And no complaint was ever made to you?—No complaint at all.

416. Of course you know about the levers that the men have to pull on the machines?—Yes.

417. Have you formed any opinion as to what the pressure is?—Only from statistics in the report, and Mr. Eatock and Dr. Collis were through my own place. I went round with them and saw some pressures and weights that were recorded.

418. But even then, you did not see the hands of any of the workmen that were affected?—No, none of our workmen are affected in any way. I contend that in the working of the machine which I mention in my notes which you have, if the disease is caused by pressure on the centre of the palm, it is by wrongful use of the machine; because there is no need, in fact it is ridiculous for a man to attempt to pull those levers by the centre of the palm.

419. You might tell us which of these machines is the one in use in your works. (*Plate 4 of the report was shown to the witness*)?—Possibly the best way would be to eliminate those we have nothing like. We have nothing of A. type to my knowledge and B. type on the left elevation, and B. is very similar to D. type on the elevation on the right hand. We have nothing of the style of the elevation of B. on the right-hand side. We have nothing of C. type, and we have nothing actually of D. type. Our handles are not pointed as they are in B. and C. type. They are not square on the half elevation as in D. type. They are tapered handles, finishing very similar to the D. type and the elevation on the left of B. We have four makes of machine, and the majority of our handles are slightly different.

420. Do you use double levers?—No. We have not any compound levers. Ours are not very weighty machines.

421. Compound levers would lessen the pressure would they not?—Yes, distinctly.

422. Yours is an independent factory, all under one roof, not a tenement factory?—It is a tenement factory; there are very few independent factory people in Nottingham.

423. Might I ask how many men you employ?—We have 24 men when fully going. I am speaking of twist hands.

424. You pay a certain rent for the tenement?—Yes.

425. Is the machinery yours?—Yes.

426. Do you pay a lump sum for the power or according to the power you use?—We pay for the power in the rent.

427. So that it does not affect you financially whether you use much or little power?—That is so.

428. I suppose you know the suggestion that is made with regard to this disease, that the pressure is on the centre of the hand?—Yes. I claim that in operating the machine there is no need at all to have any pressure on the centre of the palm in the way described in the report.

429. You have not any of these ball types?—No, we have not.

430. Supposing they were the ball type, would your answer be the same?—Personally I should never dream of taking hold of it in that way.

431. But supposing your hand had to go on the top, do you think that might reduce this pressure that is complained of?—The only machine I remember that had a ball top is one I visited many years ago, and the man who worked that machine at that time never put his hand on the top; they always took it in *that* way or *that* way (*gripping first thumb uppermost and then with the thumb below*).

432. They got hold of it below the ball?—Yes.

433. (*Judge Ruegg.*) Or round?—No, they very seldom took hold round the ball. In fact they used to swear about the ball being on it. That is the only one I have seen, but I know there are others.

434. (*Chairman.*) Supposing the man did catch hold of the top, would that produce this pressure which is complained of?—I do not think so.

435. So that it would be quite immaterial whether they got hold of the ball or below?—Yes, very largely.

436. So that in your view if any special pressure is exercised on the middle of the hand in this way, it is really the negligence of the workman?—Exactly. The only way in which I can see that there would be pressure on the centre of the hand would be by lifting the comb bar lever, if a man took it in *that* position, instead of taking it *so*; because in the upper lever there is nothing to press down at all, he has simply to draw it over.

437. With regard to the wheels, do you think that would have any effect?—With regard to the wheels, we rather object to the statement in the report about the weight, because I have not known a twist hand who did not put his power slightly on, at the time to turn his wheel, to start the machine.

438. Both going at the same time?—Yes. I think Mr. Underwood will be able to bear me out that in the plain net machines they would practically start themselves, and there are very few positions in the Levers lace machine when they would not start practically by themselves if they did that.]

439. Using one hand for the wheel and the other hand for the lever?—Yes. I admit that as a man has to turn through his machine from one motion to another to pick the threads up or anything of that sort, he must turn without the power, because the machine would be damaged if he put the power on and went the least bit too far. But when starting the machine I claim they do not have to pull anything like the full weight. That is, of course, only partially destroying the statement in the report. When they are starting the machine, they do not have to put this pressure on, and it would nullify to some extent the number of occasions on which they use this pressure.

440. Have you any suggestion to make as to the age of the men? I suppose you have found now that the men who are alleged, you would say, to be suffering from this disease, are rather old men?—Yes.

441. Do you want to say anything to us from that point of view?—There is just the general point I mention in those notes that you have, that I believe it is a fact that the men in the lace trade are working on the machines at a greater age than any men in other trades, and if it is a disease that comes on after a man is past 40 or 45 years' of age, then it will be found in the lace trade, where it would not be found in other trades where men leave their machine work after the age of 45 or 50.

442. What other trades are you referring to?—Engineering trades. I do not think you will find the men working at lathes and that sort of thing after they reach 45 or 50 years of age.

443. So that supposing it transpired as a matter of statistics that a much higher proportion of lace workers were suffering from this disease, that would raise a *primâ facie* presumption that there was something special to the industry, would it not?—Yes.

444. I understand you say that that is accounted for by the fact that older men are engaged in this trade than in any other?—That is one of the points. The other point is that we contend the disease is mainly caused through rheumatism, which is very prevalent in this district and very prevalent among twist hands.

445. Do you mean after they become twist hands?—I am speaking of twist hands there, because twist hands suffer from rheumatism. I come across twist hands, not other workpeople. Whether it is Nottingham or the lace trade is not for me to determine. But I contend it is not, it is not the lace trade because there is nothing in the lace trade to induce it. I should rather argue the other way. Our shops have to be kept dry, and there is no moisture. But Nottingham has a humid atmosphere, and it is noted for these complaints. I mean gout and rheumatism.

446. I understand all the hands, but you suggest the twist hands are suffering specially?—It may be not on account of the lace factory but on account of the conditions of Nottingham.

447. I understand the point of age and the point of rheumatism. Is there a third point, or are those the two main points you want to put before us?—I think those are the two main points.

448. Have you any statistics that would help us at all on those points? You have given us your general opinion. Have you made any investigation into it?—We have not at present.

449. Of course we shall not be able to report very early, and if there are, we should be very glad to have them?—We will try to get statistics on those points if possible.

450. I think it is only fair to you to say that you suggest in these notes that you also somewhat rely on the fact that these twist hands may be engaged in other occupations or hobbies, which may account for it?—Yes.

451. Do you mind elaborating that a little?—I notice in your report you mentioned gardeners, and in one of the special cases you report a man having left a trade and become a gardener, and his disease was very much worse. I should like to ask if there is some mistake in the report because it seems a very peculiar case to record in this report, which sets out to show prevalence of disease in the lace trade. It is page 14, Appendix 1, case No. 25. You notice it says there that he was a levers hand and is now a gardener. He left the trade 30 years ago and has got worse since. He has been affected for 20 years, and he left the trade 10 years before he was affected, and he has got worse since he has left the trade.

452. That is so?—In the body of the report you mention something about gardeners, carpenters, and stonemasons, and I want to point out to this Committee that Nottingham men, and I ought to say specially twist hands, as this inquiry applies to twist hands, are very fond of gardening, and nearly all of them own large allotment gardens. They employ a great deal of their spare time and the majority of their slack time in these gardens. In my own place I do not know of a man, except an old man who is 75 I think, who has not a garden. I think we have the oldest man in the place who is really a capable old man.*

453. Do you mean that they have a quarter of an acre, or half an acre, or something like that?—Yes; they work large allotment gardens, and half their time at least is away from their work.

454. How many hours a day do they work in the shop?—They work ten hours; but they begin at 4 in the morning and work till 9, and if it is good weather the man as a rule goes away from the place and goes straight to his garden. Those who work in the morning from 9 to 1, after having their lunch frequently go away and turn up again at 6, having been gardening most of the time. Then in the summer time when we are short of work, they have a much longer time. Frequently we work what we call short time or half time at the works, from 7 till 1 o'clock in the morning, one shift, and then the man is free for the rest of the day, and most of the time is spent in his garden.

455. He works six hours instead of ten?—That is so, and he has worked his six hours at one stretch.

456. So that your suggestion to us is that part at any rate, if not the whole, of this is due not to what happens in the works, but to what happens outside in these other occupations?—Yes. That is following upon the statement that it is caused by pressure in the hand; because in gardening, as you will readily see, in digging and that sort of work, there is very much pressure on the palm of the hand, and, as I say, there should not be any in the lace trade.

457. You say all, except one, are gardeners?—I am not saying it means that percentage right through the trade.

458. No, but you verify that figure for your works? There are really 23 out of 24?—Just for the moment I believe there are 23 out of 24.*

459. (*Judge Ruegg.*) Do I understand you to say that in the pull upon these levers, whichever way they ought to pull them, they do not in fact put the hand over the top of the lever and pull it down so as to put pressure on the hand?—They do not, in fact, do it.

460. Whether it is necessary or not?—I do not see my men do it. I would not say it is not done, because I believe it is done in some places.

461. Is it in fact found more convenient if the lever is on the left, working from the left, to put the hand over the top of the lever and pull slightly from left to right?—I do not think so. I should never think of putting my own hand up like that to pull to the left. It is a twisting movement.

462. It is suggested to us that that is the common way in which they do it—in fact, that they get more leverage by pulling it in that way. I pulled it that way myself this morning. I was told—I will not say invariably, but that was a very usual way—and that in some types of levers that brings very considerable pressure to bear?—For my own part, I have noticed

* The witness afterwards wrote to the Chairman asking to be allowed to make a correction, and added the following note to his evidence:—This answer was ill-considered and is quite incorrect. We are not fully staffed and therefore employ 16 twist hands only. Under Question 452 I spoke of those actually at work at that time. Upon investigation I find there are 4 who have gardens, 7 who have had gardens, 4 who assist frequently at gardening, and 4 men of whom I have no definite information, I believe them not to have had gardens of their own.

amongst my own men that they more often, if they are pulling the left lever with it on their left-hand side, take it in *that* direction. They take it round the top.

463. Not over the top?—No, they turn as well as pull. If they are on the left hand of the left-hand lever, they would take it either *that* way or *that* way (*illustrating*).

464. Do you agree that if they do take it in the way I suggest to you, it does bring considerable pressure to bear on the palm?—I think possibly it does put pressure on those two fingers more than on the palm.

465. Of course, you have not prepared statistics in your own trade?—No, we have not.

466. I do not know whether it would be possible to prepare them with great accuracy; but would it be possible to prepare statistics of the persons who, being in the trade, have suffered from this disease?—No, I am afraid I could not.

467. They have been prepared to a certain extent, if you have seen the report. I am not saying whether they are accurate or not; but assuming those statistics are accurate, it is suggested that this disease exists in the trade to the extent of 5 to 8 per cent. of all workers?—May I ask whether an examination has been made in the districts of Chard and in Scotland?

(*Dr. Collis.*) I made reference to the reason why I did not visit Scotland, in my first day's evidence.

(*Dr. Legge.*) Why did you not go?

(*Dr. Collis.*) The reason was that I was informed the trade was much newer in Scotland. The machines are newer, and the number of men I should have found over the age of 40 would have been a very small proportion; and since the disease appeared to have a greater prevalence over the age of 40, a great deal of time would have been spent going round Scotland perhaps seeing one or two isolated cases, or possibly, since the machines were newer, none at all.

(*Judge Ruegg.*) What do you say about Chard?

(*Dr. Collis.*) The trade is much smaller there. I have not, in fact, been there.

(*The Witness.*) What makes me ask that question is the very fact that amongst these people there is a greater percentage of young people, whereas in Nottingham, especially amongst the twist hands of the Lacemakers' Societies, you will find we have a very large number of old people; in fact, young people have not been apprenticed as lace twist hands for a very long period of years.

468. (*Judge Ruegg.*) Assuming that these statistics are correct for the moment, and that it is a considerable percentage—5 to 8 per cent.—who suffer from this disease, and it should be found that that percentage is very much larger than in other trades, do you think your association would object to this disease being included?—I think they would object to its being included.

469. On what ground, if it is an industrial disease which largely exists in this industry as compared with others?—My answer to that should be taken very generally, because I am not prepared really to argue that point; but I think they would go on the ground first of all that rheumatism was the chief cause.

470. The difficulty of diagnosing it as being industrial, I suppose you say?—Yes, and I suppose they go on the ground that the workman was probably not incapacitated, or has lost anything by reason of the disease, to any appreciable extent. That is very surprising, but I do not think, even if the man has contracted the disease, he is in any way incapacitated from performing his operations.

471. It is admitted that he is not incapacitated for a very long time, but there does come a time after many years when he is incapacitated; when the hands are absolutely drawn up?—If a man's hand is drawn up altogether I suppose he is incapacitated.

472. If you will forgive me, that does not seem to me to be a satisfactory reason for their non-inclusion. If there is no incapacity there would be no liability. Do you see now?—Yes.

473. If you think that incapacity in fact will not result from this disease, what is the objection to its inclusion?—Then they would argue the increased cost by reason of increased insurance, I suppose.

474. That would be very small, would it not?—That we cannot say. We were only going to pay 15*d.* per cent. for the Workmen's Compensation Act when it first came along, but we are now paying up to 7*s.* 6*d.* and there is no knowing what it will be raised to. It has just been raised 1*s.* 6*d.* in one go.

475. You tell us the majority of the occupiers of these tenement factories are not men of large means?—The majority I should say are not.

476. But would you say, taking them as a class of manufacturers, that they were of less means than any other class—really men of small means?—My opinion of that would not be worth having.

477. The fact is that many of them have been operatives?—Yes, very many of them.

478. And many of them work as operatives themselves in their own factories?—Yes, and many of them do not own their own machines even. There are a few outstanding cases of extremely wealthy people who have a large number of machines; but taking the trade generally through, the majority are holders of a few machines.

479. When you say the people of this district are especially liable to rheumatism you have no statistics on which to base that. Is it merely common gossip that Nottingham is a place for rheumatism?—(*Mr. Smith.*) Yes. (*Mr. Underwood.*) I think it is pretty well spoken of as a very bad place for rheumatism owing to the water for one thing. I think it is pretty well confirmed by doctors in the town.

480. (*Dr. Legge.*) When you say rheumatism, you mean rheumatism and not gout?—(*Mr. Underwood.*) Both are very prevalent in Nottingham. Is it not very difficult to distinguish the two in cases?

481. No, I should not have said it was?—(*Mr. Underwood.*) I mean most people one knows in Nottingham suffer from either rheumatism or gout. (*Mr. Smith.*) That is so.

482. Do the men in these factories change their employment from one factory to another much?—(*Mr. Smith.*) Yes, a certain number of men do. In my own experience many hands have stayed with us, and Mr. Underwood will bear me out that a large number of his men stay regularly; but it is a trade in which men do change about.

Mr. Underwood then gave evidence:—

483. (*Chairman.*) Speaking generally, Mr. Underwood, you have heard what Mr. Smith has said to us?—Yes, and I confirm it.

484. From your special point of view you associate yourself with what he has said?—Yes; everything he has said I thoroughly confirm. I may say, speaking for our own place, we have 80 men working machines and I have never had a single complaint of this disease. I have never heard of it in fact until this inquiry was brought forward.

485. You have never heard any suggestion that there was anything of the kind going on?—Nothing of the kind.

486. (*Judge Ruegg.*) Have you taken any opportunity of looking at your workmen since?—I should be pleased to let any doctor go through the place.

487. But since this was suggested?—No; I was going to have the whole of the place examined if you had been taking full evidence to-day, and I should be very willing to do it now.

488. (*Chairman.*) Out of your 80 men, how many are there roughly who are over 40 years of age?—We have one working who has been working with us 52 years, about six working who have worked with us 40 years and so on downwards.

489. But a substantial number who are over 40?—Yes, we have.

490. (*Judge Ruegg.*) Working at these machines?—Yes, they have been twist hands all their lives. They have been brought up as boys in the works and they get to the machine eventually.

491. (*Chairman.*) I asked Mr. Smith what type of lever it was. Is it the same type in your work?—Ours are really smaller than the Levers machine or the curtain machine. They are not such wide machines. There are not so many levers to operate.

492. And the pressure is less?—Yes.

493. Can you give us any idea of what the pressure would be in pounds? I have never tested our machines. I suppose you have been round the main places, but you have never honoured us with a visit to test these machines. I do not know why, but still it has not been done.*

494. We cannot go everywhere?—If you take the Levers trade and the curtain trade, then you take in the heaviest type of machine.

495. Have you any compound levers in your works?—No, it is quite a simple machine compared with the Levers machine.

496. Have you ever worked yourself?—I have, just to pass the time, but only occasionally.

497. You have never worked at the machine for a day or anything like that?—No, only a few hours at a time, and the very fact that a boy can work the machine gives the proof that it is not heavy labour.

498. You remember the three points that Mr. Smith gave us; either older men employed, or the prevalence of rheumatism, or the negligence of workmen?—Yes.

498*a*. Can you help us with any statistics on those points. You represent a different association to Mr. Smith's, do you not?—We are the same association practically, but a different branch.

499. Can you help us with any figures on any of those points?—If you take the first point, we have in our place generations who have followed one another, and we notice particularly that what affects one generation generally follows in another. For instance, we should say that rheumatism follows on. We have cases of it where men are afflicted with it, and the boys gradually get it just in the same way. Of course we have, on the other hand, men who have gone right through; in fact, we have one who has been working a machine continually for 52 years. He has been working it every day practically and has no illness at all.

500. Your point was rather a comparative point of age, was it not, Mr. Smith?—(*Mr. Smith.*) Yes.

501. That is to say, the men work to an older age in your branch of the business than in any other comparable industries?—Yes.

502. Have either of you got any figures comparing this industry with any other industry as to age?—No.

503. That is so in your case?—(*Mr. Underwood.*) We have not, but the conditions of the twist-hand's work are good as compared with a good many workers in other trades. He has a nice warm place to work in all day long, and it is not heavy work.

504. Can you tell me, comparing it with any other industry, where there is similar pressure on the hand, whether it is worked properly or not? Can either of you gentlemen help us on that?—We have two cases at our place. We have a machine-building shop in which some of the men are striking all day; that is, they are using a large hammer, and they are handling the heavy parts of the machinery all day long. That is their work year in and year out. Take the case of mechanics. If a machine goes wrong there are two or three mechanics who have to put it right. Part of their work is lifting these levers in and out all day long

505. And repairing the machines?—Repairing the machines. They are always pulling comb-bars open, and we have never had a complaint from them.

506. You have never had complaints from anyone?—We have never had a complaint, and the last mechanic we had was 72 when he died. He was working right up to the last, and he did practically three times more than a twist-hand would do in a day in lifting these bars out.

507. Lifting the bars?—Yes, always pulling the bars out.

508. How does he do that?—There are 80 machines in the place, and the men have to attend to the whole lot. There is something always going wrong with the machine; and the twist-hand is not allowed by his Union to do it, and this man has to put it right. He may do it in a few minutes, but he has to pull the machine about while he is doing it.

509. In order to see whether the thing is going right?—Yes, in order to find out the trouble, and when it is finished with he goes off to another machine.

510. (*Judge Rueyg.*) Is your factory rather larger than the majority of these factories?—Yes.

511. One of the largest?—Yes.

512. What would be the average number of men employed in the tenement factories? Would there be 10, 12, or 20?—Yes, or less than that probably in some of them.

513. On an average?—I should say 10 or a dozen probably.

514. Then yours is exceptionally large?—Yes.

515. Is it a tenement?—No, it is a single firm. I am manager.

516. I gather you think this disease exists to a very small extent?—As I say, we have never had a complaint.

517. You have spoken of several generations. How long have you had personal knowledge of your own?—21 years last June.

518. Do you say that during that time you have never found a man suffering from the disease and have never had a complaint?—Never.

519. And so far as you know none of the men in the trade are at present suffering from the disease in an incipient stage?—That is so.

520. But that, I understand, you will ascertain for this Committee?—Yes; I shall be very pleased to do it.

521. Since this matter has been on the tapis, have you ever heard of cases?—No, I have never heard of but one.

522. If you are correct it is a very small matter?—Last week Mr. Smith and I and a gentleman from the curtain trade were appointed to come and see you this week, and I made up my mind to have the place thoroughly gone through.

523. Your own?—Yes. We were going to have our doctor come up and examine everything.

524. You have not had time to do that?—We did not do it because you said that only a little evidence would be taken, and that other evidence would be taken at a latter date.

525. Have you made inquiries from other factories?—We have had a meeting of the association since then, and we have never come across a single case except this one which Mr. Smith has mentioned. We have never had a complaint from any workman to our knowledge.

526. How many factories roughly were represented at this meeting? How many occupiers were present?—I should think a good 60 per cent. of the lace trade were represented.

527. Were occupiers there who were able to speak to this matter?—A good many representatives of the association were there.

528. I mean the particular Committee?—It was only a Council meeting.

529. How many were present?—There would be more than a dozen or 15.

530. Have you taken any steps to ascertain whether, although your own works are immune from it, they have it at other works?—We did not know exactly how we were fixed; we were absolutely in the dark. We are quite prepared to do so if our evidence is going to be taken at a later stage as suggested in the letter.

531. Assuming the representative of the Government is correct when he says the average in the lace trade is 5 to 8 per cent.; and assuming that is much higher than in other industries, do you think your employers would particularly object to having this disease included?—If it is proved absolutely that the lace trade is the worst trade of the lot, it is quite right that it should be scheduled.

532. You very properly raised the question of some difficulty of diagnosis?—That is so.

* The witness at a later date asked permission to add the following note:—This is incorrect. Owing to alterations in management at factory, I had no knowledge of visit of inspector and doctor.

533. That is the possibility of the disease being due to rheumatism or gout?—Yes.

534. I may say the Committee is quite alive to that?—A personal friend has the same thing, but he never worked a machine.

535. We have cases?—Yes; there are plenty of people I know in Nottingham who are crippled people but who have never been lace operatives. Their fingers have gone. Still, if you schedule it, he would have to prove very strongly whether he has got the disease or whether it is rheumatism.

536. This is a mere suggestion. What should you say to a qualified scheduling of the disease, throwing the onus upon the workman of proving that the disease arose out of his employment. At present if he is engaged in the industry, and comes under the Workmen's Compensation Act, the onus would be on the employer of showing that the disease did not arise from the industry. What do you say, assuming the onus was thrown upon the workman? Would that get rid of the difficulty that you raised as to the possibility of it being mistaken for other diseases? You follow my question, do you not?—Yes. Of course if he is a rheumatic subject, or a gouty subject, and his predecessors were that way inclined, then there would be a very great question as to whether you could blame it on the machine, or whether it is a matter of old age creeping on, and the very fact of his predecessors having suffered from it.

537. I suppose practically all the small tenement occupiers are insured?—Yes, I should say so. I think it is too risky a business not to be insured in any way.

538. It is not a business peculiarly liable to accident, is it?—(*Mr. Underwood.*) Very often you get these things when you least expect them. A man may get his finger in, and you never know which way it is going to turn. It is not the injury itself. Blacklead and oil gets on the hands, and if it gets into the wound there is blood poisoning.

(*Mr. Smith.*) I had some figures given to me the other day. Premiums for insurance had been paid on 53,000*l.* in five years, and there had been only one fatal accident.

(*Chairman.*) We are much obliged to you.

The witnesses withdrew.

Mr. WARDLE, called, examined by the Chairman.

539. You are the Secretary of the Amalgamated Society of Operative Lace Workers?—Yes.

540. How long have you held that position?—Nearly five years.

541. I think it was you who brought the existence of this disease to the knowledge of the Factory Department?—Yes, that is so.

542. Before you became secretary were you yourself engaged in the actual working?—I was working a machine for 26 years.

543. What is the technical name for the work?—Levers twist-hand.

544. Where were you working?—The last place was T. I. Birkin.

545. Is that near here?—In Basford, Nottingham.

546. During the 26 years were you working in this district?—Always.

547. What were the different kinds of levers which were in use at the different works?—The technical names?

548. Yes?—The principal levers that you use are the catch-bar handle, the comb-bar handle, and the stopping wheel; that is in stopping the machine and starting it—the steam rod itself that you put motive power on with.

549. Did you happen to work at any place where there was what might be called a ball lever with a ball at the top?—That is very seldom used. That is the point-bar lever. I can refer to this point-bar lever when these other people come in who have to use that through the unfortunate affliction.

550. It is easier for them?—No, it is harder for them, that is, when they stop a Levers machine, what is recognised as a Levers machine, the ordinary Levers. The technical term is propping up. You can prop your catch-bar up on your landing bar, and get your hand through into your top-bar. Those who are suffering from this affliction have their hands cramped. They cannot get their hands through, and consequently they stop the machine at the bottom, pull out the catch-bar, turn the machine up, and then they can get inside the machine. Then when they have put the threads up, after putting the comb-bar in, then they get the catch-bar in, and they have to lift this lever. That puts the point-bar up to get the catch bar in.

551. You yourself, I think, are suffering from this disease, are you not?—Very slightly.

552. Would you mind showing your hand to Sir Clifford Allbutt?—(*Mr. Wardle's hand was examined by Sir Clifford Allbutt and Dr. Legge.*)

553. (*Sir Clifford Allbutt.*) There is no contraction?—No, just the disease formed there.

554. (*Chairman.*) Is it in one hand only?—Only one hand, the right hand.

555. There is no contraction?—No contraction whatever as yet in mine. I do not suppose there will be now I know what it is. Of course I see to that when I am not engaged on anything else.

556. When did you first notice this?—After coming into contact with our other members through the position I occupy now.

557. You had not suspected it up to five years ago?—No, not for a moment.

558. Have you ever suffered from rheumatism or gout, or any of those things?—Not at all.

559. Or your family?—Not that I am aware of.

560. When did you first begin making inquiries into the matter of the prevalence of the disease amongst the workers?—Soon after I took up the present position one of the members I have here with me now was suffering from it to such an extent that he had to give up his work. Consequently he applied for a certain grant, which is provided by our rules, to see if he could get under the accident grant. We could not possibly define it as an accident without the consent of a general meeting, and the general meeting did not think that was a wise way of finishing with the case. I had entered into the matter and inquired from other members to see how far it had affected other members, with the result that the general meeting decided that, instead of paying him this accident grant, he was to have the best advice the country could produce. The result was, I went to Dr. Burghard, and he advised an operation. That was the removal of the palmar fascia. This was done, but unfortunately the little finger was so far gone that they had to have it removed entirely. A portion of this palmar fascia has been removed, but I think not sufficient, because although the little finger is removed the ring finger has gone back.

561. The ring finger was all right for a bit after the operation?—Yes. He used to sleep with a splinter on his hand fastened up so as to keep the fingers to their proper position. Through making these inquiries from our members, I thought it was advisable to get in touch with the Factory Inspector on the matter, and I saw Mr. Eatock. He said they could not deal with the case unless I dealt with it in a proper methodical manner, and got a list of the members, which I did.

562. We have that. How long ago is it?—Roughly speaking, three years.

563. How many twist hand members are there in your Union, altogether?—I should say we have 2,000 working members now.

564. And have you calculated how many of the 2,000 are suffering from this?—I believe, roughly speaking, about 70. I am speaking from memory. (*Reference was made to a list.*) There are 48 on this

list, and I should think there are more than double that who dare not come forward on account of the fear of losing their situation. I might say as far as this Inquiry is concerned, it has not met with the general approval of the workpeople on account of the fear of having to go through an examination when they go for a situation.

565. (*Chairman.*) We thought of asking you as to that. That has suggested itself to us because there is so much time in the development of the desease. There is ample time, supposing an employer should be so advised, to give notice or get rid of the workman. There is that difficulty, which you quite appreciate of course?—Yes, but I thought that difficulty might be overcome in this way. Assuming for the moment that it was scheduled for compensation and an employer turned a workman away because he was suffering from it, that would be positive proof I should say when the case came into court.

566. (*Judge Ruegg.*) I have to try these cases unfortunately, and you could not say what an employer turned a man away for. He might have a hundred excuses?—That is so. It is a very easy matter to find fault.

(*Judge Ruegg.*) I think it might be impossible to say he turned him away for this. I think it would be impossible in the vast majority of cases to say it.

567. (*Chairman.*) You realise that difficulty, do you not?—Yes, certainly; and one or two of the men I have here are half afraid to come.

568. Are they still in employment?—Yes, with the exception of two. I may say that one of them, "Mr. R." we will call him, had to give up his position. I might say when I formed this list, Mr. Eatock and Dr. Collis came and examined the machines. Of course, Mr. Eatock had seen them often enough before, but Dr. Collis came and I went round to Doughty's factory with them on a Thursday afternoon. On the Friday morning when I was going up to the office I met this Mr. R. coming away from the factory. He said, "It is no use, I cannot go on any longer. I have had to give up on account of this," and he showed me. That was the very next morning. I thought then it was time something was done. This man had to give up his occupation, and it was only the fact of his being 65 years of age that made it that he could give it up. He has a small superannuation from us, only 3*s*. 6*d*. a week. Now he has a little occupation as a waiter in a public house. He does so many hours at night and works on Saturday afternoons. That is the one I should take first because he has to get back. That is the unfortunate part. He has to give up his occupation as a lace maker and wait in a tap-room.

569. What wages would he be having when he was a workman?—I worked shop-mates with him, and at the time I was working with him the trade was pretty brisk. He was pretty well employed for the whole week, and he would be earning from 45*s*. to 50*s*. a week. Of course, his earning capacity was gradually being lessened.

570. At any rate, he had been employed a long time before you?—Yes.

571. He is an older man than you are, of course?—Yes, he is 60 odd.

572. When he was your shop-mate, did you notice his hands?—No. As a matter of fact I have seen different twist hands with this disease, and always looked upon it as muscular rheumatism myself.

573. With regard to these cases of members of your society, how do you deal with them: do you give them any grant?—Not unless they finish work.

574. As long as they were at work they would not be incapacitated, and you would not give them anything?—No.

575. How many of them are there that you give grants to?—The one I alluded to?

576. No, because they have had to give up their occupation on account of this disease. Could you help us with any figures?—There is only one we have given that special grant to. Others have had their sick benefits, and when that was exhausted they have had nothing but emergency benefit. The emergency benefit covers twelve months, and the sick benefit twelve weeks. But both the amounts are the same, that is 7*s*. 6*d*. a week for twelve weeks sick benefit, and after that they would have 7*s*. 6*d*. a month for 12 months, and they can make application for a renewal of this benefit.

577. (*Judge Ruegg.*) Does this come under sick benefit?—Yes, it is emergency. It always will if they are incapacitated from work.

578. (*Chairman.*) It has been suggested to us that the number of cases is very small—of course we are helped with statistics on that, and it is for us to judge—and that it is also to be attributed to employment outside the factory. Is it your experience that the twist hands have allotments to a considerable extent?—I do not know what that can be attributed to outside.

579. For instance, are there a great many allotment holders in this district?—Yes.

580. Do you consider them by the hundreds or the thousands?—There will be hundreds, we will say.

581. In the neighbourhood of the town?—Yes.

582. Are there a great many twist hands who have these allotments?—Not a very great percentage; they are mostly fishermen. They would not get this from holding a rod and a line.

583. (*Judge Ruegg.*) That has been suggested?—Fishermen?

584. Yes?—He would be a good fisherman getting some very heavy fish on at times.

585. Is it your experience that the men are at all careless in the use of levers they have to work?—No, I do not see how they can be. The weight has to be lifted, and they lift it in the best way they can.

586. Is putting their hand over the top a common way of doing it?—Say *that* is the lever. That is the way. (*The witness took hold of a pen and clasped it round with his hand.*)

587. Clasping it round?—Yes.

588. (*Chairman.*) That is the ordinary way?—Yes.

589. Not putting your hand over?—Sometimes. It just depends on the position you are in. If the handle is *here* (handle down), you are *there*. If you are *here*, then the handle is *there* (handle up), then it would be a different position. Do you mean in *this* way (*holding hand over the top of pen*)?

590. Yes?—No, never.

591. (*Sir Clifford Allbutt.*) I never saw them do that?—They could not do it. You could not do this. (*Witness took hold of a poker, holding the top in the palm of his hand.*)

592. (*Chairman.*) Have you made any inquiries in in other industries?—Very little; I have been rather afraid.

593. From such inquiries as you have made, do you think this disease is rather peculiar to twist hands?—More so to the lace than any. I have found it amongst railway pointsmen, masons and gardeners. That is what you were alluding to with regard to the allotments. Carpenters have it, and in the hosiery trade we can find only one man suffering from it. I am speaking now of the organised workers.

594. You made inquiries, I suppose, from the trade unions?—That is so.

595. Of course the special object of your society, I take it, is to have this disease scheduled as far as the lace makers' trade is concerned?—That is so.

596. (*Judge Ruegg.*) I gather that your society embraces about 2,000 twist-hands?—Yes.

597. Could you give us any idea of the number of twist-hands altogether employed in this district?—Do you mean outside Nottingham?

598. In Nottingham and the district?—No, I could not give you that number.

599. But would it be a very much greater number than 2,000?—Roughly speaking, I should say it would approach 4,000.

600. Then your union represents about a half?—More than a half.

601. More than half of the total number employed in this particular branch of the industry?—Yes; so far as Nottingham is concerned, 99 per cent. of the workers.

602. Nottingham itself?—Yes.

603. You tell us you have considered the danger that is involved in the inclusion of this disease?—Yes.

604. Have you considered this? Do you think it would be necessary for any employer to pay compensation for this disease who did not wish to? I mean by that, if he wanted to avoid his responsibility would it not be quite easy for him in every case to do so?—To dismiss the man, do you mean?

605. To get rid of him in some way or other?—Yes.

606. In every case?—Yes.

607. So that an employer who makes up his mind he will not pay would have no necessity to pay?—I could not answer that question perhaps so well as you.

608. You suggested as an alternative that he should not be allowed to dismiss for that reason?—Yes. Assume, for instance, that I have three men here for one firm, and assume for the moment that this is scheduled, and all three get dismissed, it would be fair to conclude what the cause was.

609. I quite understand what you say, but I am afraid it would be impossible. Have you taken the general sense of your society on the subject?—Yes.

610. Do you think they prefer to be included, or not?—Those who are not suffering from it are positive that it ought to be scheduled. They say they ought to be protected against it. Those who are suffering, as I say, in a sense, they are in some fear.

611. Do you think there would be any great difficulty in diagnosing whether this disease was due to the industry, or whether it was due to other causes, such as gout or gardening?—I have one case here to-day, and Dr. Collis will bear me out in this, because he took particulars of the man. He examined him along with the others. One of his fingers was contracted to about *there* (30 degrees). Six months ago it was in *that* position. At that time he was placed on another machine, on which the lever of the bars is altogether different, with the result that he does not know that he has anything now; the contraction is gone.

612. That would be rather an exceptional case, but in the ordinary case where a man worked at one of these machines and worked in his garden, for example, and he was fond of it, do you not apprehend there would be difficulties for the tribunal which has to investigate it, in coming to a clear conclusion as to whether the man contracted the disease in his work or by means of a spade?—If he is following two occupations like that.

613. We have been told that a very large proportion of these men do follow these two occupations?—Gardening?

614. Yes?—It is not a true statement. There is not a quarter of these people who are gardeners.

615. Have you investigated the cases of the persons who are suffering from the disease in your union, in order to ascertain whether they could contribute to it by anything other than the work?—In the way of occupation similar to gardening?

616. Yes?—I know them personally.

617. Can you tell us?—I can say that there is not a quarter of the list that was submitted to Mr. Eatock that are gardeners. I do a little bit of gardening at the back and front of my house, but it is not worth the name of gardening.

618. What do you say about this trade being bad at the present time? It is suggested that it is not a time to impose any further burdens on the employers. What do you say about that; is it bad?—It is bad, but the men are suffering equally with the employers.

619. What do you say about the employers being rather small capitalists taking them all round; they are not rich employers, are they?—No, but they are more wealthy than the average workman is.

620. But many of them are workers themselves?—Yes, a large number of them.

621. Therefore, little removed from the class of workers?—Far removed.

622. Notwithstanding that they work?—That is so.

623. I do not know whether it would be wise to have a resolution, but suppose a resolution were submitted as to whether this disease should or should not be included. You have not had such a resolution submitted to them?—No, not in that way; not as a resolution.

624. But you have little doubt as to what would be the result?—I have no doubt, for this reason: in the first instance, I brought it before our executive to see whether I should be doing right in going on with it. Of course I was doing right. It was mentioned at a general meeting, not in the nature of a resolution, but referred to in our report, and the report was accepted and the action of the committee endorsed.

625. You think the workmen generally would wish to be included?—Yes.

626. And would take the risk?—Yes.

627. But you would like some safeguard against that risk if possible?—Yes.

628. Can you suggest any other safeguard except the one you have suggested to me, that the employer should not be allowed to dismiss. Can you suggest to me any more practical safeguard than that?—We have a good safeguard.

629. You think there is a safeguard in the union itself?—Yes.

630. The power of the union itself?—Yes.

631. (*Sir Clifford Allbutt.*) I daresay you will know, or perhaps you will take it from me, that this disease is not an uncommon one. It is perhaps rather frequent in all classes?—Yes, I found that to be so.

632. I understand from you that it is a convenience, if not a necessity, for the workman to be able to put his hand through a rather narrow space?—Yes, that is a convenience.

633. Therefore, the moment he begins to get this kind of contraction it would interfere at once with his facility of doing that?—That is so.

634. That would pick out the men who could not do it and make them rather conspicuous?—Yes, that is so.

635. More than in any other employment. For instance, a gardener could go on digging with his remaining fingers, and no one would know unless they shook hands with him. But in the lace trade the need of putting his hand through this small hole, and, if he is not able to do that, having to work in a roundabout way, brings the affection to a definition in his case, does it not? It makes it distinct and clear, much more than it would in another trade where the hand had not to be put through narrow places?—Yes, it would be noticed.

636. (*Chairman.*) Therefore, an employer would be likely to see that the hand of one of the workmen was in such a condition that he had to stop the machine and work in a different way to the ordinary man?—Yes; but I might point out that the machinery which is being more generally adopted in the Levers section to-day is what is known as the Go Through machine. There are not so many of the old Levers machines built. The Go Through machine has a more rapid motion. It can produce more in a shorter space of time, with the result that when they pull out the catch-bar the machine is absolutely open, and you can put your head in. So that it is only the poor employer who has not got much money who is in possession of these old machines. At the same time all this class of machinery has been in the possession of certain families for generations. For instance, there is one gentleman whom you have seen to-day. I know you have seen him because I saw him here. He is working machines that his grandfather was working; but I might say in justice to him, he is one of our best employers, and keeps his machines as well up to date as it is possible to do. But there are others quite close neighbours of his where the grandson of the firm is running the same machines to-day, and he wants as much profit out of his old dilapidated machinery as the owner of up-to-date machinery. These are the people who are cracking that they are very poor.

637. (*Sir Clifford Allbutt.*) Do I understand that in times coming, when new machines become general, this difficulty about the lever will be diminished?—No.

638. It will be just the same as regards the lever?—More acute in some cases. As far as the comb-bar

lever is concerned, that has improved wonderfully. I could not say what percentage.

639. That would make no difference to his disability?—They have a compound lever on that which makes it comparatively light. But with regard to the catch-bar, there has been no improvement come out in respect of that. That is so much heavier in proportion to the size of the machine.

640. (*Dr. Legge.*) Do any of your men wear gloves for this work, or wear anything in their hand to keep the pressure off the particular part?—No. They could not do that. You see their hand has to go in the threads, especially those making silk laces. If they have the slightest roughness of the fingers in the ordinary way, it would catch the threads and pull them out.

641. Do the men who are lace workers change their employment a great deal?—From lace makers to something else?

642. No, from one factory to another?—There are a few that do.

643. And in the case of a stopage of work are they all re-engaged? I suppose the employment is by a weekly wage, is it not?—They are paid by piecework. When they are waiting for orders they simply go up every morning to see if any orders have come. If not, they walk about and wait until some do.

644. You have told us that you thought you would have a remedy against the men being dismissed for this condition; but have you thought of the condition where men have left and want to resume the work, that that same difficulty might arise, and they might not be re-engaged if this condition were there?

(*Judge Ruegg.*) Never get into a fresh firm?—The position will be this. I realise that amongst other things, as one who has suffered from this in an early stage, it would be very difficult for him if it were scheduled to go to another firm. I realise that; but so far as danger of his being dismissed from his present firm is concerned, you have no need whatever to trouble about that.

645. (*Dr. Legge.*) But the other you think is serious?—There would be a difficulty; but as a rule the man who has been at a firm a large number of years generally stops there until the finish. There are very few of those shifty people amongst them. You can take a man who has been in the firm ten years, and he will be there for ever so to speak.

646. Then are you not exaggerating the fear of their being dismissed because of this condition, if you say they stay until the end?—No, I say the men fear it. I do not fear it for a moment because I know what the position would be. We may as well speak plainly on the matter. Supposing it were scheduled for compensation, and a firm turned a man off through this and we were satisfied it was through this, we should soon get him back again.

647. And you think in the case of a man who left work and sought re-employment you could also do that?—No, that would not be so easy.

648. You are satisfied that if the disease is to be scheduled, there should be a very clear definition of the stage the contraction has reached before compensation is to be given?—Yes, because a man can follow his employment with a great amount of success even with his hands contracted, as you will find when these people come in.

649. Would you say it should not entitle to compensation until the fingers are pressed down into the hand?—No, I should not go so far as that.

650. Would you let them go beyond a right angle?—Just about there (*showing the degree of contraction*).

651. That you think is about the degree to which the earning capacity goes?—If he could not follow employment while his hand was in this position, I should say he was justified in saying so.

652. It is possible to define it in that sort of way, is it not?—Yes, it is possible for him to be totally incapacitated through being in that position. Yet in the next machine you will find a man at work with his fingers closed into his hands.

653. Then an angle would be a very unsafe test to action, would it not?—Yes.

654. (*Judge Ruegg.*) In every case the onus would be on the workman to prove incapacity?—Yes.

655. So that he would have to prove that to the satisfaction of whatever tribunal there were?—Yes.

656. (*Dr. Legge.*) You made this inquiry three years ago, did you not?—Yes, I brought it to the notice of Mr. Eatock we will say three years ago.

657. Under the Insurance Act it is possible for you to have this matter dealt with. You are an Approved Society, are you not?—Yes.

658. And you have submitted your rules?—Yes.

659. Your society will decide what is "incapacity for work" within the meaning of that Act, will it not?—Yes.

660. And it would be quite possible for you to make Dupuytren's contraction come within that designation?—Then the society is paying its own compensation.

661. Still, you would get over the difficulty you had before when you agreed it would not come out of your funds?—Yes, there would be that advantage, but it is very small.

662. I recognise it is only a small payment?—Yes, 5*s.* a week.

663. Then it is also possible with the additional benefits conferred by the Act to utilise that also?—From the Trade Society?

664. Yes?—Only for 12 weeks. The emergency benefit would not be paid under those circumstances.

665. I was thinking of additional benefits which might accrue?—The additional benefits under the Insurance scheme, do you mean?

666. Yes?—They would be very small. We have to prove yet whether we have any to pay.

667. (*Chairman.*) You have seen the report of Dr. Collis and Mr. Eatock?—No. I have seen the portraits that are inserted, I suppose because I provided Dr. Collis with them; but I have not seen the report.

668. I only want to ask you one question. It does not bear very directly upon our inquiry; but are there any improvements that can be made in the machinery do you think, that would lessen the risk of the workmen?—Yes, certainly. The very least they could do would be to have a larger catch-bar handle we will say, a longer and easier lever.

669. And the compound lever?—Yes. They could not get that on a catch-bar in a Levers machine. You could on the comb-bar, but not on the catch-bar. It is on the comb-bar now. The curtain section does not suffer so much from it.

670. You see the suggestion there about the two bottom ones, the shape of the lever. Do you think that would be an amendment: to catch hold of a sort of stirrup?—I think that would be a help; for one reason the fingers would get a grip on it.

671. And not the hand?—And not the hand.

672. Except that you would have a great deal of pressure on the fingers, would you not? This is a pretty considerable pressure, is it not?—The pressure goes into your hand always, whereas in this the pressure would be a loop on your fingers. It would not be into the palm of your hand.

(*Judge Ruegg.*) It is what is called an inverted stirrup.

673. (*Dr. Legge.*) Would it be possible on the existing machines to have this stirrup handle which could simply be slipped on the top of the existing machine?—At comparatively no expense, or very little expense indeed. I might say there has been so little interest taken in the building of the machine, so far as reducing the weight of the catch-bar or comb-bar as the case may be. They have paid more attention to the appearance of the machine. With the great cumbersome catch-bar flopping about the machine does not look its value within 100*l.*, and it would do so with a nice compact handle. As an illustration this may be interesting. I know where there are two machines standing together; one man is working one machine and he is asked to go to the other one temporarily. They are both made by the same maker. He goes to the other machine which is the same width and gauge, and is supposed to be a model of the other one, but his catch-bar handle is considerably shorter. He makes the remark to the employer, "I can hardly pull this

catch-bar out." The employer says, "What is the cause of it?" And the man says, "Why, the other "one, number so-and-so, has a long handle. I can pull "that with comparative ease." Then the employer says, "We will have a longer handle put on." It was put on and it is simpler, with just a little alteration like that. So that it is more the appearance of the machine they have considered than anything else. They have widened these machines from 14 quarter yards in width up to 24 or 25 quarters; speaking of the Levers machines only. There has been no consideration paid to the extra weight and extra thickness of the bar. The bar has to be proportionately thicker according to its length, or it would sag.

674. Have you ever made any representations of this kind to the Manufacturers' Association?—No.

675. (*Judge Ruegg.*) All this machinery is made in this district, is it not?—Yes.

676. You may take it from us that the manufacturers of this machinery have had this report. Could they be approached in any way?—I could not do it. I have no doubt now that they know there is some inquiry, and that there is some stir being made in the matter, that they will wake up and do something. That is the only way to make them do something. That is why I wanted it scheduled for compensation if a man contracts this disease. It will make them look round. It is the removal of the evil I want, more than the money.

677. How many in all are suffering from this: those whose names you have, or whose names you can give if necessary?—I could positively, find a hundred.

678. So that really there are 100 out of 2,000, or 5 per cent.?—Yes.

679. Members of your Society?—Yes; I am speaking of those only.

680. (*Dr. Legge.*) And are they generally of the kind that you are going to produce?—Yes, in various stages.

681. (*Chairman.*) These are bad cases?—Some of them are bad. I have good cases as well.

(*Chairman.*) Thank you.

(*The Witness then introduced workmen suffering from the disease.*)

Mr. "R." called, and examined by the Chairman.

682. How long is it since you gave up?—About 2½ years since. I had to give up my situation because I could not hold my carriage. I only have those three fingers. (*The witness showed his right hand to Sir Clifford Allbutt and Dr. Legge.*)

683. (*Dr. Legge.*) How old are you?—Sixty-seven. It is not quite so hard now as it was when I was at work. I am doing a little waiting, and I use a lot of hot water to wash up and I think it softens it.

684. (*Chairman.*) What about the other hand?—It is just the same.

685. Is that going worse now?—Yes, it is going worse because I am doing a little work. It has not gone a great deal since I left off lifting the machinery up.

686. (*Dr. Legge.*) What was your machine?—It was a Levers machine.

687. (*Chairman.*) Did you use both hands, or generally the left?—Generally the left; but you have to use your right to turn the catch-bar over.

688. (*Sir Clifford Allbutt.*) Have you not had your wrist broken?—Yes.

689. (*Chairman.*) Will you please take this? (*giving the witness a poker with which to illustrate the use of the levers*)?—This is the way I would lift it up. You pull your comb-bar and landing bar over in this way. You are always lifting up and turning the machine over if you break a lot of threads.

690. It would take some little time to turn the machine over, would it not?—Yes.

691. How long?—About half a minute. You have to get at the back to take some threads up.

692. Of course, you could not get your hand through?—No.

693. (*Sir Clifford Allbutt.*) Did you give up because you were compelled by this defect?—Yes.

694. That is to say, you dismissed yourself; you could not do any more?—I could not do it any more.

695. (*Chairman.*) How many years in all were you at the machine? How old were you when you began this particular work?—I have been in it all my life; I was brought up in a twist factory.

696. How old were you when you first began using these levers?—I was 19 years of age.

697. Say 20. Then you worked for 30 years, until you were 50 years of age?—Yes.

698. And was it when you were 50 years of age that you first began to see any signs?—Yes.

699. There were no signs before then?—No.

700. Your hand was always as it was, without any swelling?—Yes.

701. And at 50 your hand began to show signs?—Yes. Up to 50 I worked at one place, and there was not a very heavy machine.

702. What was that place?—Thornton's, on the Queen's Road.

703. What was the machine there?—They were all 14 and 16 quarters, and most of them light machines.

704. Then you left Thornton's when you were 50 years of age?—Yes, to get a better situation; to get more money.

705. Where did you go to then?—I went to Adcock's.

706. Were you there all the time?—Yes. (*It was stated by Mr. Wardle that both the above-mentioned firms were now defunct.*)

707. How long after going to the new place did you first begin to see signs in your hands?—A long time. It came on when I worked at Adcock's, because they were heavy machines there.

708. Very much heavier than the other?—Yes.

709. And bigger machines too?—Yes.

710. And bigger pressure for both hands?—Yes; Adcock's was 17 quarters.

711. Then did it get gradually worse and worse?—Yes.

712. Until you had to give up?—Yes.

713. As you were getting worse and worse did you go to a doctor, or anything like that?—Yes, I went to Dr. Milner, my lodge doctor. He said: "I think I "can straighten that finger, but I shall have to cut it." But I did not think he could. That is many years ago; I think about 15 years ago.

714. Did you notice any other men suffering in the same way?—Yes; I knew one or two in the factory I worked at, whose fingers were being drawn up with lifting the catch-bars and landing-bars, and turning the machine up. That is the worst part. There are some heavy machines that have to be turned over, and it takes you all your time to turn them over, because you dare not put the power on; you would go too far, and you would have to do it again.

715. Did you earn your full wages until you left?—Yes, the full price, and the last man I worked for was sorry I had to leave.

716. (*Mr. Wardle.*) Did it make any difference to your wages?—No.

717. (*Chairman.*) You left because you could not go on any longer?—Because I could not shift the carriages to make the thing look regular.

718. (*Mr. Wardle.*) I rather think the witness understands you to mean did he work for any less?

(*Chairman.*) Yes.

(*Mr. Wardle.*) No, at the same price; but he did not make so much money.

(*Chairman*). The same rate, but less money at the end?—(*Mr. R.*) Yes.

719. Piecework?—Yes; it used to take me longer to get over the carriages.

720. During all these years, from the age of 50, had you an allotment, or anything where you did any other work?—No. I am doing a little bit of waiting now.

721. Are there a good many twist-hands who have allotment gardens?—No, I never had one myself.

722. Did you do anything outside to bring this on, as far you know?—No, I never did anything else.

723. Did you ever have rheumatism, or gout, or anything like that?—No. I have been in a lodge 45 years on the 27th of next month, and I have only had 10 weeks out in 45 years, so I have not hurt them.

724. (*Dr. Legge.*) Is it your experience that these machines of late years are heavier than they used to be?—Yes, because they have been building them bigger.

725. Which hand do you use most?—The left hand.

726. When did the fracture of the right wrist take place?—When I was quite young. I should be about 11 years of age when I had my wrist broken. It has always been like that. It does not hurt me at all.

727. Which hand did the contraction begin to show itself in first?—The left hand.

(*Chairman.*) Thank you.

The witness withdrew.

Mr. "A." called, examined by the Chairman.

728. Are you in employment now?—No.

729. How many years have you been engaged looking after these machines as twist hand?—I have been in the lace trade, not exactly on a machine, close on 50 years; say 47.

730. And how long have you been looking after the machine, 35 to 40 years?—Yes, about 35 years.

731. When first did you notice there was anything wrong with your hands or hand?—I did not notice it till I was about 48 years of age.

732. How old are you now?—I am 56.

733. Then you noticed it only eight years ago?—Yes.

734. Which hand was it?—The right hand. (*The witness showed his right hand to Sir Clifford Allbutt and Dr. Legge.*) It has been operated on.

735. What about the other hand?—The other hand has been operated on as well.

736. That will not go back?—No, you see the finger were pressed back at the time of the operation. It was five years since that was done.

737. Just consider. In three years the thing developed so quickly that you have had to have an operation. That is, if it came first only eight years ago. That is so, is it not, Mr. Wardle?

(*Mr. Wardle*) Some go quicker than others?—*Mr. "A."* That hand went very quick (*the right hand*).

738. (*Dr. Legge.*) Was this made very much better by the operation (*right hand*)?—Yes, it was. Those two fingers were down like that (*fingers bent right into the palm*). It was in a splint for two or three months with the fingers pressed back.

739. (*Chairman.*) They are beginning to go again now?—Not the right hand, only the left.

740. (*Dr. Legge.*) Then would you recommend those who have this bad condition to undergo an operation?—If the right hand was as bad as it was when I had it operated on, I would say I would have it operated on again, because I made a good job of that.

741. How long were you off work for the operation?—I went into the hospital in June 1907. That is five years ago.

742. How long were you in hospital?—I was in hospital only about 13 days. Of course I was an out-patient afterwards. I used to go up every morning.

743. How long was it before you were discharged as an out-patient?—I should think it would be about three months.

744. Did your employer know what was wrong with you?—Yes.

745. Did you tell him?—I left the place to have it done.

746. Do you know of other people who have undergone operations?—Yes. One who is in the other room has had to have his little finger off, and I do not know whether I shall have to have this off, it pains me so badly (*the little finger on the left hand, second joint*).

747. (*Sir Clifford Allbutt.*) Is that since the operation?—Yes.

748. (*Chairman.*) Which hand used you to work most with?—The right hand.

749. And how used you to catch hold of the lever?—(*Witness illustrated with a poker.*)

750. And the wheel?—Of course you had to use both hands to the wheel.

751. (*Sir Clifford Allbutt.*) Do you think the wheel or the handle was the more important in doing this?—I am sure I could not say.

752. (*Chairman.*) Did you do anything beside your work? Had you a garden or allotment, or did you fish, or anything of that sort?—No.

753. (*Judge Ruegg.*) There was nothing else to subject your hand to pressure?—No.

754. The pressure you got on your hand was from work?—Just so.

755. (*Chairman.*) Before you went into the hospital you told your employer you were going?—Yes.

756. Did you have any discussion?—I told the manager.

757. Did you have any discussion with the manager as to what was the reason you had to go: that you had to have this done to your hand?—No. Of course I did not know what was the cause of it. I had no idea at that time what was the cause of it.

758. Had you heard of other people who had suffered in the same way before?—No, at that time I had not.

759. Not in your shop?—No. There was an operation on one in 1909.

760. (*Judge Ruegg.*) Have you ever suffered from rheumatism?—No.

761. As far as you know, are your family rheumatic?—I believe my father was.

762. But you have never suffered from it?—No.

763. Do I understand now, with your hands in their present condition, you are able to work?—Yes.

764. If you got another job would you be capable of doing it?—The employers object to this kind of thing.

765. You mean they object to engaging you when your hand is in that condition?—Yes. I have been out of work four months.

766. I suppose in the old time when you first began they did not examine your hands?—No. They used to examine your teeth.

(*Chairman.*) Thank you.

The workman withdrew.

Mr. "B." called, examined by the Chairman.

767. How long have you been in this trade as a twist-hand looking after the machines?—I rose from a little boy.

768. You have been in the business all your life?—Yes.

769. And you are now a twist-hand?—Yes.

770. Have you been looking after a machine as a twist-hand for 30 or 40 years?—For 34 years.

771. When did you first notice anything wrong with your hand?—About 15 or 16 years ago.

772. Which hand was it in, the left or the right?—It was the left hand that started first.

773. Which do you do the more work with, the left or the right?—The left. We had to stop the machine more with the left than with the right.

774. How long after you saw that there was something wrong with your left hand did you see anything wrong with your right?—Very soon after—the next year.

775. And they have gone gradually worse since then?—Gradually worse. (*The Witness showed his hands to Sir Clifford Allbutt and Dr. Legge.*)

776. You have had nothing done to them, have you?—No.

777. You can manage to get the lever pretty well over now?—Yes; I can shift them. I cannot open them more than this, but I can grasp. I cannot get my hand between the machine to get hold of the catch-bar.

778. Did you see other men in the works suffering with their fingers in this way?—Yes.

779. Did you see it pretty often?—Yes.

780. All the 34 years you have been on the machine? Have you seen any of the men who were there before?—Yes.

781. Some of them are alive, and some dead, I suppose?—Some of them are at work now. There is one here now.

782. Apart from those people in the next room, have you seen any others suffering from twisted fingers—I mean your shopmates?—Yes.

783. Did you ever say anything to the foreman or your employer about it at all?—No, nothing.

784. (*Judge Ruegg.*) But he must know if you work day by day with hands like those. He knows you have hands like that, does he not?—Yes, the foreman knows.

785. Does the master not know?—Mr. S—— knows, because he brought the gentleman down to examine them.

786. (*Chairman.*) When was that?—About two years ago.

787. You had your hands examined?—Yes.

788. By Dr. Collis?—Yes.

789. Have you been doing anything else?—No.

790. Have you an allotment?—No.

791. Have you a back garden, or anything like that?—No.

792. Apart from using these levers, have you been doing anything to use your hands in any out-of-the-way way at all?—No.

793. Have you suffered from rheumatism?—There is very little in our family.

794. I suppose the lodge doctor has been attending you?—I have a recommendation and have been down to the doctor with them. That is all the doctors I have had.

795. You have not had much doctoring the last 34 years?—I never had any doctor but once, when I had my leg broken.

796. (*Judge Ruegg.*) Could you say whether you think there are more cases of late years than there used to be of the fingers going like that?—Of course I take notice of them now, but I did not when I was a boy.

797. So that you cannot say whether it has become more common?—No, I cannot, but I think it has now.

798. Are Lever's machines heavier now than they used to be?—Of course the bigger they are the heavier they are. There is the friction of the wheels stopping.

799. (*Chairman.*) Are the machines bigger generally?—Some of them are, but not ours. They are no bigger than they were 30 or 40 years ago.

800. (*Chairman.*) Has there been any improvement in the machinery in the last 30 years?—Not at that place.

(*Chairman.*) Thank you.

The workman withdrew.

Mr. "C." called, and examined by the Chairman.

801. How long were you at the machine twisting?—Thirty years.

802. When did you first notice anything wrong with your hands?—Ten years ago.

803. Ten years after you had gone to the machine something went wrong with your hands?—Yes.

804. Which hand was it first?—The right.

805. And during the ten years after you were working at the machine, did both hands get gradually worse?—Yes. (*The witness showed his hands to Dr. Allbutt and Dr. Legge.*)

806. Then you had to give up and do some other work?—I do a bit of putting bobbins in carriages—threading.

807. That you are doing now?—Yes, when I have anything to do.

808. Do you find difficulty in doing that now?—It will soon be that I cannot do it on account of this other finger going.

809. During all these 20 years, did you see other men in the shop suffering in the same way?—No.

810. During the last ten years, have the levers in the shop got heavier at all, or are they just the same all along? Is there the same amount of pressure when you are pulling?—Yes, about the same. There has been no modern machinery introduced into that firm.

811. (*Chairman.*) The machinery is the same as has been there the whole of the time that you have been there?—Yes.

812. Have you ever had rheumatism, or anything of that kind?—No.

813. Have you had a garden or allotment?—Yes, I have had a garden.

814. How big?—Five hundred yards.

815. Square yards?—Yes.

816. And you looked after it yourself?—Yes.

817. Did you grow potatoes, and things like that?—Yes.

818. And you did the spade work yourself?—Yes, the digging.

819. How long have you had the garden?—About four years.

820. Do you mean four years back?—No, before I sold it. I had to sell it because I got no work.

821. When was the four years that you had the garden? Was it before your hand went bad?—Many years—it is about 15 years ago.

822. (*Judge Ruegg.*) How many men worked with you in the factory all this time?—I cannot tell you; I have been on so many different jobs.

823. I thought you worked at the same place?—I worked at this place for seven years.

824. Wherever you have worked you have seen a large number of men in different shops working with you?—Yes.

825. Have you ever seen one suffering in the same way that you are suffering?—No.

(*Chairman.*) Thank you.

The workman withdrew.

Mr. "D." called, examined by the Chairman.

826. How old are you?—I am 45.

827. When did you cease being a twist hand?—Five years ago. I have resumed, but I stopped on account of this complaint, and was off two-and-a-half years.

828. How old were you when you began looking after the machines?—I should think I was 21 years of age.

829. How long did you work without seeing any indication that there was anything going wrong with your hands?—The number of years I can hardly recollect, but at a rough guess 13 or 14 years.

830. Which hand?—The right hand. I noticed a small lump under the skin of the little finger. Of course that is taken away.

831. How long after you first saw the indication of this swelling was anything done to it? Did you have to go under an operation?—I went on several years and had an operation on my own without making any complaint whatever to the society. I went to to the General Hospital and I was under Dr. Anderson.

832. Is he alive?—Yes. Dr. Anderson operated on me, and I was out 13 weeks.

833. Thirteen weeks in all?—Yes, that particular time; that was the first operation.

834. Did you tell your master or foreman, or anybody?—No, not at the time.

835. But they knew that you were away for something?—Yes, they knew I was away, but I did not tell them exactly till I came back; then it got blown about. They got to know and I had to explain; but the case of this Dupuytren's Contraction was in its infancy. Nobody seemed to know anything about it.

836. It had not got that name then?—No, certainly not.

837. The employer and the forman knew when you came back that there was something wrong with your hands?—Yes.

838. What was done at the hospital? Was it cutting something off and straightening your finger?—I went under an operation and this palm of the hand was opened, and I expect the guide or tendon, or whatever they call it, was stretched.

839. The doctor did not cut the finger off then?—No, that was the second operation.

840. You went back to work?—I went back to work and it panned out as Dr. Anderson told me, that I should have to come back.

841. He told you that, did he?—Dr. Anderson said, "You will be a clever man to keep it in that "position for long if you follow a gripping employ-"ment." I went once a week after I got healed up and he examined it and I said, "Doctor, it is going again." He said, "Yes, you are a very lucky man to "keep it in that position if you follow your trade." That is the gripping.

842. How long after you returned to work did the trouble begin again?—I was working under difficulties I might say from the very time I resumed, and it was a matter of about five years.

843. Then you had to go back to the hospital?—I did not go to the hospital; but I made a complaint to our society and the result was that the Secretary, who was not Mr. Wardle at that time, and the Council decided to send me to Dr. Robinson to be examined.

844. Where does he live?—He is in Regent Street; he was in Woolaton Street then.

845. In Nottingham?—Yes, the result of that interview was that I should go to London to see Dr. Burghard, of Harley Street.

846. You went to him and he saw your hand?—Yes.

847. What did he say?—Of course I went up with the Secretary to be thoroughly examined, and he said he thought he could improve it very greatly. But after being through one operation and it failing, I was not going through the next. But eventually I did, with the result he said he could make my little finger all right or improved. I was sent by the society and operated on on the following Saturday to the Friday I went up.

848. Did Dr. Burghard operate himself?—Yes, over the guiders. Unfortunately after I came out from the chloroform I found my little finger doubled up while I was in the hospital, and I called the nurse and said, "This is not right." She said, "I am very "sorry; Dr. Burghard is coming to-morrow; he will "explain." So he came on the Sunday morning, and he said it was much worse than he anticipated, and there was nothing for it; he could do nothing with it. I said, "Why did not you take it off," and he said, "We "dare not take people's limbs off. It would be better "off," and I said, "Take it off." With that a surgeon appointed at King's College took it off. That was the result of going up there.

849. Since then you have been working of course?—Yes.

850. How long is it since the finger was taken off?—Three years this March, I believe.

851. Then you came back to Nottingham again having lost your little finger?—Yes.

852. Did you get work in the same factory?—No, I was out of the trade close on 2½ years. I was practically bred and born in the lace trade, and I could not find any other employment. I found a little easy job which I could manage with my hand.

853. (*Judge Ruegg.*) Are you in that position now?—Yes.

854. Can you pull the levers?—Yes, but I cannot pull levers of any size now.

855. Will you put out your hands? Was your third finger always the same?—Yes, it was never straight. It was down here (*right down*). They took that off. I have got *that* back to a certain degree (*third finger*). I might say as a fair proof that this handling business causes this contraction, this side of the hand has been cut and carved about and is naturally very weak. That finger (*index finger*) had nothing the matter with it. But with that being very weak, I have played on it a little to do the extra work and now it has started (*at the base of the finger*).

856. Since the part of the hand below the ring finger has been diseased, you have brought the pressure to bear——?—On that finger which was good.

857. On the part of the hand below the first finger?—Yes.

858. And that is showing evidences of this disease?—It is showing evidences of the extra weight. I think that is very good proof.

859. (*Chairman.*) What is your other point?—I was operated on, on both hands, in London.

860. At the same time?—Yes, and I may say that that finger was the best job Dr. Burghard did (*third finger of the left hand*). It was practically here (*right down*). He opened the hand right down to here (*middle of the palm*). This finger is absolutely genuine and good. That finger is affected (*second finger*). He liberated both these. I have good use in both those, but unfortunately *that* is affected.

861. But you are able to do the work now fairly well?—I am doing work in this respect. I am working a very simple and easy machine; but if it came that they wanted me to go on a larger and heavier machine, then I should be beaten. You understand what I mean, I should not be able to do my duty.

862. Have you ever suffered from rheumatism or gout?—Until I had this operation in regard to this finger, I never had a week off in my whole life.

863. (*Judge Ruegg.*) You have had no rheumatism?—No, never.

864. (*Chairman.*) Have you ever had a garden?—No, I have not gripped a shovel.

865. You have not even been a fisherman?—No; I am a little bit too excitable to be a fisherman.

866. Did the employer or foreman know of all these operations on your hands, because you had a great many from time to time?—I went through three operations. Of course they knew, but this case had not been probed into. I was the first ever to bring it before the Lace Makers' Society, and naturally everyone was wondering what was the matter. I did not talk about it too much for fear I might get a kind of boycott in the trade. That is where it was, and that is what unfortunately men are suffering now. They do not say anything, because if their employers get to know they are standing about light. That is where the thing comes in.

867. (*Judge Ruegg.*) You are engaged in work now with some firm, are you not?—Yes.

868. Do you think if you were to lose your employment for any reason, any other firm in Nottingham would take you on with your hands in that state?—I question if they would. As a matter of fact, this is only rumour, and probably I ought not to talk about rumours, but it is said that certain employers in Nottingham before they engage a man want to have a look at his hands.

869. Now?—At the present time.

870. Under those circumstances, what do you say about including this disease?—I think most certainly it ought to be done.

871. You think it ought to be?—Yes, because it is throwing a man on the street. I had 2½ years.

872. Have you considered the question that a man may also be thrown on the street by not getting employment?—Yes, certainly.

873. There is the other side to look at?—Yes, quite right.

874. Still, notwithstanding that you would have a difficulty in getting work now, you think the disease should be included?—I think it ought to be covered by compensation—anything that stopped a man from earning his daily bread. I think it ought to be supported some way.

875. (*Chairman.*) At any rate, do you think this machine could be improved so as to make the pressure any less than it is now?—The only improvement I can see would be in the mechanical part, such as better leverage. I have a machine at our place to-day, that has been altered through the very thing. In pulling this catch-bar up, which is a large weight, the lever was only about that length (*about* 10 *inches*). Our old gaffer went and worked this machine a bit, and he said, "That lever does pain my hands. I will have it sawn off," and he had it sawn off and one screwed on which you could lift with one finger, whereas it took a man's bodily weight previously.

876. (*Chairman.*) How long ago did this incident happen?—About six years ago. This machine is probably 30 years old; but since he had this one, we heard about other people having these short levers sawn off and longer ones screwed on, giving a man a chance.

877. (*Dr. Legge.*) Without this operation, would you have been completely incapacitated?—Yes, most certainly. If I had not gone through this operation, I do not think I should have been able to lace my boots with the right hand.

878. But still you would admit it was rather too severe an operation to advise other men to undergo?—In regard to the operation, I myself think they may improve it for a time, but I do not think there is any man born on earth that can cure it when it has once started. I think that when this complaint has once started it will go on whether the man is doing laborious work or not, in a slighter degree you understand.

(*Chairman.*) Thank you.

The workman withdrew.

Mr. "E." examined by the Chairman.

(*The witness showed his hands. The fingers of the left hand being drawn half way over, and there being a little evidence of the disease on the right hand.*)

879. Are you still working at the machine now?—Yes.

880. Have you been in the lace industry all your life?—All my life.

881. How many years have you been working on a twist machine?—I am 59. I went to the machine when I was 20.

882. You have been working very nearly 40 years, and everything went well till nearly three years ago?—Five years ago. When I felt this little lump begin to form, and gradually it seemed to get bigger and bigger and my finger began to draw; but it has gradually seemed to get back to where it was before.

883. How long was it that it went worse?—It kept getting gradually a bit further and a bit further; but since I have gone on another machine, I have noticed it seemed to come back again.

884. How long ago is that?—It is eight months since I went to this last machine.

885. And in eight months the finger has gone back?—Yes, it has seemed to go back.

886. Will you tell us as carefully as you can in what respects the machine you went to eight months ago differs from the machine you were working on up to eight months ago?—There is a little difference in the lever with regard to pulling the catch-bar, and a difference in the shape.

887. In what way are they different?—One is round and the other is oval. The first one is oval. It is a bit thicker to grasp

888. And the new one?—The new one is a small one, what we call a knob—a different shape altogether.

889. You are in the curtain branch?—Yes.

890. First of all you say the shape is different?—Yes.

891. Is the strength to be exercised different?—I can see nothing except the shape different. One is a bit broader than the other one. I do not know that it is that.

892. (*Judge Ruegg.*) Which is the broader?—Not the one I work on at the present time.

893. Call them the old one and the new one; which is the broader of the two?—The old one, still it was a newish machine.

894. (*Chairman.*) As far as the strength to be exercised is concerned, how do the old and new machines compare?—Just similar.

895. There is nothing much in that?—No, I could not perceive any difference.

896. (*Judge Ruegg.*) Have you had any treatment for that at all?—No.

897. (*Chairman.*) Did not you go to a doctor?—No.

898. Did you meet other men in the works whose fingers were going wrong?—Not where I worked. There were only eight of us.

899. Were you the first man in your works you knew of whose fingers went wrong?—Yes. I have been in contact with these men since, and of course they have invited anyone who had anything the matter with them to go and see our Secretary, and I was one who went down.

900. Dr. Collis saw your finger when it was bad, did he not?—Yes, he came to the shop and saw it.

901. Have you ever had any rheumatism or anything of that kind?—No.

902. Have you had any garden allotment?—No.

(*Chairman.*) Thank you.

The workman withdrew.

Mr. "F." called, examined by the Chairman.

903. You are still employed as a twist-hand?—Yes.

904. How long have you been employed as twist-hand?—Thirty years.

905. When did you first notice anything wrong with your hands?—It might be 12 or 14 years.

906. From now?—Yes.

907. Was it the right or the left one that went wrong?—I believe it was the left, the little finger.

(*The witness's hands were examined.*)

908. This began to go wrong about 13 years ago?—Yes, both together as near as I can tell you. (*The little finger of the left hand was right down.*)

909. (*Judge Ruegg.*) Can you work the levers with the left hand?—It is the levers that have done this.

910. Can you work them now?—I work it with my fingers. I get on that way. (*With the other three fingers.*)

911. You would be better without that finger, would you not?—It is in the road.

912. (*Chairman.*) You have never had any operation or anything of that kind?—No.

913. How many twist-hands are there working at your shop?—I could not tell you how many men. There are about 32 Levers and 40 Curtain frames.

914. Do you know anybody else in your shop who is suffering in the same way?—Yes, there has been one in here this afternoon.

915. Have you suffered from rheumatism?—No, I have had the gout.

916. (*Dr. Legge.*) You have had a touch of the gout?—Yes, in my toe.

917. (*Chairman.*) Have you had a garden?—No.

918. (*Judge Ruegg.*) Do you think now if you left your work you would be able to get work again in Nottingham, with your hands?—I do not know what I should do. It is awkward to work at anything.

919. But do you think that if this disease is put in the Act, and the masters have to pay for it, that any employer would engage you with your hands like that?—That is the question, is it not? If they look at your hands they will not employ you.

920. And notwithstanding that, do you think it would be right to put this disease in the Act, and make them pay compensation for this?—I think so.

921. You still think so?—I do.

922. Notwithstanding that it might make it very difficult for you to get work?—We have that to chance, I expect.

(*Chairman.*) Thank you.

The workman withdrew.

"Mr. G." called, examined by the Chairman.

923 How old are you?—58.

924. Are you still engaged as a twist-hand?—Yes.

925. How long have you been a twist-hand at the machine?—Over 40 years.

926. When did you first notice anything go wrong with your hands?—16 or 17 years ago.

927. Which hand went wrong first?—My right hand.

928. How long afterwards did the left hand begin to go?—It has only just lately began to go.

(*Both hands of the witness were examined, the right hand not being very much affected.*)

929. It has never been any worse than this?—No, it has never been any worse than that.

930. And although it has been going for 16 years, that is the biggest deflection?—Yes.

931. (*Dr. Legge.*) You can do your work very well, I take it?—Yes.

932. (*Chairman.*) There has been no need to worry up to now?—Not up to now.

933. Has this finger been like this for 16 or 17 years (*right hand*)?—I began to notice it 16 or 17 years ago.

934. (*Judge Ruegg.*) It has gradually got worse?—I have not noticed it getting any worse than this.

935. (*Chairman.*) And this one has just begun to go (*left hand*)?—Yes.

936. Do you know of any others in your shop who are suffering in the same way?—No, I do not think there is one.

937. How many are employed on the machines in your shop?—When all are employed there are about 140.

938. It is a pretty big shop?—Yes.

939. Are they old machines or new machines?—Most of them are old machines.

940. Have you changed the machines you have been working on during the time you have been there?—I am in a new job now, similar to the old one.

941. But at a new machine?—Yes.

942. I do not mean a different machine, but is it a new machine?—Yes.

943. Comparing this new machine with the old machine, is the work harder or lighter?—It is about equal; there is not much difference.

944. The power is about the same?—Just about the same.

945. Have you had any rheumatism?—No.

946. Have you had an allotment garden?—No.

947. (*Judge Ruegg.*) That has been going on for 13 years?—16 or 17 as near as I can guess.

948. Do you know whether your employer knows of it?—Yes, I think so.

949. Has he ever spoken to you about it?—No. The old gentleman never comes now, and the young one died a while ago; but I noticed the manager was here to-day. I saw him come in.

950. Did he know about your hands?—He never asked me anything about them; but he knew about the other meetings like we had at our offices, I suppose.

951. But you are the only case?—The only case I know.

952. And the only case you have ever known whilst you have worked there?—Yes.

953. (*Dr. Legge.*) Are these other men who are working there doing the same work that you are?—Just the same.

954. Is there any explanation that you can give as to why you have been selected to suffer in this way?—No, none at all.

955. Have you ever had gout?—No.

(*Chairman.*) Thank you.

The workman withdrew.

Mr. "H." called, and examined by the Chairman.

956. You are still employed as a twist-hand, are you not?—Yes.

957. How long have you been employed at the machines?—I have been at the machines about 33 years.

958. When first did you notice anything go wrong with your hands?—I do not know that there really is anything the matter with my hands. I do not know what they have sent for me for. There is nothing the matter with mine. You can just see a bit of a one *here*, one *there* and one *there* (*indicating positions on the right hand*).

959. How many are there in the same shop as yourself?—There are plenty worse than me that have not been forward.

960. You say there are a great many people working at the machines who are worse than you are?—Yes.

961. (*Judge Ruegg.*) In your shop?—There are several hands that I have seen that are every bit as bad as mine.

962. (*Chairman.*) Are their fingers a bit bent?—No, I cannot say they have started to go. You can just see they have got them the same as mine is formed, but it is no detriment to me. I have a bit of pain like a twinge, a kind of jump sometimes, but there is no hindrance or anything of that at present with me.

963. It does not lessen your capacity for work in the slightest?—Nothing at all.

964. But have you seen other men in the shop whose hands have a tendency to go?—Yes, far worse than mine.

965. (*Judge Ruegg.*) How many have you seen in your time with their fingers beginning to draw up?—A great many.

966. How many?—50 or 60, I should think.

967. That you have seen yourself?—Yes.

968. (*Chairman.*) Not in your shop only, but in other shops?—Yes, all over the trade. You get talking to different people, and they are all in the lace trade, and you can see some with one up and some with another up, and so forth.

969. Have you seen anybody suffering from these fingers in any trade other than the lace trade?—No, I have heard two or three of them saying men have them on the railway.

970. It is the first you have ever heard of that?—It is the first time I have ever heard it this afternoon. I should not doubt that they had because they have leverage.

971. (*Judge Ruegg.*) Signalmen?—Yes, signalmen. They have to grasp levers, and I should not doubt but what they had, although I have never seen any myself.

972. (*Chairman.*) Is it your opinion that it is the levers that caused this?—It is. I think it is the gripping and stopping your machine when it is running.

973. (*Judge Ruegg.*) What is called "braking" the wheel?—Yes, stopping the machine. You throw the rod off and stop the machine when you have any threads broke, or anything the matter with it. It is the way in which you clutch and grip to catch it in a certain place for it to stand, for if it goes over that place you have to go round again.

974. You think it is the wheel?

975. (*Chairman.*) Is it the wheel more than the lever?—It is every bit as bad as the lever I should say myself—the leverage you pull over. Some pull the comb-bars out as well, but I do not. We do not have to pull it out on the machine I work, but some do, and it is really worse than the catch-bar.

976. (*Judge Ruegg.*) You see if your hands get bad and the master had to pay compensation, you might have a difficulty in getting another situation?—I should have, I have no doubt. No doubt all these people will who have bad hands.

977. You still think it would be right to put it in the Act and make the employer pay?—Of course, I am not going to go as far as that. I do not know whether the employer should pay or what. Of course, these people it does a lot of damage to ought to have some recompense; but I doubt whether it would do me that harm from what I see of it the time it has been coming on me.

978. You do not think it will ever stop you working?—No, I do not think so.

979. You have not had rheumatism, and you have no garden?—No.

(*Chairman.*) Thank you.

The workman withdrew.

"Mr. I." called, examined by the Chairman.

980. Are you still employed as a twist-hand?—Yes.

981. How long have you been employed at that work?—I should think about eight or nine months at this place.

982. But have you been all your life a twist-hand?—Yes, 40 years.

983. Looking after the machine, using the levers, stopping the wheels and so on?—Yes.

984. Is there anything wrong with your hands now?

(*The witness's hands were examined, the thumbs of both hands being bad.*)

985. (*Judge Ruegg.*) Can you bend that thumb (*left hand*)?—No.

986. (*Chairman.*) Or the other?—That is getting bad too (*right hand*). When you are shifting your carriages to get your slack ones out they will drop on your finger, and they are all on the table. You have very big trouble to put them up. They would not know you were like that, but mine came on while I was at X.'s. I was there 13 years, and I have been left there a year last Easter.

987. It only came on about 13 or 14 years ago from now. Do you remember which one came on first?—The left one.

988. Has that got gradually worse ever since?—Yes, and this getting bad now (*right*).

989. How long has it been going since the right thumb started?—This started about three years ago.

990. Not more than three years from now?—It is more than that. Is it two years since you were at the office?

991. (*Mr. Eatock.*) You saw the doctor at the Union office?—Yes. He said mine was the worst case of the lot when he examined me at the office.

992. (*Chairman.*) Have both hands been getting rather worse lately?—Yes.

993. You have never had any operation or anything like that for them?—No.

994. Have you ever had rheumatism?—No.

995. Have you had an allotment garden?—No.

996. How many men are there employed at the machines at your shop?—Do you mean working at present?

997. Yes?—I think there are about 26.

998. How many were there at the place where you were working 13 years?—About 32.

999. Have you met any other man during all those years who was suffering from his fingers in the same way as you have done?—Yes.

1000. At the works?—One has died since who worked at the same place.

1001. But his fingers were bad?—Yes.

1002. Was he working at this place that you are at now, or at the other place?—The other place.

1003. Was there anybody else besides him at that place?—No, not that I know of.

1004. So far as you know, did the foreman or employer know that you and he were suffering in this way?—My former employer did. This one where I am working now does not know.

1005. (*Judge Ruegg.*) Did you not tell him?—No.

1006. You do not want him to know?—No. I do not suppose he would keep me if he did. Sometimes when I have to thread it goes wrong, and I have all that to go over again for nothing.

1007. Quite naturally, you try to keep it from the master?—Yes, I try to keep my situation.

(*Chairman.*) Thank you.

The workman withdrew.

The Committee adjourned *sine die.*

THIRD DAY.

At The Home Office.

Friday, 29th November, 1912.

PRESENT:

HIS HONOUR JUDGE RUEGG, K.C. (*Chairman*).

Sir THOMAS CLIFFORD ALLBUTT, K.C.B. | Dr. THOMAS MORRISON LEGGE.

Mr. ARTHUR LOCKE (*Secretary*).

Dr. ROBERT JONES, called, examined by Judge Ruegg.

1008. I think you are Lecturer on Orthopedic Surgery at Liverpool University?—Yes.

1009. Will you tell us your other qualifications?—I am Master of Surgery, Liverpool; Fellow of the Royal College of Surgeons, Ireland and Edinburgh; Surgeon to the Royal Southern Hospital, Liverpool; and President-elect of the International Orthopedic Congress.

1010. Have you seen this report on Dupuytren's contraction by Dr. Collis?—Yes, I have read it all very carefully.

1011. I believe your experience has not taken you among lace workers?—No, not at all.

1012. Therefore you are not in a position to say whether the disease is more prevalent amongst that class of worker or not?—No.

1013. Will you tell us what occurs to you with regard to this disease. First of all, what are the conditions under which it appears?—It occurs in two forms practically in all classes of society.

1014. Have you in your experience found it occurring in all classes of society?—Yes.

1015. Including a class of society who are not ordinarily engaged in manual labour?—Yes. First it occurs as a contraction, a very rare condition which does not interest us I take it, which occurs in children, is a congenital condition, and develops in after life. There has been a history of contraction of the deep palmar fascia from infancy to adult life.

1016. How can that be accounted for if it is congenital?—It is difficult to say. I have never been able to account for it. You have the congenital defect, a child born with a contraction of the little finger alone, and one always knows it even when one sees it when the child is 14 or 16 years old. Generally the same finger on the other side is affected in the same way. It is generally due to the contraction of a capsule.

1017. Is this congenital disease Dupuytren's contraction?—No, it is not, but it is often called Dupuytren's contraction; there is a marked difference between them.

1018. (*Sir Clifford Allbutt.*) Anatomically they are identical?—Anatomically they are not identical. One is due to a contraction of palmar fascia, the other of the joint capsule.

1019. (*Judge Ruegg.*) Will you now tell us about the second type?—That is a disease which occurs in adults generally after middle life, very rarely under the age of 30, certainly not under the age of 20.

1020. Have you seen them between the ages of 20 and 30?—Yes. It is of very insidious onset and very often spreads over a long period of years.

1021. Going gradually worse?—Going gradually worse. In many cases, not in all, it is painless and the patient seldom takes any notice of the condition until it is well established. Patients, if they come at all early, generally complain of the trouble in one hand, more often the right than the left. Frequently when you examine them in the early conditions, there is no trouble at all in the second hand if you get the case early enough. It is nothing very obvious, but very shortly indeed if you examine the other hand carefully a little thickening can be noticed.

1022. In the same place?—Yes, usually in the same place, but not always.

1023. Do you find that condition where the men have not been engaged in manual labour?—Yes, generally when they have been engaged; but you do unquestionably find it when they have not been engaged in manual labour. Being interested in this point, I have often noticed it.

1024. Have you made any investigation to discover whether the labour has been labour involving pressure on one or both hands?—Unfortunately I have taken no notes; but I found, on looking over my notes, an old clinical lecture that I delivered in 1903. For two years I made an analysis of 33 cases that occurred during the two years, and I embody that in my report now. I will give it to you. During those years, that is, 1901 and 1902, I treated 33 cases, of whom 30 were men and 3 women. All those cases were over 20 years of age. 27 were over 30, 22 were over 40, and 12 over 50. Then with regard to the distribution of the attack, I noticed that the fourth finger was the first attacked in the great majority of cases, followed by the fifth and then the third.

1025. The fourth finger?—Yes.

1026. Is that what is generally called the ring finger?—Yes.

1027. Followed by the fifth and then by the third?—Yes. In 25 of the 33 cases both hands were affected. Where both hands were involved, the right hand was the first to be affected in 16 instances.

1028. 16 out of 33?—No, out of 25.

1029. There were a considerable number of cases in which the disease first appeared in the left hand?—Yes.

1030. Nine cases?—Yes, about half, I should think. Of eight cases where one hand alone was affected in the very early stages, it proved to be the right hand in all occasions.

1031. They were all?—Yes.

1032. Did you consider the occupations of those persons?—Yes, I made these notes with regard to the

occupations. There were three women; one was a barmaid, another a cook, and a third a woman of independent means who had never done manual work. Seven cases occurred in well-to-do folk, professional or business men, and the disease could not be traced to injury or chronic irritation.

1033. At that time did you take any trouble to try and trace the origin?—Yes, we tried to trace the origin.

1034. And you could not trace them either to injury or to any chronic irritation?—No. In 12 cases there were three boiler-makers, two shipwrights, two haulers of ropes, and a distinguished polo player—at all events he played polo a great deal—and a gardener.

1035. (*Sir Clifford Allbutt.*) Had the polo player both hands or one hand affected?—Only one. They laid stress on their occupations as a cause. Five of these were affected in both hands.

1036. (*Judge Ruegg.*) Haulers of ropes?—Yes; men who were dragging weights up by means of ropes.

1037. Pulleys?—Yes, at warehouses, granary places and so on, where they stand at big windows hauling things.

1038. Not sailors?—No, not sailors.

1039. You say that the 12, these boiler-makers, shipwrights and haulers of ropes, laid stress on their occupation as a cause?—What I mean is the polo player told me he throught it was due to polo.

1040. They all thought it was?—They all thought it was due to it. The polo player and the other people when I made inquiries thought the trouble had started from what they had been doing with their hands.

1041. That was the impression on their own minds?—That was the impression on their own minds, and I may mention in that relation that a certain number of cases—not a very large number—do commence with a little pain. Some remember having had pain after a good deal of strain on the palm. They tell you, "At "one time my hand was painful for a week or a "fortnight"; then it all passes off and they forget all about it and the trouble usually starts many months after that.

1042. Are you speaking now only of these cases you investigated?—No, I am speaking of cases afterwards also.

1043. Are you speaking only of cases in which the patients attributed the disease to the occupation, or are you speaking generally?—Now I am giving you simply the result of two years' work.

1044. But were the persons who complained of pain the persons who attributed the disease to their occupation, or did you find in every case upon investigation that there was a complaint of some pain at some time or other?—No. At that period I had a sort of feeling which made me quite sure that these cases were all due to irritation of the palm from some outside influence, and it was with that end in view that I made the investigation on this subject for two years. I cannot remember now that those people told me distinctly; but they gave me to understand they thought the trouble arose from the working with ropes or whatever it was, and the polo player was very distinct. He told me he had a great deal of pain one day.

1045. (*Sir Clifford Allbutt.*) Do you remember what age he was?—He was between 30 and 40, a young man.

1046. (*Judge Ruegg.*) I want you if you will to distinguish between that class of person, the worker or the professional player who does subject his hand to influences which may lead to local irritation, and the cases you give here of business men and professional men in whose case the disease could not be traced to any injury or chronic irritation. Did you have any history of pain in those cases?—No, in some not. I could not remember accurately, but in the great majority of cases there is no trace of pain of any kind.

1047. Not in the progress of the disease?—No.

1048. But I understood you to say always in the investigation made?—Not always; sometimes.

1049. In most cases you found a history of pain?—I would not say in most cases. In some cases they distinctly had a history of pain, either when they had been working with a screw-driver or with something of that kind which makes their hand sore for a period; but that passes off and they never tell you of it unless you make inquiries. They do not ascribe the subsequent trouble to that because there is too long an interval.

1050. In the 12 cases you speak of, would you say that their calling involved any rough usage of the hands?—Yes; the boiler-makers and the shipwrights have a great deal to do with implements.

1051. (*Sir Clifford Allbutt.*) What does a shipwright actually do?—A shipwright has to do with the building of wooden ships. He is really largely a carpenter. He is known sometimes as the ship's carpenter. He uses hammers and screw-drivers.

1052. The characteristic instrument is an adze?—Yes; he has an adze which he uses a good deal.

1053. (*Judge Ruegg.*) I do not know whether you told us; but of those 12 who were engaged in an arduous calling, how many were affected in both hands?—I think five of them.

1054. In the cases where you could not trace any pressure or irritation, were they affected in both hands or one?—Some in one and some in two.

1055. Did you consider the question of heredity with reference to those cases?—Yes. In 10 cases the patients, although they did manual work, were not subjected to unusual pressure on the palm. As to heredity, in 7 out of 33 cases I found that there was a clear history of heredity.

1056. With regard to those 12 workers again who used their hands, did you consider whether the work involved pressure on both hands?—No. I could not find that to be the case in all of them. 5 of the 12 cases were affected in both hands and their calling involved rough usage of both hands, especially the haulers of ropes. I looked on that as rather interesting. The people do that all the while (*the witness illustrated the motion of pulling ropes up and down on a pulley*).

1057. In 7 cases out of the 33 there was a clear history of the disease being hereditary?—Yes; that interested me very much.

1058. What do you say with regard to it being caused by accident?—In only one instance of that series, which is the most accurate I have got, was it ascribed to a direct disabling blow and that was severe enough to break the metacarpal bone.

1059. Did you go into the question of the diathesis of the particular persons?—Yes, it is a very funny thing. The age is just the gouty age, and what people call the rheumatic age. But it is very difficult indeed to come to any accurate conclusion about it.

1060. (*Sir Clifford Allbutt.*) I see you say that out of many hundreds of cases where the metacarpal bones have been fractured, you recall only one where there has been subsequent contraction?—Yes.

1061. (*Judge Ruegg.*) Could you draw any inference which would be useful to the Committee with reference to the diathesis. I see you say 12 out of the 30 had a history of rheumatic or gouty diathesis?—I should speak on general grounds that we know in rheumatic and gouty diathesis there is a tendency to irritation of the fibrous cells; but I should say such a case would be more likely to result from the same pressure—I mean this is purely hypothetical—in bringing about fibrositis, Dupuytren's contraction.

1062. But do you think a gouty tendency or gouty diathesis may be responsible for it in the sense of being responsible for it entirely?—No, I do not think so. In no cases that I know of, and in the very few cases I have examined (because I have my own views about operation in these cases) the gouty deposits, the chalk deposits, have not been found. I have several times sent them for examination, and all that has been made out is really a little fibrous thickening; but all this is only an impression.

1063. May I ask what the conclusion is that you draw with reference to the origin of this disease?—I should say that there is a predisposition—and that is a very vague term—to this condition; that very little irritation of the palms of certain people will result in Dupuytren's contraction, and that predisposition is sometimes hereditary I think. For the rest I could

give no reason, except that I feel a rheumatic or gouty diathesis would also be a predisposing cause.

1064. Then, having got a predisposition, you have to find out the cause?—Yes.

1065. What do you suggest is the cause?—I should say in all probability irritation.

1066. I think you are in accord with Dr. Collis there. For the benefit of the Committee, and largely for the purpose of its being got on the notes, will you give a description of this disease in as untechnical language as you can?—Yes. The palmar fascia is an unusual structure, for running through it there are longitudinal fibres which are really the prolongations of a muscle of the forearm, the palmaris longus. These spread out in a fan-shape manner in the palm of the hand, and then divide into slips to each finger, along which they extend as far as the pulp of the tips of the fingers, being especially strong along each side of the finger. These prolongations blend with the sheaths of the tendons, the deep fascia of the fingers, and also send slips to the sides of the bones, thus helping to form the tunnel or sheath in which the tendons run. A slip to the thumb is occasionally found, but is rarely of any size or strength. There is very rarely any contraction in it. Besides the longitudinal fibres prolonged from the tendon of the palmaris longus muscle, there are other longitudinal fibres which are attached above to what is known as the annular ligament, that is the ligament which binds all the tendons down over the front of the wrist. It is in these longitudinal fibres that the shortening and thickening occurs which constitutes Dupuytren's contraction. Though the skin over these fibrous thickenings is puckered and tied down, this is entirely secondary, and there is no actual thickening, in my experience, of the skin itself. The process is, therefore, a plastic inflammatory one, which one would call the fibrositis of the palmar fascia, and is not associated with any inflammatory thickening of the skin. A contraction is very often described as looking very much the same as that arising in connection with wounds of the palm. This, however, in my opinion, is a different condition, for it consists of a thickening usually of every part of the fascia, of the subcutaneous tissue, and very often of the scar tissue of the skin itself; but I do not regard that as Dupyutren's contraction.

1067. Although Dupuytren's contraction, you think, in some cases may result from a trauma?—Yes, from a trauma—from a direct blow of that kind (*illustrating by a blow as of a hammer on the wrist*), but not a cut in the palm from a non-compound injury.

1068. Not what is ordinarily called a large scar?—No, not a scar; from a bruise rather than a scar. In my note it is stated that gout and rheumatic diathesis are predisposing. I should have added that you cannot associate this condition as essentially gouty. I cannot see the predisposition.

1069. Essentially in the sense that gout is the cause of it?—Yes. I have no doubt in my mind that constant pressure upon a limited area in the palm will produce contraction of the fascia in those who are predisposed. I have noted this in young and middle-aged folk, who have for weeks and months leaned upon a walking-stick in case of lameness. This has been more evident when people who have used the stick in the left hand have been affected on that side, of which I remember distinctly instances. I have notes of several cases where the intermittent use of a screw-driver has given pain, and a tenderness of the palm subsequently developing into fascial contraction, and I have noticed what has interested me very much, that is, in several instances where the trouble has arisen, as far as I could make out, in both hands in women who have scrubbed and who have done the wringing action in laundries.

1070. The twisting?—The twisting action. I operated upon, I think, four washerwomen altogether during the last two years. I have had a sort of feeling, without being able to lay it down authoritatively, that the more limited the pressure has been on the palm, and the more severe it has been, the more likely one is to have Dupuytren's contraction. In cases where I have made inquiries of people who have been very sure that something had given rise to it, I have asked them about it, and they have said, "I have had to do a great "deal of heavy pressing in that way upon the palm"; and strangely enough it is just in this position, the deep position (*illustrating with the fist of one hand in the centre of the palm of the other*) where the pressure is more likely to bring it about.

1071. With regard to the injury, I think you have treated hundreds of cases of injury to the metacarpal bones?—Yes.

1072. And out of the many cases of injury to the metacarpal bones, only one has resulted in Dupuytren's contraction?—Yes.

1073. You say the condition is invariably bilateral?—I do not think I should say that quite. When one sees the condition it is usually bilateral. When one sees an advanced case, nearly always the other hand is affected as well.

1074. It occurs to me there must be many cases where the pressure is confined to one hand. How is it that the disease becomes bilateral—that it appears in both hands?—What one feels about that is—and that is what I say—that a predisposition has a good deal to do with it. Very often, when you have the left hand affected by it slightly, the right hand, which does the most work, is very often far advanced; and even if the hand is the left hand, on some occasions where the left hand has been mostly used for pressure, both have been affected.

1075. There must be cases, one would have thought, where something or other—either the industry or some special thing—involves considerable pressure or irritation on one hand, and there is no pressure on the other; yet you say practically this disease appears in both?—It does in a very very large proportion of cases.

1076. Can you in any way account for that?—No; I cannot account for it, except as I say, where the one hand is used most, it intensifies the condition.

1077. (*Dr. Legge.*) It is an inflammatory condition?—It is.

1078. And if it is inflammatory, do you not think there is a tendency for the constitution to be affected to some extent, and to have the thing determined at the same place in the other hand?—It is more likely in a certain number of cases, when one is disabled, that you use the other hand more.

(*Judge Ruegg.*) That is not answering the question.

1079. (*Dr. Legge.*) I was thinking there is something constitutional about it if you get leucocytosis at that particular part of the fibrous tissue. You may get it involving the same part, in the corresponding hand?—Yes, I think that is quite a reasonable hypothesis.

1080. (*Judge Ruegg.*) In other words, what laymen call, for the want of a better description, a sympathetic affection of the other hand. Do you think that is possible?—I think that is quite possible.

1081. (*Dr. Legge.*) I was going to cite an instance of bilateral paralysis following lead poisoning. Do you not think with that it is very difficult to explain why both hands should be affected?—Yes.

(*Judge Ruegg.*) Lead poisoning is very different.

(*Witness.*) It is a very different thing. It is a central deposit.

(*Judge Ruegg.*) One is so local, and the other affects the whole of the body in the blood.

(*Dr. Legge.*) There must be something in the lead circulating in the body. There is a sympathetic condition, too.

(*Judge Ruegg.*) Yes; one has to deal with that very often.

1082. (*Sir Clifford Allbutt.*) That would suggest that there is some kind of poison generated in the right hand which finds a specific correspondence of its own nature in the other hand?—Yes. That has often given rise to a theory that it is microbic in origin; but so far as I remember no microbe has ever been found, and many examinations have been made for a microbe.

1083. I did not intend to use the word "poison" in a specific sense. Some material is generated?—Yes.

1084. (*Judge Ruegg.*) There is one further question it is suggested I should ask you. Have you ever noted

pads on the knuckles reported to occur in cases of Dupuytren's contraction by Dr. Garrod?—No, I do not think I have. I have seen them attacking the same people as Dupuytren's contraction attacks—between 40 and 50 years of age. You mean little gouty deposits on the knuckles?

1085. (*Dr. Collis.*) Not gouty—fibrous?—I have never noticed that.

1086. (*Judge Ruegg.*) Have you considered the respective occupations of sailors and fishermen?—From my recollection I have often examined fishermen's hands, but the contractions there are peculiar. A fisherman is a man who uses an oar, but, strangely enough, he is not as often as you would think affected with Dupuytren's contraction. The people I have seen have a contraction of all the fingers, a sort of posterior contraction, but it is not due to contraction of the palmar fascia, although I have seen cases occurring in fishermen; but a great number of fishermen get in the condition that they cannot open their hands fully.

1087. You do not think it is common amongst sailors or fishermen, and men of that kind?—I could not say authoritatively. I have seen many, many cases of sailors; I have seen cases also of fishermen, and I have seen a great many cases in almost every department.

1088. (*Sir Clifford Allbutt.*) That becomes more or less a habit fixture?—Yes, a habit fixture.

1089. (*Judge Ruegg.*) What do you say with regard to the treatment of this disease?—I think nearly all the early cases can be cured by extending the scar tissue for a period. I am quite accustomed, for instance, when I operate on one hand which has become pretty bad, when the other hand starts, to give suggestions with regard to the stretching treatment of the other hand, and which generally results in the thing not developing. All that is needed is simply to take the hand, place it in a hyper-extended position on a splint during the eight or nine hours they are asleep, and keep it stretched. If there is any deformity, you keep it on for about a month or six weeks. After a period, when stretched considerably, if the hyper-extension is kept up intermittently, it does not seem to develop at all. Even in the younger people when it starts it generally does develop rapidly.

1090. Of course, there comes a stage of the disease when that treatment is not effective?—Yes. It is only just when it is beginning, just about the stage you see my hand in now (*fingers slightly bent over*).

1091. What about the later stage?—For the later stage I generally do multiple tenotomies; that is to say, I have a very fine tenotome—extremely fine—on a handle, and I make simple sections of the palmar fascia in eight or ten places, and then simply keep the hand hyper-extended for a period. I am personally quite opposed to the operation which is more common, that is, a complete dissection of the scar, because I have very often had to encounter cases which are the results of that operation where you get not only the removal of the scar, but you get a huge scar tissue which is absolutely incurable. Therefore I am strongly opposed to the open operation for Dupuytren's contraction.

1092. (*Sir Clifford Allbutt.*) It is a much less serious operation?—Much less. It is much simpler; very much the same operation as that of Adams.

1093. (*Judge Ruegg.*) In the early stages you think this treatment is sufficient?—Yes, I think it is sufficient. Over and over again I have found it quite effective.

1094. But assuming a person continues at the employment that you think has caused it, do you think it would be any cure?—If an association could be proved between the irritation of the palm and the development of the case, I would say it would be equally liable to occur after the operation.

1095. If the same irritation from the work exists?—Yes. I wish I could speak more emphatically, but I really cannot, with regard to the association between it and labour. I have the feeling clearly present in my mind that with regard to many people it would be a very good thing for them not to use their palms roughly because they will get into trouble. I am quite convinced if I had anybody with a starting Dupuytren's contraction, I should say to him at once: "Be very careful you do not do anything which presses on your palm." Yet I have no statistics and nothing except my own experience.

1096. The difficulty to my mind, as a layman, is the appearance in the other hand?—I suppose there is really no man who does not use both hands for something.

1097. (*Sir Clifford Allbutt.*) I was going to ask you that?—Yes; all workmen use both hands.

(*Sir Clifford Allbutt.*) There is no such thing as a uni-lateral person?—No.

1098. (*Judge Ruegg.*) But there are many occupations where a considerable unusual pressure is applied to one hand and not to the other?—Yes. If it were not for that little difficulty, of course, one would have no hesitation in at once saying it is proved beyond all manner of doubt that pressure on the palm is the sole and only cause of it—if it were not for two conditions: the bilateral element and the element of recurrence in people who are apparently doing nothing but idling away their time.

1099. You do not think it is caused by rheumatism or gout alone?—My feeling is that it is not caused by rheumatism or gout alone.

1100. I have to deal with this as a practical matter. Do you think there would be any difficulty in distinguishing with regard to a person whose occupation exposes his hands to some pressure, whether the disease was contracted from the employment, or might have been contracted elsewhere?—No, not the slightest.

1101. No difficulty?—No difference I mean. I thought you said difference.

1102. You think there would be no difference?—I think there is no difference.

1103. And would that not mean very considerable difficulty in saying whether the disease was industrial or not?—Most difficult. I think it is a most difficult thing to decide, and will be.

1104. You understand that the proposition is to place this in the schedule to the Workmen's Compensation Act as an industrial disease? Then the tribunal which has to consider the question as to whether it is industrial or not, you agree will have a difficult task?—Unquestionably.

1105. We had many instances given to us at our last sitting of a workman who has a relaxation, gardening or work with spades, shovels, and such like. Would it not be very difficult to say whether the disease was contracted from the work or from the play?—Very difficult; I think impossible. I should not like the job a bit.

1106. Do you realise that that is a practical objection to the inclusion of the disease?—No; because I do believe fully that certain industrial diseases, granting the predisposition, would bring about the trouble.

1107. Do you recognise the difficulty of the tribunal, the difficulty which you say would exist, as an objection to the inclusion of the disease? It is no use bringing before a tribunal a disease, and no one being able to say whether the man contracted it in the industry or not, because, in that case, as in every case, a man has to prove his case to the satisfaction of the tribunal, that this was a disease contracted in the course of his employment. Do you think he would have great difficulty, in some cases, in showing that?—I think he would have difficulty in many cases too in showing that. I think it is very difficult to answer that question.

1108. On the other hand, I suppose there would be cases where there would not be nearly so much difficulty?—No, I think not. I think if you find it in one hand, and you find a very distinct history of using the palm of the hand in this way (*the witness put the fist of one hand into the palm of the other and made a twisting movement*), I should have very little hesitation in agreeing that there would be industrial trouble there, and I am perfectly sure, in many instances I can recollect, I have been able to trace the trouble in the hand to the industry.

1109. Would you mind looking at the part of your proof where you deal with occupation? These questions are largely for my own guidance. Assuming for the moment that you were called as a witness in those 12 cases you speak of, of boiler-makers, shipwrights, haulers of ropes, the polo player, and the gardener—we will take the boiler-makers—do you think if those cases came before you, you would have any difficulty in attributing them, as a witness before the tribunal, to the employment?—It is a very difficult question to answer responsibly. You mean that the trade was the sole cause of it, putting on one side diathesis, predisposition, and everything?

1110. I would not say sole, because I am afraid that raises another difficulty that we have to deal with so often?—I should say it is a contributing cause undoubtedly.

1111. The question in these cases under the Workmen's Compensation Act is always whether the incapacity has been caused by the disease—the incapacity for work which is assumed. Supposing that question was put to you in these particular cases you have instanced. What would you say?—Thinking I had to do the best I could in that way, I should say certainly, the trade had brought it about.

1112. Would you say the same with regard to shipwrights?—Yes.

1113. I take it with regard to haulers of ropes you would have little hesitation there?—No hesitation at all.

1114. And with regard to the polo player?—Yes, the polo player; because he told me so distinctly. He said, "I have often thought of giving this game up "because I have so often, after a hard game, had a "little pain in the palm of my hand."

1115. And the gardener? — Yes, the gardener ascribed it to the spade. He also complained that he had pain on some occasions after using a spade.

1116. May I amplify that slightly? The words of the Workmen's Compensation Act, after dealing with the disease, are these: "and the disease is due to the "nature of any employment in which the workman "was employed at any time within twelve months "previous to the date of his disablement or suspen-"sion." That would be the question for the tribunal which has to arbitrate?—I should have no hesitation in saying in a great number of cases that the work is distinctly the cause of it; but I should be very sorry to have to point out exactly the cause. That is where the difficulty comes.

1117. And there would be some cases very near the dividing line?—Very near.

1118. I am afraid that could be said of many other cases?—But I should say that in the greatest number of cases the occupation has certainly made the hand worse.

1119. Do you think, having regard to certain classes of employment, say, for example, these lace machine minders, it would be right or reasonable to imply a presumption that the disease originated from the employment, leaving it to the other side to dispose of that if they can?—I should say without hesitation it would: to imply the presumption.

1120. It has been done in certain diseases in the schedule to the Act. If the applicant for compensation is employed in a particular industry, and the disease is a disease incident to that industry, the presumption is he contracted it in the industry, unless the employer can show the contrary?—Yes; that would be a perfectly fair way to put it.

1121. Do you think that would be a fair way of getting over the difficulty if that presumption exists?—Yes.

1122. Still, it might place a very difficult task on the employer; an almost impossible task?—Very difficult on the employer and the judge.

1123. (*Sir Clifford Allbutt.*) You were speaking of the disease being incident to the injury. We know so little about the incidence. Apparently the incidence on the several classes of society, so far as I can gather, depends very much on the sphere of observation of the particular surgeon?—Yes.

1124. The surgeon who practices in Nottingham would think it was prevalent amongst lace workers?—Yes.

1125. And the surgeon who practices in the West End of London would think it was prevalent amongst the people who sat in the house and did nothing?—Yes.

1126. We have have no guide to incidence. Therefore, when we speak of incidence, we are in a difficulty?—Yes.

1127. It comes to this: that the effect on the particular person is the sum of the conditions which produce it, is it not?—Yes, and predispose to it.

1128. And you cannot analyse those?—No, I cannot.

1129. But you think the evidence in a particular case might determine your judgment as to that person?—Yes. For instance, if a man who is using a walking stick for lameness, complains of pain and then this develops soon after, I should have no hesitation.

1130. (*Judge Ruegg.*) Supposing a man walks to the lace factory and uses a walking stick to walk there and back, and pulls a lever during the day, what causes his Dupuytren's contraction? It is very difficult to say, is it not?—Most difficult. This could only occur, of course, where there is a great deal of pressure put upon the hand through the lameness.

1131. I suppose like a good many other things, it comes to the balance of probabilities?—Yes.

1132. (*Sir Clifford Allbutt.*) In the particular case?—In the particular case.

1133. Only there is the very great difficulty of not having any normal incidence?—Yes.

1134. You speak of the same affection in the foot. That I do not know anything at all about. Is there any kind of guide? Supposing the person was engaged in the lace trade and also had Dupuytren's contraction of the foot, that would suggest it was not due to the trade but was constitutional?—Yes.

1135. Can you tell us anything about the foot?—I can say this. In no case that I have examined where Dupuytren's contraction has existed in the hand, have I noticed any contraction of the plantar fascia (of the foot), which is the equivalent.

1136. Yes. Does cutaneous callus correspond in site to the commencement of Dupuytren's contraction?—Nearly always.

1137. It is a part of the hand which is apt to be callused?—Yes.

1138. But you think it commences as a lesion?—Yes, as a lesion.

1139. A particular lesion of a particular place?—Yes.

1140. From which it spreads?—Yes. There is a hyper-atrophy of the palmar fascia, and really an atrophy of the skin.

1141. Then it gets a momentum of its own?—Yes. It gets a momentum of its own, and goes on.

1142. Has the pull on the muscle anything to do with it? It is rather an important point for us whether it is the chafe or the pull—the drag?—That struck me some years ago, but before I quite knew it was more the longitudinal fibres that cause the contraction; because in one or two instances where the thing started, I kept the hand extended and I also divided the palmaris longus muscle to prevent any pull on it, to make it a longer muscle. But I really do not think that has any influence on it.

1143. You think the pull is negligible?—Yes.

(*Judge Ruegg.*) What do you mean by the pull is negligible?—(*Sir Clifford Allbutt.*) Whether the muscle was ruptured by a pulling action, or whether it was a lesion directly at right angles—whether action on the line of muscles, or transversely.

1144. Then even with any amount of callus in the hand, you do not get any subcutaneous fibrositis?—I do not say, never; but in many cases where I have examined I have found none.

1145. That is very curious?—Yes.

1146. It shows it belongs to this muscle?—It belongs to this muscle.

1147. The aponeurosis of the muscle?—Yes, the subcutaneous tissue gets inflamed.

1148. It is rather remarkable that the tendency to fibrositis should be confined to that?—Yes.

1149. I think you have told us, but do you agree that the concurrency of the affection in both hands would indicate some degree of the constitutional defect?—Yes.

1150. I think I may infer from casual observations that you think this is associated with that common and obscure state we call chronic rheumatism rather than with gout?—Yes.

1151. If so, damp, chill, and so on would promote it?—Yes, any condition which would tend to promote chronic rheumatism.

1152. If the calling were one which involved adverse conditions of one kind or another of that sort, damp or chill?—Yes.

1153. I do not know that that is the case here at all. Speaking of working people, of course, gout is less a disease among them than rheumatism, is it not?—Yes, it is.

1154. And it is not associated with arthritis?—Do you mean the rheumatoid type?

1155. Either rheumatoid arthritis or gout in the persons you find affected?—No. I have been astonished; because one would think, especially on the microbic theory, that you might; but you never do.

1156. Not even what is called rheumatoid arthritis?—In osteo-arthritis or bad rheumatoid arthritis, although you get the fingers in that position (*bent a little*) it is a very rare thing to find any contraction separately of the palmar fascia.

1157. So that that again dissociates it?—Yes, from the osteo-arthritis.

1158. (*Dr. Legge.*) You said that the condition was largely painless?—Yes.

1159. Then what precisely do they come to you for; is it incapacity?—No, not because of deformity; but because of incapacity usually, in the case of the working man.

1160. He has to give up work altogether?—No. He says work is inconvenient, and sometimes impossible; and he is a little bit unhappy about the deformity and says, "Can anything be done to my fingers to straighten them?"

1161. In this treatment that you adopt of the hyper-extension, could the man conveniently keep on at his his work while it is being done?—He could in the later stages, but not at first, because the hyper-extension would have to be done day and night. Later it need only be done at night time. The splint need only be on at night time.

1162. Is it painful?—No, not at all painful after the deformity is treated. It is only painful whilst the strain is being put on the tissues.

1163. I think you said for a month?—A month or six weeks. It varies, however, with the severity of deformity, but it is not curative in any but the earlier cases. In the earlier cases hyper-extension generally suffices.

1164. When you stated that originally in your evidence, you said it need be applied only at night?—Yes; if the condition is recognised very early, the development of the condition may be arrested. The splint need only be put on at night if it is, as in Sir Clifford's hand, a little bit of a nodule; but as soon as deformity comes the splint should be worn continuously.

1165. (*Judge Ruegg.*) Looking at this, will you say at what stage the treatment becomes useful (*showing the witness Plate I.*)?—Only in stage 1, I take it.

(*Dr. Collis.*) Yes, there is apparently no flexion there.

(*Witness.*) It would be only an accessory to treatment in stage 2 and other stages.

1166. (*Judge Ruegg.*) In the later one it is useless?—It is essential in all of them for a time as part of the after treatment. There is a tendency to recurrence in all these cases, and unless that hyper-extension is kept up for a period you get a relapse.

1167. We are speaking of the extension alone in the first stage?—Yes.

1168. Useless in the second?—Yes, extension alone would be useless.

1169. And of course in the third?—Yes.

1170. Is that treatment generally known in the profession?—I have sometimes written about it. It is not very well known—not as well known as I think it might be.

1171. It is very useful?—It is very important.

1172. With regard to a person who has this slightly, even if he said, "I cannot stay away from work, I must go on," would you recommend it at night if he could not adopt it in the day-time?—Yes. I should not if there is contraction. It is only in the early stages, just as in the very excellent picture you have there of the first stage.

1173. (*Dr. Legge.*) Might that hyper-extension be surgically applied? Must it be applied by a surgeon?—No.

1174. They can do it themselves?—They can do it themselves.

1175. Will you give us your experience of the treatment you adopt of multiple tenotomies?—As to the results?

1176. Yes?—I think it is a very satisfactory operation indeed, if you get it in stages which are not very extreme stages. For instance, in the second stage and the third, and in all of them, there would be beneficial results, but the results here (*stage* 4) would not be so good as in this (*stage* 3).

1177. (*Judge Ruegg.*) In fact you would attempt the operation in all the stages that are shown in the illustrations?—Yes.

1178. (*Dr. Legge.*) That does not cure it entirely, I take it?—In the early stages it cures it entirely. In the second stage I should say it would cure it entirely.

1179. Then will relapse follow that treatment?—Relapse will not follow that treatment if patients are told exactly what they ought to do; first to hyper-extend the hand, and then, generally as a routine or little habit, to take their fingers and press them over in this way (*pressing the fingers backwards*) so as not to let them contract again.

1180. How many months would it be before a workman with his hands in the third or fourth stage, who desires to undergo this operation, would be able to return to work?—It would depend very much on his age. Here, one may say, if a man is fairly old, say any time between 50 and 60, the result is not nearly so good, operatively, even in the same condition of deformity, as it is between 30 and 40, and 40 or 45. I do not know whether you would lay any stress on this remark; but if I come across a gouty patient who happens to have this at the same time, I look upon it as not so promising of a good result as I should with one who was not gouty. That is largely the case with other patients too. With such people they are very liable to have their fingers very stiff afterwards, and not get the elasticity of the younger folk, and the non-gouty folk.

1181. Supposing a lace worker got this when he was 45 years of age, and it were advanced to such a degree as to interfere markedly with his work, do you think he would be entitled to half wages for the rest of his life?—I should give it to him.

1182. For the rest of his life?—No; I should not give it to him for the rest of his life; I should have him operated on first.

1183. That is the point. Do you think, as the Schedule to the Act gives one power to lay down some condition, that compensation should be given for the disease while undergoing surgical treatment, which would include both hyper-extension and the operative treatment if necessary. It says, "In such cases and subject to such conditions."

(*Judge Ruegg.*) Either with or without modification. In what way do you read that?

(*Dr. Legge.*) I was thinking of the actual instance of the glass workers' cataract. I might read from page 3 of that report. Do you know this statement in the Committee's second report with regard to glass workers' cataract, which was also extremely slow in its development, and there was doubt whether it was always possible to distinguish from senile cataract. But that point was clearly proved by its being a

posterior corticle cataract, and the conclusion arrived at was that it was really a definite industrial disease, and should be scheduled; but if operated on the result was satisfactory, and they could very often return to their work. So the Committee said: "There "is, however, an alternative course. The operation for "the removal of cataract is attended by practically no "danger, and among glass workers usually enables "them to obtain employment again, sometimes even at "the highly skilled work on which they had been "formerly engaged. If the period in respect of which "compensation were made payable were limited to the "time necessary to cover the period of incapacity "immediately preceding and succeeding the operation, "a just relief would be given to the workmen, while "the burden on the trade would be reduced to such "very small proportions that we cannot believe that "the employers would incur the expense of arranging "for periodical medical examinations or be guilty of "the harshness of this dismissing men whom they "knew to be suffering from a slowly ripening cataract. "The Workmen's Compensation Act enables such a "limitation to be effected without further legislation, "for Section 8 (6) of the Act empowers the Secretary "of State to extend the provisions of the Section to "diseases other than those first scheduled, 'either "'without modification or subject to such modifications "'as may be contained in the order'"?—Yes.

(*Judge Ruegg.*) It was on that clause that this recommendation of the Committee was made.

1184. (*Dr. Legge.*) Yes; the compensation should be made payable only in cases where an operation is undergone, and for a period not exceeding six months?—In the first place the operation is an operation not very frequently performed, and a great deal of harm can be done unless it is very correctly done indeed. In fact, I think if open incision became a general thing, that the patient was to be sent away to be operated on, the result would be a very great disaster, because you would find a great many ruined hands.

1185. But we could say, provided the operation were done, it meant the open operation?

(*Judge Ruegg.*) Or define the operation.

(*Dr. Legge.*) Actually define what the operation should be?

1186. (*Judge Ruegg.*) There is no danger at all with yours, is there?—No danger at all.

1187. Is an anæsthetic used?—Sometimes. I very often do it without, but not if it is very complete. I quite understand your question.

(*Dr. Legge.*) I think it is desirable to have the treatment by hyper-extension included.

1188. (*Sir Clifford Allbutt.*) Would that do for the name of the operation: treatment by multiple tenotomy and hyper-extension?—Yes, quite well.

1189. There is some incision, of course?—Yes, by multiple tenotomy.

1190. Is this your own operation?—Yes, the manner of doing it is my own.

1191. Could your name be attached to it?—Not my own. Other men have done tenotomies but in a different way.

1192. (*Dr. Legge.*) You agree it is desirable to have this treatment as early as possible?—Unquestionably. I have not a very legal mind I am afraid; but the feeling I have is this, that if a young man comes with a deformity, represented by about that (*the second stage*), there is a very great chance of complete recovery, and that with after care he may have complete recovery if he is not over 40 or 45 years of age. Any operation for the third stage does not give you such good results after that age is passed. In old people the operation is only a great help and not a complete cure.

1193. (*Judge Ruegg.*) What do you say as to his going going back to work after the operation?—In very old people?

1194. If you like?—I should rather put them on as permanently disabled.

1195. You see if the hand is cured?—As I say, in very old people, or, possibly over 45 years of age with a very marked degree of deformity, I do not think the cure is a complete cure. You get the men up to about *that* position (*the fingers being almost in the normal position*), but they have to be very careful of the after treatment.

1196. We had an illustration of a man who had worked at lace work with extraordinarily deformed hands, and he was still working?—That I do not know. I do not know how they do their work with a deformity.

1197. He was doing his work?—I have seen a surgeon doing very excellent operative work with a Dupuytren's contraction. It all depends upon the nature of the work.

1198. (*Dr. Legge.*) But on the whole?—On the whole I think there ought to be some power to insist upon the operation being undergone.

1199. Just one other question with regard to the proof that it is an industrial disease. Would you consider, if we were to find this disease of Dupuytren's contraction was, say, five times more prevalent amongst a certain class of worker as compared with the general industrial classes, that that should be a sufficient proof?—I think that is the only way in which you can come to a proof. I quite agree with you.

(*Judge Ruegg.*) You mean, proof to the satisfaction of this Committee?

(*Dr. Legge.*) Yes, to regard it as an industrial disease.

(*Judge Ruegg.*) Not proof in court?

(*Dr. Legge.*) No. If it satisfies this Committee, then it is proof in court, is it not?

(*Judge Ruegg.*) I do not say that.

1200. (*Dr. Legge.*) Did you examine the statistics?—Yes, I did, and if I may mention, as far as the lace workers of Nottingham are concerned, I think the case is proved to my mind after reading this report, because there is such a marked disparity between the incidence of the disease here and in other trades. When you come to individual cases it is different.

1201. Do you agree with Dr. Collis that the number of persons examined who are under 40 should be excluded from the statistical figures of the disease?—Because they are so few you mean?

1202. Yes; you may examine so many, and find so few?—Yes.

1203. He found from those figures that 11·7 per cent. of those aged 40 employed in the Levers branches were affected, 13·1 per cent. in the curtain branch, and 13·4 per cent. in the plain net branch, as compared with 1·2 per cent. in tin plate workers and 0·4 per cent. in granite cutters?—Yes. I am not technically sufficiently informed to know what the granite workers and tin platers do.

1204. There is not quite the same pressure, but there is handling. That would give you the incidence generally for the industrial class, and the normal population therefore to compare those with. Would you agree with that?—Yes, I would agree, quite.

1205. (*Judge Ruegg.*) You have had a large experience at the hospital. Do you think there are a great number of men who would come for compensation if this were scheduled? Do you think it would be a serious burden upon industry?—No, I should not think is would. The only trouble is that they would come when they are very old.

1206. It is suggested in your proof that you want to say something about the form of handle that should be used, a handle which should be less harmful?—Yes. It was not quite clear to my mind the sort of handles they are using in Nottingham, even from the pictures. But what I wanted to convey was this: that anything which was fairly bulky and took the hand softly, was better than anything which presses upon the centre of the palm or requires prolonged and extreme contraction of the fingers.

1207. I think we are alive to that; we saw the handles?—I happen to be the consulting surgeon to the whole of the boiler makers and engineers of Great Britain, and although one comes across Dupuytren's contraction in their case, it is not nearly as common as amongst lace workers, I am sure.

1208. There may be cases in every trade?—There are cases in all trades.

1209. (*Dr. Legge.*) But one may leave them to have the burden of proof thrown on them?—Yes. With regard to the shipwrights of Great Britain, I have had

an official connection as their honorary surgeon for the British Isles, and although you find the disease amongst them, you do not find it nearly as common as amongst the lace workers.

1210. They use hammers, do they not?—Yes.

1211. Are they wooden?—I cannot remember; I fancy they are wooden.

1212. (*Judge Ruegg.*) Are you the adviser for the Association of Workmen, or the Association of Employers?—I am neither. It is simply this, that the doctors who are attached to all these Associations send their cases down to me, but I am not for the men or the employers; it is merely for treatment, not for arbitration or law.

1213. Is there anything else you particularly want to say?—No.

(*Judge Ruegg.*) The Committee are very much indebted to you for your evidence.

The witness withdrew.

Mr. W. J. West examined by the Chairman.

1214. You are the secretary of the Nottingham Lace Manufacturers' Association?—Yes.

1215. That includes Nottingham and any other places?—No, Nottingham only; but this inquiry we have made has been a joint inquiry of two associations combined. We had a joint committee on it.

1216. You are going to give us the results of the investigations of this joint inquiry?—That is so.

1217. Will you tell us who the other committee includes?—The other association is the Lever's Lace Manufacturers' Association. They include Nottingham and all outside districts where lace machines are.

1218. That is Nottingham, Stapleford, Sandiacre, Long Eaton, Beeston, Sawley, and you go as far as Derby?—Yes.

1219. Does your association include practically all the Nottingham lace manufacturers?—Do you mean the two associations; because the two associations practically do include the lot?

1220. The two associations practically include the whole of the employers in that trade in Nottingham and the surrounding districts?—Yes.

1221. You have made inquiries amongst how many of these?—280. The two associations represent about 325 manufacturers, but in some instances we overlap; that is to say, we have members who are members of both associations. It is 280 nett.

1222. You have practically made inquiries from all of them?—Yes, that is so.

1223. Were the inquiries made in the form of a circular or in what ways were they made?—We wrote a letter explaining what we wanted and we enclosed a form in which we asked four questions. Two of them have been answered in only very few instances, so that they are of no value; but the principal questions we asked were: how many twist hands do you employ; and secondly, how many of them are suffering from Dupuytren's contraction.

1224. Will you tell us how many of those 280 manufacturers replied?—We have had replies from 105 firms.

1225. Considerably less than half?—Yes, that is so.

1226. Have you finished, or do you expect to receive other replies?—I have had them coming in right up to yesterday. We may get some more, but we always have this difficulty. A lot of them are very small manufacturers and a great many of them have only recently, in the last few years, become manufacturers. That is to say, up to a few years ago they were operatives; and we have always found a great deal of difficulty in getting information from that class of men. They have so many forms nowadays that they have to fill up.

1227. Are the 105 fairly representative firms?—Yes, I may say we have got most of the big firms and the old-established firms; they are very representative.

1228. Will you tell us the result of the answers with regard to the number of hands and with regard to the men affected?—Yes. According to the replies I have here, I have summarised them in this way. I have had replies from 88 Lever's manufacturers and 9 curtain manufacturers, and 8 plain net manufacturers.

1229. By Lever's manufacturers, you mean what?—Manufacturers of Lever's lace. Lever's lace is what the layman would call fancy lace, that is, trimmings and millinery lace as distinguished from lace curtains on the one hand and from plain net, which is made in all one breadth, on the other.

1230. And they use levers?—They all use levers. Lever was the man who originally invented the lace machine; it has nothing to do with the levers on the machine.

1231. But they all use levers?—The levers for moving the catch and comb bars are practically the same on all three types of machines. I have received replies from 88 Lever's manufacturers, 9 curtain manufacturers, and 8 plain net. Of course there are very many more Lever's manufacturers than there are curtain and plain net. There are comparatively few firms making curtain and plain nets.

1232. The class of machinery is substantially the same?—Yes; the principle is the same, and the curtain machine to the uninitiated looks practically the same as the Lever's machine.

1233. (*Sir Clifford Allbutt.*) Are not the Lever's rather a heavier pull than the others?—Not necessarily.

1234. (*Judge Ruegg.*) But, in fact, are they?—I am not absolutely technical in the lace trade, but I have never heard that before.

1235. We had better get these figures?—105 firms altogether.

1236. Will you take them separately?—With regard to 88 Lever's manufacturers employing 1,555 twist hands—machine minders as they are described in the report—9 men were suffering from Dupuytren's contraction. Nine curtain manufacturers employing 259 twist hands had 2 men affected, and 8 plain net manufacturers employing 334 twist hands had 2 men affected. That is a total of 105 firms, 2,148 twist hands, and 13 men affected. I might say it struck me as being rather peculiar, and I do not know whether there is any significance to be attached to it, but the whole of these 13 cases are men employed in Nottingham. I have not had a single case reported to me from outside districts. Of course there is one thing possibly that largely accounts for that; that is, that the average age of the Nottingham twist hand is considerably higher than the average of the men in the outside districts, for the simple reason that the trade in Nottingham is unfortunately a decaying industry, and all the new enterprise and new machinery is outside, and new blood, so far as the workmen are concerned, is not coming in. The new men are not coming into the trade as fast as they are getting old, and the young men go outside.

1237. You think that is a fair proportion with regard to the 105 who replied; but if the others had replied, have you any reason to think the proportion would have been any different?—I hardly know what to say to that. Of course my reports here are admittedly incomplete. I have inquired of 280 manufacturers and only had replies from 105, and I do not know I am sure. The report mentions 85 cases.

1238. It may possibly be that some that have men affected do not care to reply?—It may be so. But on the other hand we pressed them to reply, pointing out that we wanted the information to be as complete and exact as possible.

1239. Yes, but they did not reply?—That is so. In the report it is mentioned there were 85 cases found amongst, I think it is, 1,156 twist hands. I do suggest that those figures of 85 amongst 1,156 are not a correct representation of the prevalence of the disease.

1240. Are you a manufacturer?—No.

1241. You are the secretary of the association?—Yes.

1242. Have you considered this question about the reliability of these figures; that there may be cases where there are men suffering from this disease who purposely keep their employers in the dark?—I have not. But I have considered it from this point of view, that amongst these 85 cases 51 are in the early stages of the disease; that is to say, the palmar fascia only is affected. I suggest that in the great majority of those cases it would require an expert medical examination to say whether the man was suffering from the disease or not.

1243. We only want to find out to what extent you have investigated it. Is that the statement attached to the answers; that in many of the cases they are in the first stage, or a very early stage? Why do you say that?—Because the report says so. There are 85 cases mentioned, but 51 of them are in the very earliest stages of the disease. I have not any means of proving this; but I should imagine from what I know of the average twist hand, that of those 51, 50 would not know they had got it until they had been examined and were told they had it.

1244. It is possible. We want to discover if there is any value in these statistics that you have given us. Do you know whether these manufacturers who have answered have had a medical examination made?—No, I am afraid not; they would not have had the time.

1245. Then there has been no medical examination?—I should say in the majority of cases not.

1246. And what kind of scrutiny have they asked for?—I do not know how the majority have done. When the men went on or came off the shifts—that is, when you get them all together, when they go in or out of the works—their employer questioned and examined them. If he thought they had got it or thought it was probably coming on, he looked at their hands as far as he could.

1247. Do you not think there are many operatives who would purposely hide it if they could?—It may be so; but I do not know what their object would be.

1248. We have had cases of that?—I can quite see the point.

1249. They are afraid they would lose their employment?—Possibly.

1250. Those are your statistics. If you get any further replies which materially vary them, perhaps you would let the Secretary have them?—There is another point which I do not know whether it is worth while considering, and that is this. It is mentioned somewhere in the report that a number of the men stated they first noticed the condition of their hands soon after starting to work or whilst working the heavier machines. As I say, all my cases are situated in Nottingham, and in the great bulk of the cases the machinery in Nottingham is much smaller and much lighter than the machinery outside. That is rather curious.

1251. Except that you may supply the answer to it yourself by saying the men have worked much longer in Nottingham, and not so long as a rule outside. They have not been engaged in the industry so long?—Yes, possibly.

1252. Have you any other evidence to give?—No; except that I have a few letters from men whose names are household names in the lace trade, and who have been in it all their lives, and they say they have never had a case. I have one rather curious case of a very big firm. He is a man who has works in England and abroad as well and employs over 160 twist hands, which is a big number — I mean it represents a lot of machinery. He has been in the trade the whole of his life, between 40 and 50 years, and he says he has never seen a case in the whole of his experience. Here is a letter from Mr. Pegg, of Long Eaton, who says: "I "have been working amongst lace workers for 50 years "and a very long time as a lace manufacturer, and yet "during this time I have not seen a single case, "although I have come in contact no doubt with "some thousands of workpeople."

1253. Knowing the feeling of your association, do you think if the disease exists as suggested to a very limited extent, your association would object to its being included in the Workmen's Compensation Act?—The effects of scheduling it under the Workmen's Compensation Act are rather difficult to foresee. These men change their situations. A man might work 30 years for one employer and leave with apparently no sign of Dupuytren's contraction, and then he works at another place for a year and gets it. Who is going to pay him, when one employs him for 12 months and another for 30 years? There are a lot of these things for a manufacturer to consider. Then, again, we do not admit that the disease is occupational, or only to a limited extent. In any case it is admitted by everybody it is undoubtedly to some extent and in some instances purely constitutional.

1254. We have had a great deal of evidence about that?—It is quite conceivable the lace maker may have Dupuytren's contraction by reason of its being constitutional in him and not by reason of his occupation. If you schedule it those cases cannot be separated. If he incurs it and it is looked upon as being industrial, it may as a matter of fact have been constitutional. Then there is another thing which makes it rather serious from the point of view of the manufacturer, particularly in the lace manufacturing industry which has been so depressed for such a long time, and it is this. This disease does not affect a man's health. Although there may be only a small proportion of them, you have him for life. If it occurs in the case of a strong, healthy man of 40, you may, perhaps, have to pay that man the maximum 1*l.* a week for the next 30 or 40 years. I do not think any manufacturer would object, particularly if it were proved that it was to some considerable extent occupational, if it were not going to make very much difference; but I am afraid it is going to make a very great deal of difference, and we feel very strongly that it is not occupational.

1255. The Committee are, of course, considering that very carefully; to what extent it is occupational. Manufacturers would, of course, insure against it, as they insure against other risks?—Of course they would; but it is going to very materially increase the premiums.

1256. You say if persons who are incapacitated owing to this disease are to be compensated for life, that would be a very serious burden?—Yes. Personally, if it is going to be scheduled, I take it it will be treated in the same way as any other disease.

1257. You must not necessarily assume that. It may or it may not?—And, of course, I see that the difficulty undoubtedly is, if it were scheduled there would be some cases come up for compensation which had never been caused by the occupation, in fact, with which the occupation had nothing whatever to do. I am a chartered accountant, and I have seen members of my own profession affected with Dupuytren's contraction. If a chartered accountant can get it in spite of his never doing any manual labour, or very little, there is no reason why a twist hand should not get it through exactly the same cause as has given it to the chartered accountant.

(*Judge Ruegg.*) The Committee are quite alive to that.

1258. (*Dr. Legge.*) Have you worked out these figures that you have given us as a percentage at all? I make the proportion of men affected amongst the twist hands in the Lever's machines as ·58 per cent.?—I have not worked them out separately. I have taken them as a total.

1259. What does that come to?—13 cases amongst 2,148 is ·60 per cent.

1260. But although there are 9, and 2, and 2 in the three classes, the proportion is very nearly the same. In the Lever's case it is ·58; in the second, curtain manufacturers, it is ·7; and in the plain net, ·6 per cent. If you turn to Dr. Collis's report, on page 9, where he gives the proportion, his figures, when worked out as percentages—certainly in the severe cases—are larger than those of yours?—You are taking the severe cases only—stage 4.

1261. Yes, it is 0·9 per cent., and in the curtain machines it is 1·2 per cent., and in the plain net there are none?—That is so.

1262. And in other processes also. So that really your figures and his are not very divergent?—No.

1263. Because you say, do you not, so far as you know, there is no medical examination?—I should say in the great majority of cases there would be no medical examination.

1264. And you quite realise that it is not having the disease which enables compensation to be claimed, but being incapacitated from it?—Yes, I quite follow that.

1265. And that it is only in the very late stage that you get the incapacity. Did you not indicate to the manufacturers that you wanted them to notify you of definite pronounced cases?—Yes; we asked them to make every inquiry possible in the time and give us a record of every case they had.

1266. So that these probably represent severe cases. Do you agree to that?—No. Because I wrote a supplementary note to those of them who had most in their employment who were affected, and I asked them to tell me to what extent it was affecting the men's wage-earning capacity. I had replies from about six of them, I think, and they said, "Very little." As rather bearing that out, one must remember this: that these men work in pairs, what they call "butties." A man who is a good and quick worker would not work with a butty who is a slow one, because the total earnings of that machine are reckoned up at the end of the week and divided equally between the two men. They are a lot keener after that than the master himself is. He will keep a man on who is a bit slow, and perhaps not getting the production out of the machine that he ought. For example, there are a lot of old men employed who are naturally slower, and you would not find a good twist hand who would be satisfied to work with a slow or partially incapacitated butty.

1267. Then you are not afraid the men would not be anxious to remain at work as long as they can. They would be cut down to half wages if they went off?—I do not know about that. Do I follow you in this way, that the men would sooner remain at work than come under the compensation?

1268. Yes?—I do not know; I have had no experience of this. I have always understood that that was rather a moot point.

1269. (*Judge Ruegg.*) I think you are right; it is a moot point at certain ages. It is when they get old?—Yes, and the lace trade, being a seasonable trade, they are sometimes very busy, and at other times they have long periods when they are not very busy; and the idea of keeping time and attending to business is perhaps a good deal more lax among lace operatives than it is in a good many industries.

1270. (*Dr. Legge.*) If we were to suggest that no one could obtain compensation unless he underwent treatment for the condition so as to improve it, would that reconcile the manufacturers more to admitting the claim?—Yes, it might possibly. Of course I have no authority for saying that. We have not considered it from that point of view. When you say under-go treatment, do I take it the Committee have it in their minds that before admitting a claim for compensation at all it would have had to reach a certain stage of the disease?

1271. Yes, in any case it must.

1272. (*Judge Ruegg.*) In any case it must reach the stage which results in incapacity for work?—Yes. But what one man would consider absolutely incapacitated him from working, another would laugh at.

1273. (*Dr. Legge.*) Yes. But the medical evidence we have had is that it is a progressive disease, and it is very amenable to treatment at the early stage; and that at that early stage surgical treatment, not operative treatment, but necessitating an absence from work for, say, a month or six weeks will improve the condition materially. That is the sort of requirement that might be made?—The manufacturers have not considered it from that point of view; but of course, naturally, if it had to be scheduled, they would welcome anything which would reduce the liability.

1274. Which would safeguard any abuse?—Certainly. Of course I want you to distinctly understand that I cannot bind my association with regard to that or any similar point, because they have not considered it from that point of view. As a matter of fact it has never beeen put to them in that way before.

1275. (*Judge Ruegg.*) Do you think that the manufacturers have regarded their men who have bent fingers as having contracted Dupuytren's contraction at their work?—I should think possibly.

1276. Of course there are earlier stages than that where the disease exists and has not manifested itself with the fingers being bent over. But I am afraid at that earlier stage it does not result in incapacity for work, and does not really result in incapacity for work until a somewhat late stage?—No.

(*Dr. Legge.*) There is no period of suspension.

1277. (*Judge Ruegg.*) That is the difficulty. Do you think it would have any harmful effect on the workers if this disease were included in the sense that if the people who had it in the earlier stages, and old workmen, would find it difficult to get employment?—Yes, undoubtedly. And I believe the workers themselves are of that opinion.

1278. Some of them?—Yes; I know some of their officials are.

1279. (*Dr. Legge.*) Would it satisfy the manufacturers as to the disease really being industrial in nature, if we could prove it was five times as prevalent in the lace industry as in any other industry?—It would be rather overwhelming, would it not, if that is actually proved.

1280. If it is found by figures and examinations of workpeople?—Yes, I suppose it would.

1281. (*Judge Ruegg.*) We understand that you do not wish to bind them?—Yes. It is quite impossible for me to answer for the manufacturers.

1282. (*Dr. Legge.*) I am only asking you personally?—If you ask me personally I shall say it was strong presumptive evidence any way.

(*Judge Ruegg.*) We are much obliged to you.

The witness withdrew.

Mr. L. Smith re-called, further examined by Judge Ruegg.

1283. You gave evidence before us when we were at Nottingham?—Yes.

1284. And there are one or two matters you have found you were slightly mistaken about?—Yes; with regard to the statistics in my own shop as to gardening. I have written to Mr. Locke on that.

1285. You have written a letter to the Secretary?—Yes; that is in full detail.

1286. That will appear in the notes as a correction. You do not want to add anything on that?—No.

1287. Have you made any inquiries since you were before the Committee on the last occasion with regard to persons who suffer from this disease?—Yes.

1288. Have you made inquiries outside the lace ndustry?—Yes.

1289. What do you wish to say?—In the first instance, with regard to those cases outside, local cases, never employed on lace machines, and in some cases never employed in manual labour ——

1290. You have found such cases?—Yes; one of a lace warehouseman who has never been in the factory part at all.

1291. Never on a machine?—Never on a machine. Another is a squire, a country gentleman; a third an army officer. The fourth, the managing director of a paper manufactory; fifth, a licensed victualler ——

1292. A licensed victualler might be subject to pressure in the palm of the hand in pulling the beer engine?—In this particular case I believe he is a man who has not worked except as manager of public-

houses; that is what I am given to understand. The seventh case is of a man now about 60 years of age who started life as a plough boy, then became a pot boy in a public-house, rose to be waiter in a public-house, then a bookmaker, and now a starting price bookmaker. I have made particular note of these cases, because Dr. Webber, of Nottingham, who is a Master of Surgery there, says this a very severe case.

1293. The bookmaker's case?—Yes; and this and the next case are not in any way to be mistaken for rheumatic joint or gouty thickening. The next case is one of the manager of a cardboard box manufactory, who was a clerk in the same trade. The ninth case is that of a doctor of medicine. The tenth is a designer; the eleventh, a lace curtain manufacturer who works as a designer and whose father also had this disease.

1294. Did the manufacturer never work at his own machines?—He did not work at the machines. Then the twelfth case is the case of a man who used to work a lace machine, but the disease appeared after he became an employer and did not work, and it is confined to the little finger of the left hand. He states emphatically it has no connection whatever with his work on the machine. Those are the cases that have come under the knowledge of two of us who have been inquiring.

1295. Are those cases in Nottingham, or people who live in Nottingham?—They are cases in Nottingham, except in the case of the squire, who lives within five miles of Nottingham.

1296. Are these cases slight cases or severe cases?—In the majority of the cases I believe they are severe, I have not seen all these cases myself, but I was given to understand when I asked about it, that their fingers are flexed and semi-flexed. In the last case I do know that the little finger is stiff and flexed and impossible to put in the right position.

1297. Have you made any inquiries as to whether there has been pressure in the palm of the hand during their life?—We have made inquiries, but they cannot say.

1298. They cannot account for it?—No. Then I propose to give you evidence of the inquiries we have made of a few Nottingham medical practitioners.

1299. I am afraid we can hardly hear that from you?—There is one case of a doctor who is a club doctor to 80 twist hands. I thought that might have some bearing on it.

(*The Committee conferred.*)

1300. (*Judge Ruegg, to the witness.*) I am afraid we can hardly hear it.—Mr. West was going to ask if we might send medical evidence.

1301. He did not ask?—Then I would like to apply to be allowed to send medical evidence.

1302. Do you mean evidence of medical men from Nottingham?—We suggest putting a medical man on to this case for us to look the matter up and give evidence on the medical side, if you will hear it.

1303. We should be pleased to have that.—Then I will make a note of it and leave the evidence as to that. I have a written statement from a doctor that I was going to hand in; but you would rather not see that.

1304. That is probably the gentleman we shall have before us?—No, I think not. Still, I do not wish to trespass on the medical side.

1305. You may send it to the Secretary for what it is worth. We are going into it so much more carefully than that. We are seeing the doctors, and the members of the Committee are competent to deal with it.—We may instruct the doctors to look into the matter for us?

1306. Yes.—May I take such cases as are published in the report that we are able to trace?

1307. Yes.—With regard to case No. 1, page 13 of the appendix, the worst cases we have been able to trace only four of these cases.

1308. Is that J. K.?—Yes. This man had not complained previously to Dr. Collis's visit of any disability, and as far as we know still divides his money with the man on the machine with him, and we submit if his earnings were affected the other man would hardly do five shillings' worth of work for his butty.

1309. The suggestion is that he does earn 5*s.* a week less?—Yes; and we suggest the evidence that he earns 5*s.* a week less is not correct. With regard to case No. 3, G. K., it is shown to be more advanced than No. 1, and yet the earnings are not affected. It could only be so on certain machines, and the man admits himself that there are very few of them. Probably it is an old machine where the bars come close together, and he has not room to work his hands. I mention those two cases as a contrast to one another. In the worse case of the two there is no effect on the earnings, and in the other case the man estimates his earnings at less money. That is just to point out that this evidence on the working efficiency should be deeply inquired into before anything is based upon it. Then with regard to case No. 13, that is T. S., this man says he left the trade on account of his hand. This man's father had the same disease, and this man left his work owing to mental disease. Dr. Hill, of Old Basford, said if he did not live out of doors he would probably become demented Both he and his father were great gardeners. They went to their gardens on most days, and frequently left the factory on Saturday and spent the intervening time till Monday morning in the garden, living and sleeping there. He left his employment as stated above, and spent the whole of the summer gardening. He was then set on again, worked through the winter, left again, and has since the winter commenced applied to be reinstated in spite of the condition of his hands. He gives that as a reason for leaving the trade.

1310. His hands are flexed?—His hands are flexed.

1311. But not to an extent to cause incapacity for work?—He is able to work. He gives the reason for leaving, the state of his hands. But Dr. Hill did say at the time, if he did not take outdoor work he would suffer mentally. Case No. 22 is the only other one we were able to trace.

1312. That is J. L.?—J. L. This man, according to the report, is a very bad case.

1313. Thirty-nine years employed; hands semi-flexed?—He is a case amongst the advanced cases, yet it has no effect on his earnings. I am informed that this man pays even income tax, and a medical opinion has been given to us on this case. The doctor saw this man at work, and he says the way in which this man operates the lever would cause no pressure whatever on the affected parts. These are cases that we have been able to trace, and so we have followed them up as far as we could and got these further details of them.

1314. Yes. But apart from the one who you say made a misstatement as to leaving the trade for the reason that his hands were affected, they do not materially differ from the statistics given here?—No; that is what I say.

1315. That they are not able to work in some cases at an advanced stage of the disease, I suppose you know?—Yes. They admit that in some cases.

1316. Are you the gentleman who had not seen the disease amongst the workers?—I have not seen it.

1317. You have never seen it?—I have not seen it amongst the workers now.

1318. Not now?—No, not amongst the workers. Then on the constitutional side I propose to say something. We claim that where both hands are affected it clearly shows the disease to be constitutional as the hands are not equally called upon; in fact, the left hand has comparatively little work to do. It would be very inconvenient, if even possible, in any machine to use the left hand to raise the comb bar. If you look at plates 1, 2, and 3, that is the plates showing the machines, you will find that the comb bar marked in the centre of the machine is immediately adjacent to a fixed portion of the machine, and the man would be in danger of catching the back of his hand on this fixed portion. He would have to work round on this fixed base in order to pull with his left hand (*the witness illustrated with a twisting round motion*). Not only that, but in most of these machines they have to lift the bar up and fasten it with a hook. This hook is invariably placed on the left hand, so that if the man were to lift the bar with his left hand he would have to cross his hands to fasten the comb bar when he had lifted it, so

that throws the work of the comb bar practically on the right hand alone. It is admitted on page 10 of the report, the paragraph immediately below Table II., that in the 35 advanced cases, where one hand is involved both are likely to be. "Moreover, Appendix 1, which "shows that out of 35 advanced cases one hand alone "was involved in only five, demonstrates that in such "cases both hands are likely to be affected." Whilst on page 8 it is stated that every bad case must have passed through the early stages. The last paragraph says: "Every case in group 4 must at some time have "passed through the stages represented by the other "three groups, but the length of time a case takes to "reach this stage varies considerably." Surely these two statements suggest that it is a constitutional cause. If caused by the machine one would expect that where two men, as frequently happens, have worked the same machine together for years, they would both be affected. Then out of 35 advanced cases nine cases have left the trade. I do not know, but those figures, as far as I am able to judge from reading the report, have been brought in in reckoning to the percentage of cases in the trade. We suggest that is an unfair percentage, because there is no record of the number of men who have left the trade during these years who were not cases. They have even gone back in one case 30 years.

1319. (*Judge Ruegg.*) Would you kindly tell me what the position is that you take up as regards this? Do you, as representing the manufacturers, say if the disease exists to a considerable extent it may be included, or might be included? But if it exists, not to a considerable extent, but still as a distinct industrial disease, it ought not to be included even for those cases where it does exist?—I do not follow.

1320. Do you say it depends on the extent to which the disease exists in the trade, whether it should be included or not?—No.

1321. Supposing for the purpose of argument it exists in 20 per cent., it should be included; but if it exists in only 10 per cent., it should not be included, because those 10 per cent. must suffer?—No; I am taking these figures. If these figures increase the percentage, the statement in the report as to the prevalence of the disease existing amongst lace workers is based on a wrong premise.

1322. If they are including the persons who have left the trade?—Yes; that is my point there. Then I wanted to make some criticism of the statistics in the report, if I may. We find at the bottom of the top paragraph on page 6: "Dupuytren's Contraction then "may be (1) congenital, (2) caused by definite injury "or (3) caused by chronic and localised pressure." If it is congenital, then it is admitted straight away that that is not occupational; if it is caused by definite injury, surely that comes under the present compensation clause for accidents?

1323. If it is an industrial injury it may possibly do, but if it is an injury caused in the work ——?—If it is an injury arising out of his employment, it will come under the Compensation Act.

1324. That may be so?—"Thirdly, it may be caused by chronic and localised pressure." We will take the conclusions and come back to that third point. In the conclusions we find it stated that: "Dupuytren's Con-"traction is more than usually prevalent among lace "machine minders." I should like to point out here, if I may, that the average of cases on page 11, Appendix 3, shows a different percentage to what is stated in the text. But in the first case, let us consider this point; that in Table III., the percentage of cases on the bottom line, where you include foremen and employers, not machine minders only, the percentage of cases is very much greater than where machine minders only are taken into account. I have worked out the figures there, and I find on the first division in the first column that there were 5 per cent. of cases where foremen and employers are included, and 3·8 per cent. where workpeople are alone concerned. Then further along we get as high as 12·5 to 1·6, showing that when masters and employers are concerned, not machine minders only, the percentage is very much greater. That would tend to show there is not the prevalence amongst the lace minders that there is amongst the employers and the foremen.

1325. (*Sir Clifford Allbutt.*) Have those men been through the trade?—Possibly in some cases; not in all. I do not know that employers and foremen were examined.

1326. (*Judge Ruegg.*) There is a note at the bottom of that table: "Under this heading foremen and "employers are included, *and men employed at* "*machines which are not running at the time of our* "*visit*"?—Yes. There are machine minders amongst that number; but at the same time it is admitted there are foremen and employers, and when you put foremen and employers amongst the number of men, you get a higher percentage than when you stick to men only.

1327. (*Sir Clifford Allbutt.*) How many per cent. of foremen against men?—I do not know how many foremen Dr. Collis examined.

1328. You have not so much for foremen and so much for men, or anything of that kind?—No. The same thing holds good when you come to Appendix 2.

1329. (*Judge Ruegg.*) What inference do you ask the Committee to draw from that?—As rebutting the statement that it is unusually prevalent amongst machine minders. On the only figures he shows here where he has brought in anyone besides machine minders, he shows a higher percentage of cases.

1330. You mean amongst foremen and masters?—Yes.

1331. They have all been machine minders, have they not?—No; I have never been a machine minder.

1332. You are a master. I was rather thinking of a foreman for the moment?—I have a foreman who has not been a machine minder.

1333. Probably most of them have been?—I could not say that. It is quite hypothetical how many have.

1334. Is there anything else you want to add?—Then the second conclusion is, "that the prevalence has "a direct relation to, first, the frequency with which the "levers and wheels of the machine are manipulated." The estimated number of times the catch bar lever is operated in the Lever machines, on page 6 of the report, is 16 times an hour. The number of times the comb bar is used as stated on page 7 is also 16. It says: "The comb bars are lifted practically as often as the catch bars are turned out." These two bars taken together are used 32 times an hour. In plain net machines they have no catch bars. The comb bar is estimated to be moved 14 times per hour. That is on page 7, further down, under "Plain net." Then, where the bars are moved 32 times per hour, the percentage of cases is very little higher than in the case of machines where it is operated only 14 times. The weights are about the same. In addition, in the Lever's machine half of these movements, namely, the catch bar movements, are made with the catch bar, and when we last gave evidence we were told that the wrongful use of this bar was said to be very harmful. That is the bar which the men can put their hand on the top of. In spite of this and of the fact that weights and method of the operation of the catch bar of the curtain machine are practically the same as of the Lever's machine, the contention of pressure here has been dropped; on page 10.

1335. The contention of pressure on which machine?—The curtain machine.

1336. Which paragraph is that?—The seventh paragraph. Now if we turn to the percentage of cases, page 10, paragraph 4, below Table II., in the last two lines Dr. Collis says: "But no definite relation exists "between the pull required to actuate the catch bar "and the occurrence of cases." Then again he says: "In curtain machines the comb bar is fixed, and no "relation can be established between the pull of the "catch bar, which is exerted about ten times an hour, "and occurrence of cases." Then on page 10, paragraph 4, below the table, we find the percentages are given. Now, I am taking the point of its relationship to the weight and the power required. "Among opera-"tives found working at machines with a comb bar "pull of 75 lbs. and over," we have 7·9 per cent. there. Table III. shows a slight difference in the figures. There it works out at 8 per cent. Then among those

working at a machine with a comb bar pull of under 75 lbs. he has 2·8 per cent. Lower down, with regard to the plain net machines, he shows that with a comb bar pull of 75 lbs. and over it is 8·6 per cent., which I work out from his table at 5·7 per cent., and with a comb bar pull of under 75 lbs. he has 5·6 per cent. So that in the Lever's machine, where we have the greater number of operations and slightly heavier bars, if anything we have a less percentage of cases or a very slightly higher percentage of cases, according to which figures are correct, although there are 32 operations instead of 14; and although this pressure is put on the palm of the hand in the Lever's case as compared with the plain net. That is with regard to the pressure. Then with regard to the preventative measures ——

1337. You want to show that there is no fixed relation between the use of the machines at the higher pressure and the number of cases which occur?—I contend that the conclusions in the report are not borne out by the report. Then may I say a word here on the type of handle suggested. If preventable, I am anxious to prevent the disease. I again submit it is for doctors to determine whether preventable or not. I am not fighting it, and I may say I have discussed these two handles with Mr. Eatock since the report has been out. I wish to make this remark with regard to the type Y. We all know it has been contended that the workmen put their hand on the top of the catch bar handle, and that that pressure issaid to be detrimental with regard to the pressure on the palm. If this type, Y, is used, a man must put his hand over that centre bar. He could not get enough purchase on one side unless there was a very big handle. He must put his hand over the centre bar. There is a projection shown, and in order to draw that over a third of the circle, as described in the report, it must come so (*the witness illustrated*).

1338. (*Dr. Legge.*) Do you mean this little projection (*indicating*)?—That projection is a fixture. But apart from that, it does compel him to put his hand on the top of the bar, unless this crossed bar was sufficient to give him a grasp on each side of the centre bar.

1339. (*Judge Ruegg.*) Do you think that is proper, or improper?—I think it is an improper bar. I do not think that is a handle which will prevent the wrongful use of the catch bar; that is, putting the hand on the top. I think it will induce it, and if they put their hand over that T, in drawing it down in that way the centre bar will come between those two fingers and surely cause a detrimental effect on the guiders. With regard to the stirrup type handle, I think there is a good deal of useful work to be obtained out of that.

1340. After all, this is only a suggestion?—Yes. I just wish to mention it to the Committee. As far as I can see from the arguments that have been adduced as to the cause of this disease, that will produce the disease. I think those are all the remarks I have to make.

1341. Have you been able to consider it with the manufacturers of these machines at all?—No, I have not talked these matters over with the manufacturers of the machines.

1342. You have not been able to do that?—Not with the manufacturers of the machines; I did not know it was necessary. I could very quickly give my opinion on that. I volunteer the opinion that those stirrup handles could be put on the machines, but whether they could be worked equally well with the stirrup handles, as compared with what they are today, is quite a different matter. I have been told by some twist hands that they could not possibly work with them.

1343. Why?—You do not know what you are doing when you ask a workman why; the sort of answer we get is: "We are not used to it." But it certainly would increase the difficulties until they got thoroughly well accustomed to them.

1344. It is custom then?—Possibly.

1345. (*Sir Clifford Allbutt.*) It has been suggested to the Committee that the great point in the improvement of the handle is to get a uniform pressure over the whole of the palm. That is your point too, is it not?—Yes.

1346. It is a matter to be schemed out by engineers, and so on, upon which we do not offer any very definite opinion; in fact, there is an opinion that a stirrup handle would be bad, that it would make for unequal pressure. That is a matter in solution at present?—So far as I could see, these two handles were only suggested with the intention of eliminating the possibility of putting the hand on the top of a rod.

1347. They very seldom do that, I think, except in the case of a Lever's machine?—Very seldom.

1348. I saw them at work. If they had a more rounded form that occupied the whole of the palm better, without revolving at all, they would avoid the local pressure?—Yes.

1349. (*Dr. Legge.*) I gather that you are proposing to experiment with the stirrup handle?—No, we had not proposed to do so, but we have discussed this matter. This report has been out some time now, and the men have got hold of it through their union and it has cropped up in several committees. We have had the men speak about it, and the way they call the bars that are suggested is not reportable in some cases. Of course we shall always be met with that amongst workpeople who object to any alteration of the method of work.

1350. (*Judge Ruegg.*) Thank you.—I take it we may, if we desire, send a medical nominee?

(*Judge Ruegg.*) Yes.

The witness withdrew.

Mr. Underwood re-called, further examined by Judge Ruegg.

1351. I understand you want to make one or two small corrections in the evidence you gave on the last occasion?—Yes.

1352. Those corrections have been duly noted and will appear in some form in your evidence. Is there anything you wish added to the evidence which you gave on the last occasion, in addition to these corrections?—Yes, there are just one or two points. Of course, since you were at Nottingham, I have made observations myself on the working of the machine and watched the men carefully, and also had medical men in to see these demonstrations, and I see nothing and the gentlemen too ——

1353. Who are they?—The two medical men.

1354. I think you had better not give us any evidence of medical men retained by you. We are going to hear the medical men. Mr. Smith asked that this Committee should hear a medical man on behalf of your association, and we have consented to do so. I do not think we can have what the medical men said to you unless they come themselves to tell us?—Then I will leave that out. Then there is another thing I notice more particularly, and that is, that I should say 75 per cent. of our men operate the levers with the right hand, and of course in the report it shows that a good many of them are affected in the left hand. I should just like to point out with regard to the double locker machines, plate 3, there is a lever plainly marked "Q" there. It is almost impossible to work that with the left hand in the position it is in at present.

1355. That has been explained to us—No doubt Mr. Smith has gone through that, and probably he has gone through a great deal of my evidence.

1356. I expect he has. Will you tell us anything else you wish to touch upon?—I do not know whether you would accept this. We have six men examined here who have been working machines, aggregating 270 years. They were examined by a medical man and this is signed by him. He says there is no sign of Dupuytren's Contraction.

1357. I think you may state the fact: "We have six "men, who in the aggregate have worked 270 years, "who have been medically examined, and who show no "signs of the disease"?—That is so.

1358. That is an average of how many years each?—45 years each. That is practically as far as I can go. Mr. Smith has gone through most of my evidence. We thought when we came here we should probably be in the room together. Of course there is the other contention we gave you down at Nottingham, with regard to gardening.

1359. We are quite alive to that?—Out of 70 or 80 of our twist hands we have 35 gardeners, and I think that is a pretty general average throughout the trade.

1360. Do you mean men with allotment gardens?—Yes, mostly. They do gardening for a hobby, and also for profit, I suppose; and they spend a good lot of time there.

1361. You do not mean to say they act as market gardeners and sell the produce?—No; but there is no doubt they sell a good lot.

1362. They cultivate a garden for themselves?—Yes.

1363. What is the size of these allotments?—They vary; some of them are pretty large.

1364. (*Dr. Legge.*) Have you considered at all the possibility of the use of these types of handles preventing the disease?—Yes; I have looked at those, and the type we employ mostly is the C type. The Y type I am afraid is unworkable.

1365. You agree with Mr. Smith. He said these were unworkable?—I do not think that is workable at all.

1366. (*Dr. Legge.*) What about the X type?—The X type means the man has to use his fingers only, I think.

1367. (*Judge Ruegg.*) That is what is called the "stirrup"?—Yes.

1368. Do you not think that will be convenient and advantageous?—I am afraid it will cause too much pressure on the fingers. I mean the strain on the fingers instead of on the hand would be too much.

1369. (*Dr. Legge.*) But you do grant if you can get something that will fill up the hand generally, it will be better than if you have a point pressing on any particular part?—Yes, if you can put the strain on the whole of the palm of the hand.

1370. And it is conceivably within the power of the manufacturers to rid themselves of the conditions which set up the disease, if it is set up by pressure?—Yes, I think this pressure could be obviated to some extent if you contend there is pressure, or the men contend there is great pressure on the palm of the hand. But our contention is that it is due to the wrongful use of the present levers if there is pressure.

1371. But have you not to make your machines such that they cannot be wrongfully used? There is always an inclination to get the work done in the easiest way?—Yes, certainly. We build our own machines, and unfortunately in the case that we have at our place, he came from another place, and he had it when he came.

1372. (*Judge Ruegg.*) You have one case?—Yes. I told you at Nottingham that I had not one that I knew of; but that was due to change in the factory management.

1373. Do you not think that with a little consideration a handle that will not bring so much pressure on the palm of the hand could easily be invented?—A different type of handle, do you mean?

1374. Either a different type or a different shape?—I do not see much to improve the C type myself. It is shaped to the hand; there are no corners to it.

1375. Do men put the pressure on the palm of the hand in order, so to speak, to spare their fingers for the delicate work they have to attend to with regard to the lace?—I think it is a matter of habit. If the man once starts in that way he probably keeps on. I have tried it, of course, since you were down, on nearly every machine in the place, and I do not think it is necessary at all unless the man has got into the habit of causing any very great pressure on the palm.

1376. But you find that they do, do you not?—Yes; no doubt some of them do.

(*Judge Ruegg.*) Thank you.

The witness withdrew.

The Committee adjourned till Saturday, 14th December 1912.

FOURTH DAY.

At the Home Office, Whitehall, S.W.

Saturday, 14th December, 1912.

PRESENT:

HIS HONOUR JUDGE RUEGG, K.C. (*in the Chair*).

Dr. THOMAS MORRISON LEGGE.

Mr. ARTHUR LOCKE (*Secretary*).

Dr. COLLIS recalled, examined by the Chairman.

1377. I think at the desire of the Committee you visited the centres of the lace industry in Scotland with reference to the occurrence there of Dupuytren's contraction?—Yes, I did.

1378. I believe the industry is there carried on in 29 factories, 12 at Newmilns, 12 at Darvel, two in Dalston, two in Kilmarnock, and one in Stewarton?—That is so.

1379. You visited 28 out of 29, and you examined all the men employed there at that time?—That is, employed on one shift at the time of my visit.

1380. The effect of that was that you examined 288 men in all, representing something less than two-fifths of the total number employed?—Yes, about two-fifths of the total employed.

1381. The lace industry in Scotland, you say, has a history extending over 30 years?—Yes.

1382. And has sprung up from the hand-loom weavers of Madras curtains?—That is so.

1383. The industry is still being carried on, though not by hand looms, but driven by power?—Yes, the

old industry is now carried on with looms driven by power, but previously with hand looms.

1384. In that industry are there any signs of this disease occurring?—The weavers in many cases are women in that industry. I did not examine the hands of a large number of those. I only mention that because of its influence on the class of lace industry introduced in that locality. Madras curtain weaving was the old industry, and it is lace curtain weaving there now.

1385. Do they use the same kind of machinery?—The same machines as for lace in the Nottingham district.

1386. The system of industry is different?—Yes.

1387. No tenement factories?—No tenement factories.

1388. With reference to the machines, are they of the same construction?—They are of the same construction, but a large proportion are new machines with compound levers on the catch bars, and more attention is paid to the machines as regards lubrication and light running.

1389. Does it make it easier to work the machines?—It makes it easier to work the machines. I found them lighter to handle.

1390. You have prepared a table showing the ages of the men examined, and the number of cases of Dupuytren's contraction seen by you, and the stage at which the condition developed?—Yes, the figures are as follows:—

Table showing the prevalence of Dupuytren's Contraction among Lace Weavers in Scotland employed tending Lace Machines.

Age Period.	Number Examined.	Number Affected 1.	2.	3.	4.
Under 20 - -	15	—	—	—	—
20 - - -	54	—	—	—	—
25 - - -	53	—	—	—	—
30 - - -	35	1*	—	—	—
35 - - -	25	—	—	—	—
40 - - -	35	—	1	—	—
45 - - -	27	2	—	—	—
50 - - -	20	—	1	—	—
55 - - -	19	3	1	—	—
60 - - -	3	—	—	—	—
65 and over - -	2	—	—	—	—
All ages - -	288	6	3	—	—

* This man had previously been a bricklayer, and attributed his condition to that occupation.

1391. With reference to that table, do you wish to make any observations upon it?—I should mention that two cases which are not included in this table were seen, one in the first stage and one in the second, which followed upon accidents, and that no case was seen which had advanced beyond the second stage or in which the working efficiency was affected. In four of the affected cases the right hand only was affected, in four cases the left hand only, and in one both hands. Eight cases were seen among 106 men aged 40 and over. That is, 7·5 per cent., but of these 106 men only 41 had worked 30 years and over, and out of these six were affected, or 14·6 per cent., showing a definite relation to the length of employment.

1392. I think, comparing that with the table appended to your report, Table I., you found that the number of older men at the works is less in Scotland than in Nottingham and district?—That is so. It was inevitable, with an industry which has not yet outlasted the life of the individuals employed.

1393. There was only one man who had been employed 40 years as a lace worker?—That is so.

1394. Whilst in England you found many men——?—Some had been employed 40, 50, and even 60 years.

1395. Had the man who had worked for 40 years worked all the time in Scotch factories?—Most unfortunately, I forgot to make a note of that. There were a few men who had been brought up from Nottingham when the industry was started, and I do not know whether he was one of them.

1396. What was the general opinion you formed with reference to the extent of the disease existing in Scotland?—That it is less prevalent in the lace trade in Scotland than in England owing to two reasons. The machines throw less strain on the hands, and fewer men have been employed sufficiently long for the condition to develop, but I consider it not unlikely in the future that an occasional case may develop sufficiently to affect the efficiency of the individual affected.

1397. Is there anything that you wish to add with reference to your visit to Scotland?—I think not.

1398. (*Dr. Legge.*) Does your evidence to-day bear out what you gave as your reason for not having visited all these factories in Scotland; is it borne out by the fact that the industry had not been established so long as to provide the necessary age period for such cases to have developed?—Yes, my visit entirely bore out the information that Mr. Brown, our inspector in that district, had given me while I was making my inquiries.

1399. And you did not see a single case which would have been likely to have come under the Workmen's Compensation Act, supposing this disease was scheduled?—No, no case approaching that stage.

(*Chairman.*) We are much obliged to you, Dr. Collis.

The witness withdrew.

Mr. Kenneth Black called, examined by Dr. Legge.

1400. What is your precise position in Nottingham?—I am a consulting surgeon.

1401. Do you hold any hospital appointment?—No.

1402. And what are your qualifications?—F.R.C.S. England.

1403. You have been carrying out some investigations into Dupuytren's contraction among the lace workers?—Yes.

1404. And among any other classes also?—Not personally; there is only what I got from medical men.

1405. Would you describe briefly what you consider the most important points in the pathology of the disease?—I think it probably is an inflammation of the palmar fascia, particularly of the digital prolongations.

1406. Would you just mention the chief medical authorities who have expressed views on the subject?—I think from what I have read, I should put Dr. Keen of Philadelphia as the leading man.

1407. We have had it in evidence, and also from Dr. Collis's report, but in order to give full stress to what you want to say, would you mention those that you consider most important?—I should suggest Dr. Keen of Philadelphia and Mr. Adams of London, and Mr. William Anderson of London. I think those perhaps are the three most important. Both Mr. Adams and Mr. Anderson have written books on the contraction of fingers.

1408. What does Dr. Anderson say?—He says that Dupuytren's contraction is found on dissection to be caused by a thickening and contraction of the digital processes of the palmar fascia. He also found that it

is an inflammatory hyperplasia; he examined microscopically an extending case and states "the fibrous strands are intermingled with nuclear proliferation." He also suggests that in all probability the inflammation is set up by micro-organisms.

1409. Do you agree with his suggestion that the inflammation is set up by micro-organisms?—I cannot say, I do not know about that. There appears to be not very strong evidence of that. The matter was investigated by Mr. Shattock of St. Thomas's Hospital and, as far as I know, he did not actually find any definite organism present which could have caused the condition.

1410. Do most of the authorities you quote lay stress on the fact that it is bi-lateral?—Yes, they do. It is bi-lateral in the larger majority of the cases.

1411. And can you say what their explanation of that fact is?—Some, who have quoted the fact that it is bi-lateral, suggest it is more likely to be constitutional, something due to within rather than to without causing it; because it occurs always—at least the common cases—on both near sides, and it seems to occur in the same form in different cases. That is to say, in the large majority it occurs in *this* finger, and if it spreads to the other hand, again you get it on the same finger, you do not get it on *that* side of the hand and on *this* side of the other (*indicating right-hand side of the left hand, and right-hand side of the right hand*).

1412. Have you any explanation yourself to give of the bi-lateral nature beyond that it is constitutional?—No, I have not.

1413. Can you suggest any other conditions, surgical conditions, which are bi-lateral in the same way?—Yes, I think if one has a knee-joint swollen and it is on one side and not the other, it suggests that it might be due to an accident or an injury; but if it is bi-lateral, it rather suggests that it is caused by something within—a poison within the system. In surgery I think when you do get a condition bi-lateral it suggests that it is due to something within, and when it is uni-lateral it suggests perhaps the other thing; but of course the latter does not hold good always.

1414. Do you know of any condition set up by slow injury, we will say, which affects only one side or one limb which involves the other side to some extent also?—Just for the moment I do not know that I do. If I thought, possibly I should be able to recall one.

1415. Take the case of the eye: what is called sympathetic affection. How would you explain that? I believe the injured eye gets affected with organisms, and I do not know what is suggested, but the organisms spread along the optic tracks and round to the other side—a direct spread; but I would not be positive about that.

1416. Take another instance, bi-lateral paralysis in lead poisoning?—Yes, that is known to be due to a poison within the system; that is to say, a poison may be introduced in food. I think that is an excellent example of a poison causing a bi-lateral condition. Of course a poison may be introduced through a wound, through the skin, through the stomach or through the lungs.

1417. Then when you speak of a constitutional cause of this condition, do you mean there is some poison, as it were, some toxæmia to use the scientific term, which brings about the double lesion?—Yes, I merely use the word constitutional as most of these writers use it. I should say constitutional, toxic, or microbic.

1418. Have you any views to express as regards the effect of heredity on the condition?—Yes; one in my own personal investigation. The doctor said he had no actual cases in his practice, but two of his brothers were affected, and he at that time was not affected at all. That is the only personal case I think I came across where it ran in families, but of course I have read of others.

1419. (*Chairman.*) But you were not able to investigate the history of those two?—No.

1420. (*Dr. Legge.*) What class of society do you think is mainly affected?—So far as I can tell it does seem to occur more frequently in the upper classes. My own figures of course are very incomplete, but what little work I did in that respect rather bore that out.

1421. Would you tell us what steps you took to get the information on that important point?—First, Dr. Keen of Philadelphia gave figures in support of that, and so far as I can make out he is the leading writer on the subject.

1422. What does he say?—He says 49 were manual workers and 74 not manual workers. That is Dr. Keen's investigation.

1423. He collected 253 cases, and "of these the "occupation is noted in 220 cases; of these 49 "were manual workers and 74 not manual"?—Yes. There is a curious discrepancy there, because I do not quite follow, if the occupation is noted in 220 cases, how 49 were manual workers and 74 were not. At least, that is the quotation, and I must leave it at that. Possibly the others may have been cases which were difficult to classify, but I do not know.

1424. (*Dr. Legge.*) Is Dr. Keen still alive?—I should almost think not, because the reference is 1881–1882. I believe Adams is not alive, but I should imagine William Anderson probably would be alive.

1425. There is nothing more that you can quote from Keen, is there?—No. Adams remarks on the disease, in his experience, being commoner in non-manual workers.

1426. Are there other references you would like to make?—Mr. Arbuthnot Lane says it "seems to occur with equal frequency among the rich and poor."

1427. Do you not want to make reference to Adams?—Yes.

1428. Will you let us have what Adams says on that point?—He says that the disease always depends on the constitutional rather than on any local cause. In favour of this view, he gives the following reasons:—First, as to the class of patients affected, he goes on to say he has had 20 years' experience as a surgeon at the Royal Orthopædic Hospital, and he says, "I "saw but few cases of Dupuytren's contraction in the "labouring class, and have failed to obtain evidence "of its frequent occurrence amongst any particular "class of mechanics, whilst the cases that did present "themselves generally occurred in butlers and indoor "servants. It seems to be an affection of common "occurrence in the middle and upper classes of society. "The cases that have fallen under my observation "have generally occurred in clergymen, barristers, "medical men, officers in the Army and Navy, and "merchants. Secondly, I would refer to the frequent "occurrence of this affection in the left hand only, "and to its occurrence in both hands, which we could "hardly explain by any local cause. Thirdly, I would "refer to the fact that in several instances I have "known two brothers suffer from it, and in some cases "the father and son, and in one instance three gene-"rations have been similarly affected, illustrating its "hereditary tendency. For these reasons I am disposed "to attach far greater importance to the constitutional "than any local cause." He further states that the thickening of the palmar fascia in Dupuytren's contraction occurs just above the transverse crease of the hand, and this part of the palm is a part in workers "certainly not exposed to pressure."

1429. Then you go on to quote what Anderson says on the same point?—Anderson also doubts that occupation predisposes or causes the condition, and states, "There is no question that the earlier observers greatly "exaggerated the importance of this factor. It "appears, indeed, that in various callings which involve "much rough treatment of the palm the affection is "even less common than in the rest of the com-"munity." He says that two of the worst cases he saw were in clerks, and he goes on: "With reference to "the question of occupation, it may be remembered "that the affection is bi-lateral in nearly two-thirds of "the cases; and that the left hand is affected almost "as frequently as the right. This and the other facts "named would appear to negative the view that mere "friction or pressure of the palm by tools or other

"objects habitually held within the hands can account "for the disease. On the contrary, it is possible that "habitual rough usage of the hands, by leading to "epidermic thickening, protects the deeper structures, "and that the horny-handed toiler is proportionately "less liable to the disease than his more fortunate "and more tender-palmed fellow-citizen."

1430. You yourself made some detailed inquiries on the subject?—Yes.

1431. Will you let us have those?—I wrote to all the doctors in Nottingham and district, and I received replies from 115, and they gave 101 cases of the disease that had come under their care or notice.

1432. Have you the letter you sent to the doctors?—Yes, I have a copy of it.

1433. Will you go on, please?—The number of cases is 101—males, 90; females, 11; manual workers, 46; non-manual workers, 55; right hand, 47; left hand, 23; both hands, 31. I can give the actual workers. I may point out that amongst the manual workers I have included domestics. Still, they are manual workers, I think.

1434. (*Chairman.*) You communicated with 115 medical men. Did they all reply, or how many?—No. I communicated with about 250, and I had replies from 115.

1435. And this is the net result of their answers?—Yes, I have had a few answers, of course, since this has been printed.

1436. (*Dr. Legge.*) You can hand in the table showing the precise occupations of these manual workers and non-manual workers?—Yes, here it is, and of course the actual letters I can send you if you wish it.

RETURNS from 115 DOCTORS in NOTTINGHAM and DISTRICTS with 101 CASES of DUPUYTREN'S CONTRACTION.

Occupations.

Manual Workers.	Non-manual Workers.
6 labourers.	19 gentlemen of independent means.
7 miners.	7 ladies of no work.
5 farmers.	4 doctors.
4 twist hands (lace).	3 manufacturers.
3 domestics.	3 managers.
2 carpenters.	2 solicitors.
3 ostlers.	2 publicans.
3 plumbers.	2 schoolmasters.
2 fitters.	2 clergymen
1 maltster.	2 dispensers.
1 engineer.	1 land agent.
1 blacksmith.	1 shopkeeper.
2 butchers.	1 clerk.
1 brickyard labourer.	1 merchant.
1 colliery belt winder.	1 overlooker.
1 bookmaker.	1 law stationer.
1 gardener.	1 retired non-manual worker.
1 moulder.	1 Army officer.
1 harness maker.	1 traveller.
Total 46	Total 55

1437. You refer to some possible defects that the figures might have. Would you state what you consider them to be?—Yes. From the above table it would appear that the disease is more common in non-manual workers, and this proportion no doubt would be a still greater difference if the actual excess of the manual working classes to the non-manual working classes were ascertained and taken into account.

1438. You do not in your letter, I see, specify what stage of Dupuytren's contraction you want notified?—No. I rather wish I had put in the letter and made it clear what one means by Dupuytren's contraction.

1439. From the letters which you received in reply, do you know what standard was generally adopted?—So far as I could gather, they seemed to take marked cases. I should say distinctly the cases that replied were the marked cases.

1440. Did you hear of any in respect of whom there had been incapacity from the disease?—No; in stating the occupation some cases were attributed to certain things. For instance, a clerk might be attributed to writing, and different causes were given. One was given as want of work in a gentleman who had it, and so on; but I could not make very much out.

1441. Then you yourself have carried out an extensive inquiry amongst the lace operatives themselves?—Yes.

1442. Would you give us particulars of that inquiry?—I examined the hands of 1,329 lace machine minders whilst at work at Nottingham and district, and they were employed in 68 different factories. I found nine cases of genuine Dupuytren's contraction. There were some cases of dimpling of the skin, thickenings, corns, and callosities, as well as a few cases of contracted digit or digits, due to, I should have said, a congenital defect, or to a definite crush or wound. But these cases, as before mentioned, are not true cases of Dupuytren's contraction. Of course, I am merely stating my opinion there.

1443. Do you mean these dimplings were not true Dupuytren's contraction in an early stage?—No; I put them down. I put down 31. I included cases of congenital contraction of the little finger and contractions due to wounds and scars, and dimplings in a fairly marked stage.

1444. You know Dr. Collis'- report?—Yes, I saw that.

1445. Do you remember that he divides the disease into four stages?—Yes.

1446. Did you take that into consideration at all in examining these workers?—I took the stages that he would have given, 2, 3, and 4. I did not regard Stage 1 as a case of Dupuytren's contraction. In the book of Sir William Watson Cheyne, he points out: "The main body of the palmer fascia is only affected secondarily." Then, further, Adams states cases of dimpled depression and corrugation of the skin of the palm without contraction of the fingers are not Dupuytren's contraction.

1447. So these nine cases refer to stages 2, 3, 4?—Yes, and they are given in Appendix 2. One of those cases I was not quite sure about, namely, Case 5, I marked as a doubtful case.

1448. I take it that most of these nine cases would be really either 3 or 4?—No, 2, 3 or 4.

1449. They are serious?—No.

1450. A serious degree of condition?—One was about *that* amount. I think the two middle fingers were contracted (*very little*), I think perhaps two or three would be in the second degree and perhaps the rest in stages 3 and 4.

1451. Will you tell us how you selected the factories you went to?—I had a very short time really to go round, and I went to the larger factories, and half the number of people were actually in Nottingham and half in the surrounding district.

1452. You went to Long Eaton, did you?—Yes, there seemed to be a larger number of workers there, and I covered the ground very quickly.

1453. You took note of all the cases?—Yes.

1454. And of the age?—Yes, in most cases I had the age.

1455. Can you tell us the age distribution?—Yes. Do you mean of the actual cases?

1456. No, I mean of the 1,300?—There would be 63, 54, 54, and 20, and so on.

1457. You have not worked it out in age periods at all?—No.

1458. You would have to go through them?—Yes I think there are three where I have not got the age down.

1459. Because you would agree that the more you saw who were under 40, the less likely you would be to find Dupuytren's contraction?—Yes. Here is a case I have down: "Little finger contracted; congenital; in the lace trade one year."

1460. Do you think in cases such as that there might be difficulty in deciding as to whether that was congenital or due to the occupation?—I think not. If one asks the patients and they say they have had it all

their life and were born with it. I think that clearly suggests it is a congenital defect.

1461. In the Long Eaton factories, did you notice any difference in the age of the workers as compared with those of Nottingham?—There were two I discovered outside, and they were 61 and 54.

1462. I mean generally; we have been told the reason there are so many cases in Nottingham itself as compared with other districts is that the workers are so much older?—Yes, I certainly noticed that, and I certainly think that is the case. The workers in Nottingham are older men—the average age.

1463. You have not given us the full particulars of your examination, stating the cases of Dupuytren's contraction, the percentage, the number with the right hand affected, the number with the left, and both?—The cases you refer to are as follows:—

Lace Machine Minders in Nottingham and District.

Nine Cases affected with Dupuytren's Contraction.

No.	Sex.	Age.	Hand.	Duration of Disease.	Time Working.	Fingers affected.	Remarks.
1	M. (right-handed.)	52	Both, left more than right.	2 years.	30 years.	Ring fingers.	This man states that he uses the right hand more than the left.
2	M.	68	Both, right more than left.	15–20 years.	58 years.	Ring and middle fingers.	
3	M.	61	Left.	—	—	Little finger.	This man used the right hand more than the left. This man volunteered the statement that the condition was always better when he did work and became worse if he ceased work.
4	M.	58	Both, right more than left.	17 years.	48 years.	Ring fingers.	This man stated he did not think his work made the condition worse.
5	M.	43	Right hand.	—	—	Little finger.	This case represents no thickening of palmar fascia and it is doubtful if it is a true case of Dupuytren's contraction.
6	M.	51	Right hand.	20 years.	30 years.	Little finger.	
7	M.	61	Both.	Many years.	—	Ring fingers.	
8	M.	54	Right.	10 years.	30 years.	Ring finger.	
9	M. (right-handed.)	63	Left.	1 year.	33 years.	Ring finger.	

1464. Did any particular feature strike you in these cases?—There is one thing, if I may say so, I was very struck with, and it was one of the first things, examining these lace machine minders, I found their hands for the most part as soft as my own. Whether it was due to the oil or not, I do not know, but they did not seem to have corns or any thickenings at all in the larger proportion. One could not tell by their hands that they did manual work. The larger proportion by far was like that.

1465. Then you made still another investigation of workers?—Yes.

1466. Will you state what that was?—I examined personally the hands of 615 inmates of Bagthorpe Workhouse and Infirmary, Nottingham, with the following results:—

——	Males.	Females.	Total.
Number examined -	447	168	615
Cases of true Dupuytren's contraction - -	51	1	52
Percentage - - -	11·2 per cent.	·6 per cent.	8·4 per cent.
Right hand - - -	15	—	15
Left hand - - -	7	—	7
Both hands - - -	29	1	30

The percentage in males affected was 11·2 per cent.

1467. (*Chairman.*) It is very astonishing.—They were all marked cases—very advanced cases in the workhouse proper. I have not worked out the percentage, but the percentage was higher than in the infirmary, and the men in the workhouse proper would be older men.

1468. (*Dr. Legge.*) Did you tabulate the occupation of those affected?—I took the occupation of those affected. I have not tabulated the occupations of those affected, but two or three of them have been lace twist hands. There were several colliers and carpenters. There was only one non-manual worker, and he was an actor who was in the workhouse. The majority of them gave their trade as a labourer. Many did not know, and they were prompted perhaps by the attendant.

1469. I take it that would mean agricultural labourer?—No; I thought it meant anything—odd jobs.

1470. Do you think it is possible, with regard to these 447 men, to find out what their occupation was, and to work out a percentage on that?—Yes, I think quite easy.

1471. How many lace twist hands who were inmates, and how many had Dupuytren's contraction. One might get to know whether there was greater frequency amongst lace hands in that way?—Yes.

1472. (*Chairman.*) Would not the majority of men in Nottingham have been engaged at some time in their life in the lace industry? It is the great industry of Nottingham?—Yes, but they earn good wages, and I think very few would find their way to the workhouse. As far as my investigation at this workhouse is concerned, it does seem to me that the disease is one that occurs in old age; because I put a note at the end, that if I included the number which are included in Dr. Collis's report as the first stage of the disease, then I should have found 19 per cent. of the men affected, that is, 85 cases instead of 51. Of course there were a number of men with contracted

hands due to a rheumatic affection without any contraction of the palmar fascia at all, but I did not include those.

1473. You say you had only a little time to work up the subject?—Yes.

1474. Perhaps you will say whether that can be carried further, because it will be useful?—Yes.

1475. With regard to the Nottingham General Hospital, how many cases of Dupuytren's contraction have been admitted?—There was one case during the seven years, 1905–1911, in 21,000 odd in-patients admitted.

1476. How have you got that information, because our information has been that it could not be obtained from the records?—I examined the actual books—the diagnoses made.

1477. Of the out-patients?—No, of the in-patients. In their report which they publish annually and in which they give a list of the diseases, they have not stated any cases at all of Dupuytren's contraction; but I was not satisfied that that was sufficiently detailed to possibly state that, and I examined the registers themselves, because I was a resident there for a time. I remember one case. The one case quoted was a case while I was there.

1478. Was that admitted for operative treatment?—Of course it is possible that some of the cases admitted for some other condition did have this disease.

1479. (*Chairman.*) Would they admit them for the disease *per se*?—Yes, if necessary.

1480. (*Dr. Legge.*) But they would admit them for operation?—Yes, they would be labelled Dupuytren's contraction, unless the diagnosis had been an error and they had been diagnosed "contracted finger," and so on; but I do not think that occurred if it was true Dupuytren's disease.

1481. You do not think it worth while to look at the out-patient records?—The out-patient records at Nottingham Hospital are not very detailed, and I do not think it would have helped.*

1482. I quite understand. Can you compare those figures which you quote with those of any other hospital?—At St. Thomas's Hospital, taking their detailed reports for a similar number of years—the actual years are not the same of course; they are 1903 to 1909—the reason of that is because I happen to have those reports and they stop at 1909, and I had the Nottingham reports from 1905 to 1911, and so I took those—the number of cases in the same number of years that were admitted were 50,000 odd, and 21 cases of Dupuytren's contraction; that is, one case to 2,390 in-patients. That might suggest that the disease is nine times less prevalent in the Nottingham Hospital than it is in St. Thomas's Hospital; but I do not think that evidence, if I may say so, is of any importance. I mean it does not prove it is nine times more common in London. It is possible London people pay more attention to it.

1483. But supposing that we could show that the disease occurred five times more frequently amongst lace workers than it does in the industrial population of similar age, would that carry weight in your mind?—Yes, certainly, providing, of course, the cases are of similar age; and if they were examined in the same way, I think that would be rather suggestive. But, of course, if one man examines one group, and another man examines another group, there must be a good deal of difference of opinion—particularly the early stages—of what would be the actual disease.

1484. In those nine cases which you found amongst those working at machines, were there any whose wage-earning capacity was reduced?—I am afraid I did not go into that question at all, as to their wage-earning capacity. I did not inquire into that; I merely dealt with the medical side.

1485. Then, in addition to the interesting data that you have collected, did you go into the question of the operative treatment in connection with the disease?—No, I cannot say I did at all.

1486. Will you let us have the conclusions drawn from your inquiry?—They are these:—Firstly: "The "disease exists among the lace machine-minders, but "it is doubtful that it is more prevalent in this than "in other trades." I think I ought to add that my investigation is, of course, incomplete. To make an investigation valuable, I should personally have liked to examine under similar conditions a similar number of men in various trades, and a similar number of clergymen, doctors, and so on, before giving definite conclusions. I think those sort of conclusions then might be of some value, if one were able to do that. But when I say it is more prevalent in this than in other trades, that is the evidence I got from the Nottingham Hospital only finding one case, and other facts of the condition. Then the second conclusion is: "There is no evidence that the disease is more "prevalent in Nottingham and surroundings than "elsewhere." Then, thirdly: "It would appear that "Dupuytren's contraction is a disease more pre-"valent in the upper and middle classes or non-"manual workers than among the labouring classes "or manual workers in Nottingham and district, as "it is elsewhere."

1487. (*Chairman.*) Why do you say that?—From my examination, and from the returns I had from the doctors. It rather suggests that. Then, fourthly: "Little evidence can be found to support the theory "that the disease is caused or aggravated by local "friction or pressure." Then, fifthly: "The known "facts of the disease are all in favour of the causation "being of constitutional, toxic, or microbic origin." Certain writers investigated the question of the skin changes in the disease, and effects due to pressure; and one would expect the first part to be affected would be the outside skin, and then the deeper structures affected later. I have quoted the authorities who have examined the cases in that way microscopically. Ross states that the skin changes usually commence in the later stages of the disease.

1488. (*Chairman.*) We must take it, I suppose, as common knowledge—at least, I should think it would be—that the male portion of the population use their hands for rougher work a great deal more than the female?—Yes.

1489. Can you account for the striking difference between the appearance of this disease in males and females, except that it is due in some way to the use of the hands?—I do not know that I particularly noticed there was a striking difference.

1490. May I take your own figures in the workhouse?—Do you mean in the number?

1491. Yes?—Yes.

1492. Out of 447 cases of males there were 51 who were affected, and out of 168 females only one?—Yes, I thought you meant the disease itself—whether it was different.

1493. No, I mean the number?—I think it is a disease that occurs in males.

1494. Why?—I do not know.

1495. If the origin is constitutional, as you rather suggest, can you suggest any reason why it should occur so much more frequently in males?—I think, if I may, I could give a somewhat similar analogy in mentioning cancer of the tongue. That is a disease which occurs in males almost exclusively.

1496. Is that not sometimes attributed to the masculine habit of smoking?—It is said to be attributed to smoking; but it is preceded very often by chronic inflammation.

1497. However, you cannot account for that distinction?—No, I cannot.

1498. Does that not have some influence upon you in your opinion as to whether it is constitutional, or the usage of the hand—the use to which the hand is subjected in the male?—No, I do not think so.

1499. In your second conclusion you say, "There is "no evidence that the disease is more prevalent in "Nottingham and its surroundings than elsewhere." For that to be of value, you must make examinations elsewhere?—Yes.

1500. You very frankly said that that standing by itself is not of much value?—No, it is not.

* *See* Appendix II., p. xv.

1501. Do you think that the mere fact of examining a certain number of cases, and finding that out of that number a majority of those affected belong to classes which would not be called manual labourers, is of itself any real test?—I think the return from the doctors on that is of some value.

1502. It has been suggested to us that unless the history of each individual case is investigated, it is a test which cannot be relied on. I do not know if you have had the opportunity of reading the evidence of Dr. Jones, who gave his evidence to this Committee on the last occasion?—No, I have read no evidence at all.

1503. He gives the cases of men in very different walks of life—gentlemen—and he gives the case of a young polo player, a gentleman. He said there was a common idea amongst all of them that the trouble had originated with the palmar fascia, the polo player particularly. At question 1039 there is this: "You say that 12, the boiler makers, ship-" wrights, and the haulers of ropes laid stress on the " occupation as a cause?—(*A.*) What I mean is the " polo player told me he thought it was due to polo. " (*Q.*) They all thought it was?—(*A.*) They all thought " it was due to it. The polo player and the other " people when I made inquiries thought the trouble " had started from what they had been doing with " their hands. (*Q.*) That was the impression on their " own mind?—(*A.*) Yes, that was the impression on " their own mind, and I may mention in that relation " that a certain number of cases in a very large number " do commence with a little pain. They remember " having had pain after a good deal of strain on the " palm. They tell you: 'At one time my hand was " painful for a week or a fortnight.' Then it all passes " off, and they forget all about it, and the trouble " usually starts many months after that. (*Q.*) Are " you speaking now only of those cases you investi-" gated?—(*A.*) No, I am speaking of cases afterwards " also." Then at question 1044: "But were persons " who complained of pain persons who attributed the " disease to occupation, or did you find in every case " on investigation there was complaint of some pain " at some time or other?—(*A.*) No. At that period I " had a sort of feeling which made me quite sure that " these cases were all due to irritation of the palm " from some outside influence. It was with that end " in view I made that investigation on the subject for " two years. I cannot remember now that these people " told me so distinctly; but they gave me to under-" stand that they thought the trouble arose in working " with ropes, or whatever it was. The polo player was " very distinct. He told me he had a great deal of " pain on one particular day." But he said, whether they were workmen or not, on individual investigation he found they often complained of the trouble originating in some little pain at some time or other, which in their own minds they accounted for by something done by them, although it may not have been what is ordinarily called casual labour?—My answer to that would be, that if a person gets this disease, they must satisfy themselves as to what caused it in their own mind; and I think it is only natural that they would at once attribute it to some pressure, and it does seem to be a fact that amongst the non-working classes—by that one means non-manual workers—the disease is markedly more common in men than in women, and amongst the non-working classes, so-called, I think a number of the women do have a certain amount of pressure. Nowadays you find girls go in for all such things as hunting and golf, where there is pressure in the palm, and many women work hard with their hands.

1504. They have not arrived yet at the stage at which their injury will develop?—No. They do housework and so on. I do not know how it quite accounts for that.

1505. Assuming for a moment that this disease was included in the schedule to the Workmen's Compensation Act, do you think there would be difficulty in particular cases of making a correct diagnosis or in the Court arriving at a correct conclusion as to whether it was due to employment or not?—From my own experience I think if it was scheduled there would be a very large number of people who would be found to be suffering from it, particularly in the early stages. I mean by that they would probably keep on looking at it and examining it, and I think they would imagine it was painful. It might actually be painful.

1506. I am afraid you have not quite understood my question. Do you think the tribunal which had to decide: Is this caused by employment or is it due to some other cause, even assuming it is some other local pressure, would have a very difficult task? Do you think it would be easy to distinguish?—I think it would be very difficult, because as to the causation there is a great difference of opinion.

1507. Even if the conclusion arrived at is that it is due to some kind of local pressure?—Yes.

1508. There would be difficulty in deciding whether that local pressure was the pressure attributable to the employment or attributable to a number of things which have been suggested; such as tennis, gardening, and relaxations of that description?—Or possibly to no pressure at all.

1509. I said, on the assumption that it has been found to be due to local pressure?—Yes.

1510. I understood you were saying something with reference to the claims which you thought would be made. I do not quite know what you were going to say, but you were suggesting a case of a person looking at his hand and imagining he had pain, and making a claim. What were you suggesting?—I was suggesting that many of these men with it in what is called the first stage of the disease, or even without that, a thickening of the skin, and who, perhaps, do not get their fingers back as far as *that* (*fingers pressed back a little from the perpendicular*)—they get back almost straight—as people get old it appears they cannot bend their fingers back so much—the elasticity decreases—then a man may very easily say he thinks he has the disease, that it causes him pain, and medical men would be found who in their opinion would support his statement.

1511. He has to prove not only pain, but incapacity for work before he can be compensated?—But he would say, "I cannot do my work owing to the pain." The symptom may be what is called a subjective one; but it is very difficult to prove that a man has not pain; in fact, you cannot prove it, even though you find nothing.

1512. Do you suggest there would be false claims?—I would not like to suggest there would be false claims any more than exists at the present day.

1513. This is more a legal question, I think, than a medical one; but diseases may be so scheduled under the Compensation Act that employment in a particular industry where a person is suffering from the disease is prima facie proof that the disease is contracted from the industry. Do you think there would be difficulties in applying that rule to the lace industry at Nottingham?—I think so. Of course I am not quite clear as to what diseases you refer to, but the one I have in mind is lead poisoning.

1514. That is one of them?—It is a definite disease caused by lead. The causation of Dupuytren's contraction, at the present time, I think, is largely theory. There is one school that perhaps believes it is due to pressure. There are other authorities who believe it is constitutional; and my point was that the leading authorities—I mean by that, men who have done work in the medical publications, that I can find—seem to rather favour the constitutional cause.

1515. I suppose you would say that if the disease is to be scheduled at all, the onus ought to be on the workman to show that it arose from his employment? Yes, I should think so.

1516. Not sufficient that he is engaged in an employment in which the disease exists, leaving it for the master to negative the presumption, but for the man to prove he has got it from the employment. In practice there is a great deal of difference?—Yes, I do not know, but I should almost imagine you could not prove it actually for legal proof one way or the other.

1517. That it did not arise from the employment if the man was engaged in the employment and he had the disease?—What I mean is, that if the master has

to prove that it is not due to the employment, I cannot see that he can prove it.

1518. No, it would be very difficult?—Of course, there is what I call legal proof and scientific proof.

1519. On the other hand, if you take a man who is engaged, for example, in this lace-machine work at Nottingham, and who is engaged in gardening and other amusements in the evening, and is found to be suffering from the disease, it would be very difficult for him to prove that it was due to the employment, would it not?—Assuming that manual work causes the disease, I should say probably the heavier work is more likely to be the causative factor.

(*Chairman.*) That would only throw the issue back as to what was the heavier work, and which was the more likely to produce the pressure on the hand. However, that is a difficulty we have to meet.

1520. (*Dr. Legge.*) Do not you think the question of the continuance of the work and the pressure would have a good deal to do with it?—No, I think not. There was one case I cited, where the man was very clear: he gave me particulars. He has the disease, and he told me when he did work it was very much better, but when he stopped work for a few days, or had a holiday, it was very much worse. He found that the work rather tended to prevent it getting worse. I have made a note of that one case.

1521. (*Chairman.*) Of course the tendency of your opinion is, that it is not either caused or aggravated by local pressure?—Yes.

1522. If that is so, it is not a disease which arises from an industry?—No. Of course, before I took this up, the Lace Makers' Association saw me and asked me my views on this question. I did not take it up for them in that way. I stated my view so far as I knew then of the disease, and I told them that I did not think my evidence would be of any value at all, unless I went into the disease as thoroughly as I could in the short time at my disposal.

1523. I am sure the Committee are of opinion that you have given your evidence very fairly indeed. Is there any evidence at all, either from the books or from your own observation, that this is of a microbic origin?—No; one authority suggests that it probably will turn out to be so, and he did work on the subject with Mr. Shattock at St. Thomas's Hospital, one of the leading men. They cut out little bits of the tissue in the cases of those men operated on and those bits of tissues were examined. They grew the organisms and they found the organisms, but there was no proof that those were the organisms that caused it. In fact they stated, and very fairly stated, that they thought these organisms were contaminations introduced from outside. They did not find any proof.

1524. So far as it has been investigated no proof has been found?—No.

1525. Is there anything else you wish to add?—There is only one thing. I think it was not put to me as a question, but was merely put (if I may say so) with regard to seeing these different factories. I did not ask them which factories to go into in Nottingham—I mean they did not give me a list of the factories.

1526. You mean the Employers' Association?—Yes, either side. I went alone with a young fellow to help me to put the numbers down, and I went where I liked. They rang up and said I might be coming, and in some cases I did both shifts.

1527. (*Dr. Legge.*) Did you see Mr. Wardle at all?—No, I believe I saw his son. I believe he is a worker. My friend said, "That is Mr. Wardle's son"—I cannot remember which. It may have been brother.

1528. (*Chairman.*) You chose the larger factories?—The bulk of the number would be from the larger factories.

(*Chairman.*) Probably they would be the best. The condition of labour is generally better in the larger factories.

(*Dr. Legge.*) I do not know that they would be the best for finding Dupuytren's contraction, because I think the old men might not be able to keep up the high pressure required in the big factory where the pressure is considerable, and would rather gravitate into the small tenement places where they would not have so much to do. They would have an easier time and be allowed to do more as they liked.

(*Chairman.*) Dr. Legge knows much better than I do; but, speaking generally, the conditions of labour in the larger factories are much better than in the smaller ones.

(*Witness.*) Yes, and the newer ones outside Nottingham were a surprise to me. I started in the tenement factories where they employ a very small number, and I found I was getting over the ground so very slowly that I said I had not the time, and I would prefer as far as I could to devote my time to the larger factories. That was why. It was very tiring going up to the top of the buildings and seeing perhaps three or five men. Of course I kept the names of the factories and places when I came across these cases. I do not know that I remember exactly whether I found more cases in smaller factories, but I certainly found more cases in Nottingham than outside.

1529. (*Chairman.*) My attention has been called to this list in Appendix I. that you have put in, the returns from the doctors in the Nottingham district. It does look rather curious at first. You find nineteen gentlemen of independent means and only one clerk. I suppose there are more clerks in a place like Nottingham than gentlemen of independent means, are there not?—Yes, I should think there would be.

1530. And professional men. Do you think that points to the more leisured classes having more time to devote to sport?—I do not know. There again with regard to the 19 gentlemen of independent means, that is rather my own classification. It might be in the doctor's returns "Gentlemen of independent means" or "retired gentleman." In one case I put "retired non-manual worker." Those are the doctor's own words.

1531. One clerk?—There was only one clerk put down.

1532. (*Dr. Legge.*) Perhaps he ran the risk of writer's cramp?—If I may say so, writer's cramp is known to be due to writing. It follows just in the same way as "clergyman's sore throat."

1533. (*Chairman.*) We shall have to investigate that presently. Is there anything else you wish to add?—No.

(*Chairman.*) Thank you. The Committee are very indebted to you for your valuable evidence.

The witness withdrew.

Dr. F. Shufflebotham called and examined by the Chairman.

1534. What are your qualifications?—I am Master of Arts and Doctor of Medicine, and Bachelor of Surgery in the University of Cambridge.

1535. You are also a Justice of the Peace for the borough of Newcastle-under-Lyme, and one of the Medical Referees under the Workmen's Compensation Act for the North Staffordshire District?—That is so.

1536. You gave evidence before the Departmental Committee on Compensation for Industrial Diseases in 1907?—Yes, I did.

1537. And, as you point out, the question of each disease was approached in this way with regard to three questions: First, Was it outside the category of accidents and diseases already covered by the Act? second, Did it incapacitate for work for a period of more than a week; and third, Was it so specific to the employment that the causation of the disease or injury by the employment could be established in individual cases?—That is so.

1538. You propose to deal with this upon the same principle, do you?—Exactly so.

1539. We have had repeated over and over again, what we may call the general symptoms of Dupuytren's contraction?—I put it in my proof because I did not know what witnesses had been called previously, and I knew the Committee had not had many sittings, so I thought it would be advisable to give my own view of it, because there might be

some points not already mentioned by the other witnesses.

1540. Will you give the effect of that as shortly as you can?—It is very short. I first of all define it. I say: "Dupuytren's contraction is due to chronic "thickening and contraction of the palmar fascia "of the hand and of the prolongations of this fascia "into the fingers. The fascia becomes slowly and "progressively thickened and there is retraction, with "the result that the fingers become permanently flexed. "This condition most frequently commences in the "little finger and gradually extends to the ring and "middle fingers, which may become so firmly and "forcibly flexed that their extension is impossible. In "extreme cases the forefinger and thumb may also be "affected. Sometimes the disease first affects the "third or ring finger, and this appears to have been "particularly noticed among the Nottingham lace "operatives." Then I describe the palmar fascia.

1541. We have had that before?—Yes, I see that Mr. Robert Jones has given that in his evidence. Then I say:—"The disease begins very insidiously "and without apparent cause. The first symptom "noticed is a hard nodule forming under the skin in "the palm of the hand about the position of the most "definite transverse crease, and as the disease extends "the fingers are slowly drawn into the palm of the "hand and become fixed and immovable. The skin is "free at first, but eventually becomes transversely "puckered and the fascia gives a thickened and "nodulated appearance which can be easily felt under "the skin. The progress of the disease is painless. "The tendons and their sheathes are unaffected in "this complaint. The deformity usually affects both "hands, although one hand may be in a more "advanced state of the disease than the other."

1542. (*Dr. Legge.*) Would it be right to say that the position of the most defined transverse crease is the same as the position of localised pressure on the palm of the hand?—Not necessarily. I shall amplify that later on.

1543. With regard to the lace-workers?—I very much doubt it; but if you will ask me the point later, I think I can answer it better under the heading of "Lace-workers."

1544. (*Chairman.*) What do you say as to the frequency of this disease?—I have looked up the literature on the subject, and there is very little statistical information in medical literature.

1545. It must be agreed that it occurs amongst all classes of the community?—It is a disease affecting all classes of the community.

1546. That seems to be agreed amongst the authorities?—That is so. I should like to mention under this point, if it would be of any interest to the Committee, that Anderson examined 2,600 adults, mostly in the workhouses of London, and found 33 cases of Dupuytren's contraction, or a percentage of 1·27. Noble Smith also examined 700 people who were in workhouses in London, and found 70 cases or 10 per cent., and of those 700 people there were 400 women, among whom were found 15 cases of this condition, thus leaving 55 cases in the 300 men.

1547. A very large proportion?—A very large proportion. Then De Lom, who was a surgeon in the British Army about 30 years ago, made some observations on this point and examined some 203,000 soldiers whose ages varied from 17 to 35, and he only found three cases. In Keen's Surgery it is noticed that of 1,000 ex-soldiers who were examined, 39 were found to show symptoms of the disease.

1548. Older men who had probably adopted various new occupations?—That is so—retired soldiers. The other figures are taken from Anderson's published lectures on the subject. I should also mention that this disease is not known in India and Japan.

1549. By what authority do you say that?—Anderson, who gave his lectures before the Royal College of Surgeons in 1891.

1550. And he said so?—Yes, he said so; and he had worked in India for some years.

1551. Is that Dr. Anderson of St. Thomas's?—Yes, Dr. William Anderson.

(*Dr. Collis.*) He was a great Japanese authority.

1552. (*Dr. Legge.*) He lectured on Japanese art, I believe?—Yes; and he had had experience both in Bengal and Japan. He said it was an unknown disease there. "Men are more commonly affected "than women, and the disease may be said to be one "of middle and late life, although cases have been "occasionally recorded as occurring in early manhood "and even childhood."

1553. (*Chairman.*) Now as to the causation?—I do not wish to go over the points that have been already covered by Dr. Collis's and Mr. Eatock's report, but I think this subject can be discussed under four headings.

1554. What are those headings?—First, heredity; second, gout and rheumatism; third, traumatism; fourth, chronic and localised pressure on the palm of the hand; and I think I may add, fifth, the bacterial origin. With regard to heredity, all authorities admit that heredity may be an important factor in the etiology of this complaint, and a family predisposition is well recognised. I have heard part of Dr. Black's evidence, and he referred to these cases. I do not think he referred to Keen's cases. At any rate Keen found the factor of heredity in 50 out of 190 cases. In three cases it has occurred in three generations, and once in four generations. With regard to gout, according to Dupuytren himself and Keen, it is often associated with Dupuytren's contraction, and both Adams and Sir William Gowers found a history in nearly all their cases. Adams found the disease more common among the professional classes and butlers and indoor servants than in those who had manual labour. That is probably because his practice was in the West End of London. I think he was surgeon to St. George's Hospital.

1555. The Royal Orthopædic?—Yes. I do not attach much importance to this except to emphasise the fact that it is found among all classes, and in Dr. Collis's report there are statistics given with regard to rheumatic and gout diathesis amongst the lace-minders and tinplate workers. Erichsen regarded gout and rheumatism as having an important bearing on the cause of Dupuytren's contraction, and Lockwood has demonstrated the presence of uric acid crystals in a thickened fascia in a case which he dissected. On the other hand, Dr. Luff believes there is no connection between gout and this disease, and he never found any gout deposits in the thickened fascia.

1556. (*Chairman.*) Before we pass from that, what conclusion do you draw from the fact that Mr. Lockwood found uric acid in the thickened fascia?—The only point I wish to make is that the subject was evidently a gouty subject, but I do not press it beyond that point. I have looked up Mr. Lockwood's original paper in the Transactions of the Clinical Society, in which he says that he found deposits of gout in other parts of the body and actually in the same hand.

1557. (*Dr. Legge.*) If uric acid was found in tissue removed from a person who was going to apply for compensation—supposing the disease were scheduled—would that not influence the judge's mind against it being due to his employment?—That is a point that I would like to consider later on, because one has to consider in the first place whether this disease is due solely to pressure, or whether in, say, a rheumatic or gouty person, who for the sake of argument we will say is predisposed to the complaint, the pressure does not aggravate the condition. One has to look at it, I think, from two points of view. So that in a gouty case, if the Committee were to decide that irritation were the cause of Dupuytren's contraction, I think it is common knowledge that in a good many cases there is this gouty diathesis, I think it could be argued that in a gouty subject pressure would aggravate the condition, and if the condition is produced in any way by pressure, the man would be able to make a successful application for compensation.

1558. (*Chairman.*) I am inclined to agree with you?—I put it in this way after making these premises.

1559. Then you deal with a possible cause in traumatism?—I should like to say I have found in cases that have come under my own notice, both

gout and rheumatism in several of the cases. With regard to traumatism, I find that Mr. Arbuthnot Lane is the only writer who suggests seriously that this condition might be set up as a result of traumatism. But even he does not appear to be very emphatic on the point, because he says, "It would "seem in some cases to be started by a wound in the "palm." In connection with this, Mr. Anderson, in his lectures before the Royal College of Surgeons, describes a condition which he calls false Dupuytren's contraction, which he attributes to traumatism; and although when I wrote out my proposed evidence I had not referred to Mr. Anderson's lectures, it seems that some of my remarks really coincide with what he says. I will not refer again to Dr. Collis's report, because that is already referred to, except so far as to say this—that in my opinion it does not appear to be clear that traumatism has any effect at all upon pure cases of Dupuytren's contraction. I think there are many traumatic conditions of the hand which may lead up to after-effects not unlike Dupuytren's contraction in some respects. For instance, injury to the flexed tendons may cause a contraction of the finger, or a septic wound in the palm of the hand may result in a thickening of the adjacent tissues——

(*Dr. Legge.*) We quite agree with that.

1560. (*Chairman.*) I think at the present time all the doctors have agreed upon that?—Exactly.

1561. There is one question I should like to ask you upon that?—There is one point, if I may mention it. I say in my report: "Then again, when we con- "sider the many thousands of workmen who meet with "accidents every year, and remember that the hands "are the commonest seat of injury, it is not surprising "that a history of traumatism should be obtained "in a certain number of cases of Dupuytren's con- "traction."

1562. My question rather arises out of that. It is again with a view to the practical working of the question. Assuming a case of a contraction caused by traumatism brought into the court as a case of Dupuytren's contraction—caused by a traumatism if you like, and not arising in the employment, otherwise there you would get your compensatable accident; but a case of a trauma outside the employment, an injury at home or something of that kind——?—I will just make a note, because that brings up another question, if you do not mind my saying so.

1563. In a contraction caused by trauma outside the employment, and in a case presented in court as a case of Dupuytren's contraction, do you think there would be difficulty in arbitrating upon that question?—It all depends on what view this Committee takes with regard to the causation. Let me put it in this way. If the Committee decides that Dupuytren's contraction is an industrial disease, there will have to be some reasons given for it, and the reasons will be under certain headings such as I have suggested. The Committee would find that the disease, say, was due to the nature of the employment.

1564. I am afraid you are not quite following my question. My question is the difficulty I should have if I had to try the case. It is said, "Here is a con- "traction of the fingers; claim under the schedule "that is Dupuytren's contraction; allegation: no, "that is due to a trauma," and there is no evidence to show that the trauma occurred at home, at the works, or anywhere else. Is there a clear distinction which can be pointed out between contraction due to a trauma and Dupuytren's contraction?—Certainly.

1565. Do you think there would be no difficulty in showing that to the tribunal?—I do not think that that would cause any difficulty at all. I do not think really that a pure case of Dupuytren's contraction is due to trauma, and I think the injuries to the hand due to trauma which cause disablement of the hand present features that can be differentially diagnosed from Dupuytren's contraction.

1566. (*Dr. Legge.*) There would be a scar, would there not, if there had been a trauma?—There might be or there might not.

1567. (*Chairman.*) You think whether a scar or not they could be distinguished?—That is so.

1568. That was all I wanted to ask on that point. Have you had any experience yourself as to whether this disease is caused by traumatism?—Yes, I have. I see hundreds of workpeople who meet with accidents in the course of the year and who contract industrial diseases of different kinds. I have also seen a considerable number of cases of Dupuytren's contraction, and I have never yet been able to trace any connection between the two conditions.

1569. That is because when you find the fingers flexed, and the history of a traumatism, you attribute them to a traumatism and not to the disease?—In the cases I have seen of flexion of the fingers due, say, to an injured tendon, I have found no thickening of the palmar fascia. In cases of beat-hand among miners one often finds a chronic inflammation underneath the fascia without thickening of the actual fascia and without puckering of the skin.

1570. Will you deal now with what you have to say on this important question of chronic or localised pressure being responsible, or the possibility of its being responsible for the disease?—Many writers have expressed the possibility of the disease being set up by the prolonged effect of the pressure of some tool on the palm of the hand.

1571. Or the pressure of anything?—Exactly, or the pressure of anything. This point is specially referred to in the inquiry which Dr. Collis and Mr. Eatock have made.

1572. You consider that the most exhaustive inquiry into the question yet made?—That is so, as far as my own investigations have gone.

1573. And you know the conclusion they came to was that the disease is due, I think I may say, entirely to localised pressure?—In the first place they find that an unduly large number of lace-minders in the Nottingham district are suffering from Dupuytren's contraction, and also that this prevalence has a direct relation (1) to the frequency with which the levers and wheels of the machines are manipulated, and (2) to the power required to actuate the levers and wheels, and their size, shape and position.

1574. I think the conclusion they came to at the end with regard to the cause of the disease was that it was always due—I am not speaking of the lace-workers now—to localised pressure; in fact I think Dr. Collis, in his evidence before us, went a little further than he did in his report.

1575. (*Dr. Collis.*) I did.—In the report I do not know that Dr Collis binds himself to that conclusion absolutely.

1576. (*Chairman.*) No, but I think he did in his evidence before us. He said he was driven more and more to that conclusion, and the more he investigated the more he came to that conclusion. I think Dr. Robert Jones practically said the same thing. Have you had the opportunity of reading his evidence?—I have read Dr. Robert Jones's evidence, but I do not think it is quite so definite as that.

1577. We will not deal with that now. Could you give us generally your opinion? — I would like to say with regard to the percentage of workers that Dr. Collis and Mr. Eatock found at Nottingham, I think that there is a possibility that the numbers may be—Dr. Collis will not mind my saying so—a little inflated, for the reason that I believe they probably went to the factories where known cases existed.

(*Dr. Collis.*) No.

(*Witness.*) Then I am wrong. That was suggested to me.

1578. (*Chairman.*) All that question has been gone into?—I mentioned it as a possibility.

1579. Do you wish to say something about Long Eaton?—I made two special visits, both to Nottingham and Long Eaton, to see what information I could gain with regard to the nature of the employment, and I had interviews with Mr. West and Mr. Wardle, Dr. Tressider and with manufacturers of various kinds of lace curtains, and at Long Eaton I was told by two manufacturers, who claimed to be the two oldest in the town, that the disease was practically unknown in that town

(*Dr. Collis.*) As I found, the figures of the report are largely watered down by the Long Eaton and Beeston cases I saw. If the percentage had been given for the town of Nottingham it would have been trebled.

(*Witness.*) It rather confirms what I say.

1580. (*Chairman.*) We had a reason given to us for that?—I visited six factories, and I had the opportunity of inspecting the various machines.

1581. Was that in Nottingham and Long Eaton?—Yes; and I examined the operatives in charge of them. I may say that, with regard to these six factories, I went to three factories which were suggested to me by Mr. Eatock and three which were chosen for me by Mr. Wardle.

1582. Three representing the inspector and three representing the men?—Yes, that is so. I saw seven cases of Dupuytren's contraction in these six factories, in two of which there was a history of gout. I would like to summarise the impressions that I obtained.

1583. Will you tell us what the impressions were that you drew?—The work of lace-machine minder did not appear to me to specially predispose a worker to Dupuytren's contraction any more than such employments as those of railway signalmen, tramway drivers, dust tile makers, or engineers' fitters. The work does not entail constant usage of the wheels or the levers as in the case of some of the employments which I have just mentioned.

1584. Did you notice at all the way in which the men pulled these levers?—Yes, I did; I pulled them myself.

1585. Did you notice the way in which the men usually pulled them. Assuming this is the lever (*a pencil*), did they put their hand round or over them?—Some of them put the hand on the top (*with the top of the pencil right in the palm of the hand*) and pulled it over, and some of them pulled it this way (*with the hand round the pencil*).

1586. You did not notice which was the most frequent?—My attention was directed to that point, and some of the managers or proprietors of these mills said there was no reason for the men to put their hand on the top.

1587. The Committee themselves have visited these factories?—Yes, so I understand. The levers, I noticed, were rather short.

1588. Did you have an opportunity of noticing the men at the time when they were not aware of your looking?—Yes, I went to two very large factories where the men could not all be watching me at once, and the machinery was running at full tilt.

1589. And you found the men were pulling the levers in these two different ways?—That is so.

1590. In your opinion, taking the two ways—first, the pulling in *this* way by putting the hand all round, and secondly, pulling it with the hand over it—would the second manner of pulling have a greater effect on the palmar fascia in the way of injuring it?—If I assume that irritation is the cause of Dupuyten's contraction, I should say pulling it over like *this* would cause localised pressure at a certain point (*the witness held the pencil with the top in the palm of the hand*).

1591. And that point would probably be the palmar fascia?—That point would probably be the palmar fascia—somewhere about the point where one finds it most commonly to commence.

1592. Before we pass from that, you have not considered the question of railway signalmen who pull signals, have you?—Yes, I have.

1593. Do you deal with that later on?—Yes.

1594. Perhaps you will go on?—No. 2 is, the pressure of the lever does not affect the ring finger and the corresponding part of the palmar fascia to the same extent as it does the little, middle and forefingers. That is when pulled with the hand completely upon the lever.

1595. But if pulled in the other way?—If pulled in *this* way (*with the hand round the pencil*), the greatest amount of pressure is on a point probably midway between the little and the ring finger.

1596. Did you notice in some cases they pulled with the hand turned, with the little finger up?—No, I cannot say I did. The third point I wish to bring to your notice is, that the skin over the palm of the hand was invariably smooth, indicating that whatever pressure was exerted it did not cause irritation of the skin. As far as I could tell, the moving of the lever or wheel was not a great physical effort to a trained workman, but was due more to knack than to anything else.

1597. Comparing those with the other employments which you think are similar—the kind of employment such as that of railway signalmen, tramway drivers, dust tile makers, and engineers' fitters—what have you to say with regard to railway signalmen for instance?—With regard to railway signalmen, I have made inquiries at the Crewe works, Stoke-on-Trent and Derby as to railway workers; and Dr. John Lawrance, the medical officer to the London and North Western Railway at Crewe, tells me that although he meets with many cases of Dupuytren's contraction among those employed in various capacities on the railway, he has not noticed that it is specially prevalent among signalmen. I have the original letter from him. Dr. Wheelton Hind, the medical officer to the North Staffordshire Railway at Stoke-on-Trent, tells me he has never seen a case of Dupuytren's contraction in any railway worker in his life, and Mr. R. H. Luce, the senior surgeon to the Royal Derbyshire Infirmary, Derby, has never had a case of this disease in a signalman.

1598. But you suggest the action of pulling over the levers by signalmen is very akin to the action of pulling over these levers in the lace trade?—That is so.

1599. I am only asking now for my information. I thought I had seen myself in these signal boxes they have pads, or something round their hands to pull the signals round?—Perhaps so.

1600. If they do that, that might account for it. The man probably does not put his hand over the top of the lever.

1601. (*Dr. Collis.*) He puts his body weight on?—It is irritation on the hand I am referring to; it is a local irritation.

1602. (*Chairman.*) I think in some cases he gets a cloth or pad?—I think it is so.

1603. If that is done, that would rather destroy the supposed analogy?—I am not so certain, for this reason; that the pad has a rough surface, and the metal of these levers is perfectly smooth, and I think that might have some bearing on the point. Then with regard to tramway drivers, Mr. William Thom, the General Manager of the Potteries Electric Traction Company at Stoke-on-Trent, has obtained information for me from the British Electrical Federation, Limited, which is a company which owns the tramway systems in 32 different parts of the country.

1604. Does it own the Potteries Electric Traction Company, amongst others?—That is one of them. I have a list here of the places throughout the whole of the United Kingdom, including Devonport, Gateshead, Hartlepool, Greenock, Merthyr Tydvil, some parts of London and Birmingham, Oldham, the Potteries, and Swansea. Mr. Williams, the Insurance Officer for this Federation, writes to say that he has caused the records of his claims during the last four and a half years to be searched, and can find no single instance of any claim that has been complicated by Dupuytren's contraction.

1605. What claims does he mean there?—He means all the accident claims.

1606. Do you mean claims made by the public, or claims made by the employees?—Claims made by the motor men. I might say that they have a mutual insurance scheme for the whole of these different undertakings and all the insurance work for accidents that occur to their own workmen are dealt with by one central committee.

1607. Whether under the Act or not?—This is in connection with the Workmen's Compensation Act.

1608. This case is not under the Workmen's Compensation Act at present, and therefore there would be no claim?—I do not think I have made myself

sufficiently clear. Mr. Williams, the insurance officer for this company, has had all the claims searched of all the workmen who have met with accidents during the last four and a half years in the 32 different undertakings with which he is concerned, and he finds that in no single case was incapacity aggravated, or the injury the man was suffering from aggravated by Dupuytren's contraction. I will not go beyond that.

1609. With great respect, that does not seem to me to show anything at all. To say that when men cannot make a claim with respect to Dupuytren's contraction, they have not had a claim made by them with respect to the disease or aggravation of some other disease by it, does not seem to show anything at all. The answer is, they could not claim?—I think I am making myself misunderstood even now. I mean with regard to all their employees who met with accidents, there is not a single note of any one of these men having Dupuytren's contraction at the same time, and it might have some bearing in cases, say, of injuries to the hand.

1610. It might have a bearing if, whenever every person made a claim for an accident, it was their custom to put down anything else they found the matter with them; but that would be unusual, would it not?—I am only dealing with their employees who have met with accidents, and in no single case have they a note that any one of them was suffering from Dupuytren's contraction. Further than that, I would say that in the Potteries district Mr. Thom has made inquiries among the medical officers, and he found that during the last 10 years there has been no case of Dupuytren's contraction known. Mr. Thom, before going to the Potteries, was the General Manager of the Madras Tramways for nearly nine years, and during that period he never heard of a case of this disease.

1611. Why do you suggest that the pressure which is caused upon the hands of these tramway drivers—I do not know enough about it—is analogous to that of lace workers?—Because they are pulling a handle all the time.

1612. I thought they turned a wheel?—They are simply pulling a handle. Their work consists of having one hand on the handle which regulates the motor, and the other one on a brake.

1613. Unless they are fully gone into, all these matters may be absolutely false analogies. I am not suggesting it is not right to consider them, but the Committee have to consider them from every point of view. Is it usual for these tramway companies to supply their men with gloves for this purpose?—I understand that in the winter time they wear gloves, but they do not necessarily wear them in the summer.

1614. That is the tramway drivers. In what way do you suggest that the operative engaged in the dust-tile industry is similar to this?—They work the press by means of their hands, and they are pulling metal handles continually, and they are paid by piece-work.

1615. The tiles being made by pressure?—That is so; by pressure of dry dust.

(*Chairman.*) Dr. Legge knows about it.

(*Dr. Legge.*) Yes.

(*Chairman.*) Do you think there is an analogy in the action of the machinery?

1616. (*Dr. Legge.*) No. The general question on the subject I would like to put to you is, that you did not notice, what I think Dr. Collis has laid such emphasis on, that in the lace industry the attitude of the hand is like *that (the hand reversed with the thumb downwards)*. In none of these is the attitude strained. It is the natural grasp?—That is so; but my remarks apply not only to lace minders, because I take it if Dupuytren's contraction is to be scheduled as an industrial disease it should be on the ground that it is due to pressure, and it would not be limited to lace minders.

1617. (*Chairman.*) That is another matter?—I only make that suggestion.

1618. You are considering it in that light?—Exactly. Then I have considered it with regard to the coal mining industry, and this is an industry in which I have had considerable experience of examining miners, and I should have thought that in an industry where so many people are employed and where there is undoubtedly so much pressure, one would find it very frequently.

1619. That is the pressure of the pick?—Yes.

1620. What do you find there?—I have made inquiries, and I understand that in various parts of the country it is very rarely found. I am told that in Scotland and in South Wales it is a very rare disease. Mr. Albert Stanley, M.P., the miners' agent for the Cannock Chase coalfield, told me yesterday he thought it was a very rare disease in his district, although in North Staffordshire I have seen a considerable number of cases.

1621. You think it is not rare there. You say a considerable number?—I think so.

1622. And you suggest also in the north?—In the north of England.

1623. Do you mean the Durham coalfields?—In the Durham and Northumberland coalfields, I understand there are a considerable number of cases.

1624. Have you any theory to account for that?—Beat-hand is commoner in Northumberland and Durham than in any other part of England, and it is quite possible that as a result of the hard seams more pressure is required.

1625. That seems to show it is due to pressure?—I am only giving you the information I have. I am not theorising as yet on the causation.

1626. It may be a very valuable suggestion. Is coal in the seams in Northumberland and North Staffordshire harder than it is in South Wales?—In some of the seams in North Staffordshire I believe it is harder; but as a rule—and I think one can say generally—the seams in Northumberland and Durham are hard seams to work.

1627. And some in North Staffordshire are very hard?—Some of the Staffordshire seams are soft.

1628. And some of them are hard?—Yes, some of them are hard, but some of them are soft.

1629. Have you found it at all common amongst the miners you have examined in North Staffordshire alone?—I have not any statistics on the point. I am only speaking from general impressions, but I have found a certain number of cases.

1630. Do they come to you in reference to that disease, or do they come to you generally in reference to something else?—Something else.

1631. And then you find it?—That is so.

1632. Those are pure cases of Dupuytren's contraction?—Yes, I am not referring to the spurious kind. "As a rule a miner's hands show rough and "thickened skin undoubtedly due to the use of the "pick, and callosities often are seen in definite "positions. This condition is almost invariably found "in miners past middle age. The areas of skin most "often affected are (1) along the roots of the fingers; "(2) over the ball of the thumb; and (3) over the "hypothenar eminence on the inner side of the "hand. The skin in the centre of the hand, "where Dupuytren's contraction invariably begins, "is generally the softest part of the hand. "With regard to the frequency of Dupuytren's "contraction among non-labouring classes, it appears "to be common knowledge that this disease is "frequently found in subjects who have never done "any manual labour in their lives beyond taking part "perhaps in games of one kind or another." Some medical men believe it is commoner among the middle and upper classes than among working people. I do not attach very much importance to this opinion as it may be based upon the class of their practice. I have personally seen cases in the following walks of life: bank manager, artist (painter), wine and spirit merchant, master tailor, pottery manufacturer, surgeon—and I have seen another case in a medical man this morning in Dr. Collis—a clergyman, confectioner, and potters' mouldmaker.

1633. In your inquiries, are you in a position to express any opinion as to whether it is caused by pressure or not?—I do not think that chronic and localised pressure is the sole cause of Dupuytren's contraction.

1634. "Sole cause" is very indefinite?—I want to deal with that point first, and then with the other point afterwards, and for the following reasons.

1635. Before we come to the following reasons, "sole cause" is a very indefinite phrase to begin with. Do you mean the sole cause in the sense, that in the ordinary normal person it will not cause it, or that you think even if it is due to localised pressure, there is some predisposing cause. Is that the sense in which you use the words "sole cause"?—No, I have not approached it from that point of view at all. I have approached this question from this standpoint. Just as lead poisoning is due to the toxic effects of lead and its salts, localised pressure should bear the same relation to Dupuytren's contraction as the toxic effects of lead do to lead poisoning. I mean to say that in lead poisoning there is no doubt it is due to the lead.

1636. In the sense that it is the sole cause. But even there we have so often to take into account, as you know so well, the particular patient?—That is so. But let me give another illustration. In the case of ankylostomiasis, which is one of the scheduled diseases, the disease there is undoubtedly due to the presence of the worm. That is a case where one can say definitely what is the cause, and the sole cause. In the same way I want to say that localised pressure cannot be the sole cause of the disease.

1637. Very well. You say so for the following reasons?—The frequency with which it is found in non-labouring classes. In several cases that have come under my notice, I have taken a great deal of trouble to investigate whether they have taken part in any games or not, and while in the majority of them there is a history of either gout or rheumatism or having been athletic, in several cases there is no such history.

1638. You mean you have ascertained that from the patients themselves who were suffering?—Yes, that is so.

1639. In other words, do you say your experience is that they do not generally attribute it at some time or other in their life to having had some localised pressure on their hands, or some injury accompanied by some small pain?—That is so.

1640. Mr. Jones's experience was exactly the opposite. In every case he investigated, the sufferers, in their own minds, whether rightly or wrongly, attributed it to some pressure at some past time, causing some little pain?—I think patients suffering from any disease are always more concerned with the cause, and think they can satisfy themselves as to the cause, whether it is right or wrong——

1641. Yes, subject to that observation?—It satisfies them mentally.

1642. But it does not in the least follow that it is right?—No.

1643. Still, Mr. Jones found, for what it was worth, that that was the state of mind of the persons suffering from the disease. Your investigations do not bear that out?—They do not. Then the second point is the occurrence of the disease in women, and Dr. Keen in his investigations reported 40 cases of women.

1644. (*Dr. Legge.*) These figures were very open to criticism?—I have looked at the literature on the subject.

(*Chairman.*) We had them this morning, and they are not in the least conclusive.

(*Dr. Legge.*) That is the point. He said he collected 233 cases, and of those the occupation was noted in 220, and of those 49 were manual workers and 74 not.

1645. (*Chairman.*) He does not account for them?—As a matter of fact, I think he has made various observations at different times, which may account for the discrepancies in the arithmetic.

1646. Before we pass from that, have you anything to say with reference to a matter which is of importance, speaking of my own mind. I do not say it affects the Committee, but it certainly affects my mind, and that is the great preponderance in this disease in males over females. Although they do not show exactly the same proportions, all the doctors show an enormous preponderance of cases of this disease in males over females?—I think that can be explained. I am only giving a theoretical explanation, and I do not say it is correct; but I think it may be explained by the fact that the men are of the labouring classes.

1647. Does that not point to the fact that it is due in some way to labour?—It may be due to it.

1648. Do you not think it is of some considerable importance?—That is of some importance. The second point is this, that gout is more common in men than in women.

1649. Is it?—I think so.

1650. What about rheumatism?—I am not so certain about rheumatism.

1651. May I call your attention to something Dr. Black told me this morning. In the course of his investigations he investigated the cases of 615 old people in the workhouse of Nottingham, 447 being males and 168 females. Of the males he found 51 suffering from this disease, which amounted to something like 12 per cent.; and of 168 females, one. That is startling?—Yes; I heard Dr. Black's evidence, and he gave an illustration. He said it might be a disease that might be more common in men than in women, and there are diseases like that. For instance, I think he was unfortunate in his reference to cancer of the tongue. But it is not so in the case of cancer of the stomach. Cancer of the stomach is much more commonly found among men than among women.

1652. Can that not be somewhat easily accounted for? A man lives a more liberal and a more free life?—That may be so.

1653. Here you have a very startling difference between the class of persons who I suppose subject their hands to rougher usage, and the other class—males as compared with females. You find that this disease occurs far more often in those who subject their hands to rougher treatment?—I cannot account for it. Then the third is the fact that the disease affects both hands, and in some cases the left hand is in a more advanced state than the right hand, although the latter is the one which takes the greater share of the work.

1654. If you can give the Committee any information on that point, they will be very much obliged to you. Have you formed any theory about it?—The only explanation I can give is that, putting it at the very lowest, this disease must be to some extent constitutional in nature.

(*Chairman.*) Dr. Legge will ask you a question on this.

1655. (*Dr. Legge.*) Do you think in connection with the Dupuytren's contraction there must be an inflammation preceding it—very chronic and slow inflammation?—In all chronic conditions whether they be locomotor ataxy or disseminated sclerosis, I think there must be a very very slow inflammatory trouble at the bottom of it.

1656. And that would be accompanied by leucocytosis?—I am not speaking as a pathologist on Dupuytren's contraction, I am only speaking from a general knowledge of this and other diseases.

1657. No; but in connection with any chronic inflammatory change?—Yes, that is so. One would get a leucocytosis.

1658. Do you think it is possible that if you get a leucocytosis in the palm of one hand, there would be a tendency in the same direction in the other palm?—That is a point I have thought of before with regard to this chronic fibrositis, I think Mr. Jones called it. It is a remarkable thing that in constitutional diseases you do get certain areas specially picked out.

1659. (*Chairman.*) Corresponding areas of the body?—That is so. I see that you asked a question of Mr. Jones on the sympathetic affection of the other hand.

1660. I only used "sympathetic," because I did not know any better term?—Exactly. And Mr. Jones said he thought it was quite possible; but I take it he means it is possible because of some constitutional trouble.

1661. (*Dr. Legge.*) Yes; but by constitutional trouble could you take it to mean leucocytosis?—I do not think so.

1662. Take another instance, bunions, on the first metatarsal; that is generally bi-lateral. But there need not be at all the same pressure on the two feet?—That is so. But I think there are other factors in the formation of bunions besides the point that it is a bi-lateral complaint. I think that people who get bunions as a rule are very careless about the fitting of the boots, and as a rule ready-made boots are not made with any relation to any slight difference there may be in the two feet.

1663. But is that any stronger point than the fact that any person who uses both hands, to a considerable extent uses one more than the other?—I am influenced in my opinion on this by the fact that I have seen cases of Dupuytren's contraction where the disease is more pronounced in the left hand than in the right, and where, if the complaint were due to pressure, one would expect the right hand to be in a more advanced state than the left.

1664. (*Chairman.*) In what we may call a right-handed person?—In a right-handed person.

1665. Will you tell us what occupation that was?—As a matter of fact it was one of the people to whom I have referred in this list, and he was a tennis player. He could not have got his trouble through his work, but if it were due to pressure one would attribute it to tennis playing. He is a right-handed tennis player, and he had been an enthusiastic tennis player for the last 40 years. It was a very advanced case of Dupuytren's contraction, but more advanced in the left hand than in the right hand.

(*Dr. Legge.*) There are obviously constitutional causes at work there.

1666. (*Chairman.*) Many players hold one or more balls in their left hand?—I have considered that point in the question of tennis playing. He has the racket in his hand all the time, and I do not think he would have balls in the hand all the time, and then the ball is a quite soft thing; there is nothing hard about a tennis ball.

Adjourned for a short time.

(*The Shorthand Writer read the last preceding question and answer.*)

(*Witness.*) In that case the man is a sufferer from gout.

1667. (*Chairman.*) There is another reason, I think, you wish to give us?—I think the smooth skin of the hands of the lace machine minders indicates that the pressure of friction is not so great as to cause irritation or thickening. On the other hand, in the case of miners, the sensitive area of the skin over the palm is the very part where Dupuytren's contraction begins. With a miner, where they use their pick the point of irritation is clearly shown, and that is not the point where Dupuytren's contraction begins.

1668. We have had the opinion of Sir John Erichsen, Dr. Adams and Mr. D'Arcy Power before?—Then speaking generally, I say I am inclined to think that the disease is constitutional from the fact that it is sometimes hereditary and often associated with gout and rheumatism and frequently bi-lateral.

1669. I gather that you do not wish to express a strong opinion upon that point?—I believe the cause is at present unknown. There is no evidence to show that the disease is bacterial in origin.

1670. I think that is agreed. Do you know anything about it occurring in the foot?—No, I know nothing about that. I have seen the references to the subject, but I know nothing from my own knowledge.

1671. Then you treat with diagnosis. I should like to hear you with regard to that?—I say, "The diagnosis "of Dupuytren's contraction is easily made. The "conditions with which it should not be confused are "beat hand, but the after effects of the latter con-"dition, that is the thickening of the palm with a little "flexion of the fingers, might be mistaken by the in-"experienced." For instance, suppose a man were to leave an industrial district and go to a district where the doctor had not seen either beat hand or many cases of Dupuytren's contraction, he might think that a case of beat hand was an early case of Dupuytren's contraction.

1672. You think a doctor with experience in both these diseases would easily diagnose one from the other?—Yes; but I should like to say this with regard to the evidence I gave three or four years ago before the Select Committee. At that time I expressed the opinion that Dupuytren's contraction and beat hand were the same thing, and I did it for this reason. The cases of beat hand in North Staffordshire were very few, and some of the miners who had Dupuytren's contraction called it beat hand, and being not a technical and medical expression I accepted the term which they applied.

1673. It is quite clear they are not the same thing?—They are quite distinct.

1674. (*Dr. Legge.*) And that disposes of what you said in reply to Sir Clifford Allbutt when you gave evidence about beat hand?—Yes; that explains the reason that I really confused the two conditions. In beat hand the trouble is deeper than in the palmar fascia, and the symptoms clear up in a comparatively short time.

1675. (*Chairman.*) Nor would there be much trouble in distinguishing it from congenital contraction?—That is so. There would not be any difficulty in congenital contraction or contraction of the fingers due to injury of the flexor tendons.

1676. Have you considered the question of the treatment at all?—Yes, I have considered it, and I have had practical experience on this point.

1677. Do you know the operation which is called multiple tenotomies?—No; one does not touch the tendons at all. It is multiple incisions of the thickened palmar fascia. It is quite distinct from multiple tenotomies.

1678. It was called multiple tenotomies by Dr. Jones, perhaps for want of a better name?—I should prefer to call it multiple incisions of the thickened palmar fascia.

1679. (*Dr. Legge.*) Sub-cutaneous?—That is so.

1680. (*Chairman.*) Have you ever operated in that way yourself?—Yes, I have.

1681. Did you find it beneficial?—Yes.

1682. Dr. Jones suggested to us that, for the earlier stages, to keep the fingers extended was sufficient?—I have not had any personal experience of that, but I know that that is so.

1683. And he further suggested that that treatment could be adopted by extending the fingers at night without interfering with the man's occupation?—That is so.

1684. As a matter of fact, I suppose you rarely see them in the first stages?—That is so. One only sees them in the first stage when patients come for examination for accidents or in the ordinary way for other complaints.

1685. Do you find that the workman who is operated upon in the hospital is able to work again in any kind of employment?—With regard to the treatment of working men for Dupuytren's contraction I should like to say this: that in those bad cases where operation is required the operation is performed at the hospital, and then they go home or to their own club doctor or to no doctor at all, and they are not under sufficient observation for the operation to turn out all right.

1686. With regard to the extent of the disease causing incapacity to work, we have heard a good deal about that. It is suggested in the first stage it does not interfere at all. We have certain plates showing the first, second, third, and fourth?—Yes

1687. In the second stage it interferes to some extent?—Yes.

1688. But it is not until it arrives at the third and fourth stages that it really causes incapacity for work, and sometimes men even arrive at the third stage without causing incapacity for work. We had a man who was working at the third stage?—That is quite possible. I should like to say one thing about malingering. I heard Dr. Black's evidence on the point of the complaint of pain. There can be no possibility of shamming in this disease except

in regard to the complaint of pain, and I give an example of a worker with only a moderate degree of Dupuytren's contraction who might say he had pain when it did not exist, and who might claim he was totally unfit for work. That is a possibility. On the other hand, the condition is associated with gout or rheumatism and there may be genuine pain in the hand, especially on exertion, and it may be a genuine case of disability for work. I did not hear Dr. Black put that point.

1689. Assuming that the disease is eventually to be scheduled, do you see any reason why it should not apply generally to the whole of the working population?—No; I think if it is scheduled, say, for lace-minders, it ought to be extended to the whole of the workers, and the onus of proof should be thrown upon the worker.

1690. I was coming to that. Do you see any reason for altering the onus of proof with regard to lace-workers as opposed to any other class of workmen?—Yes, I should not make any exception with regard to lace-minders.

1691. Do you think it would be dangerous to throw the onus of proof upon the employer?—I think it is very much more difficult for an employer to deny it is due to the occupation than for the workman to prove it is due to that.

1692. I think that must be admitted; but in some cases of diseases already scheduled under the Act, the onus is thrown on the employer if you once get employment in the trade or process?—That is so.

1693. You think this is not a case where that onus should be so thrown?—I think an exception should be made in this case.

1694. I do not think an exception. There are other cases where the onus is not on the employer?—Yes; industrial dermatitis, trade eczema, is one. By that you simply mean that you put the disease in the first column of the schedule, and that the second column of the schedule is left blank.

1695. Yes, that is probably what it would come to Then, of course, there would be a practical difficulty in working the Act if it were included, if it is found to be due to local pressure when a hand has been exposed to local pressure from the industry and from certain forms of amusement or relaxation which are indulged in by the same man, such as gardening and cricket?—Yes, as was the fact in the case of one man I saw at Nottingham, whose earning capacity was reduced by 5s. a week as a twist hand. He was an enthusiastic cricketer, and had been for 30 years, and now he is employed in his spare time as a ground man at the county cricket ground.

1696. We have had cases given to us o many .ace-workers who are somewhat enthusiastic amateur gardeners?—That is so.

1697. Then the last point you make, and a point very well worthy of consideration, and which appears to me to be a point which must be considered by the workmen themselves, and in fact has been considered by the workmen, is this: if this disease is to be added, the injury or possible injury in the workmen losing employment or not getting it, it being a disease contracted so gradually?—That is so. I might say that one of the large manufacturers in Nottingham told me that if this disease were included in the schedule his firm would make a point of examining the workmen's hands before accepting them as fresh employees, and I would like to say that Mr. Williams, the Insurance Officer for the British Electric Company, says: "The inclusion of this disease "in the schedule to the Workmen's Compensation "Act would probably mean that employers would have "to take steps to ascertain if present employees were "suffering from this disease or not, and if it were "found that it was beginning to show itself, no doubt "rejection would follow, even though the subject "might have several years of useful work before "him."

1698. That difficulty has been pointed out to the operatives' representatives, but they say they are prepared to take the risk of that?—I thought it was an important point.

1699. Have you anything else you wish to say to us upon this disease?—There is one point with regard to the circular Mr. Wardle sent out to the operatives in the Nottingham district. I do not know whether you have seen this.

1700. Do you know that this was the circular that was sent out?—Mr. Wardle gave it to me himself.

1701. As the circular he sent out?—Yes, the circular letter he sent to the operatives.

1702. You wish to make a remark on it?—I wish to say that Mr. Wardle in this circular describes the symptoms of the disease very carefully and asks for particulars with regard to any members of the Union who suffer from the disease. He says that "an effort "is being made to get the disease scheduled, and if "particulars of every case can be obtained there is "every probability that we shall be able to get the "disease scheduled for compensation." But he does not suggest in this circular that it is due to the work.

1703. The class to whom the circular is addressed is the operatives, is it not?—That is so.

1704. They would hardly be in a position to deal with that question. There is one question with regard to some figures you gave us. You took 2,600 cases. I do not know where you got them from?—Those were Mr. Anderson's figures. He examined 2,600 people who were in the workhouses in different parts of London.

1705. They would probably be persons who had been engaged in manual labour?—That is so.

1706. Of those he found 33 cases. Then he took 700?—No, that was Mr. Noble Smith.

1707. Were they also in the infirmary?—They were also in a workhouse infirmary.

1708. Probably the same class?—Probably the same class.

1709. Seventy of those?—Seventy showed Dupuytren's contraction.

1710. Then when you come to the examination of soldiers, possibly younger men, there may be explanations for it. Amongst 203,000, you find only three?—Yes.

1711. Does that convey any idea to your mind of a possibility of its being due to manual labour?—I think that the question of age enters into that very largely because none of these men exceeded the age of 35.

1712. There were 1,000 ex-soldiers?—1,000 ex-soldiers, where one found 39.

1713. Older men?—That is so.

1714. And possibly they have entered into some industrial pursuit?—Exactly.

1715. Does not that rather point in the direction that when you get them engaged in industrial pursuits, then speaking quite generally you find a greater number of them affected than when they are not?—Yes, speaking generally that is so. In these cases, of course, as I say, the question of age enters largely, and it is very difficult to say how much is due to age and how much is due to manual labour.

1716. (*Dr. Legge.*) Following up that question a little, I notice that in the references you give to the tramway drivers, dust tile operatives, railway signalmen and so on, there are no details at all as to the age of the workers?—No, that is so.

1717. That does upset the value of the statements made. One must know the age before one can draw a conclusion from it?—I quite admit it is not full. With regard to the tramway drivers, there was not one single case known. One can only consider the age in cases as they arise.

1718. Still, one would expect them not to know of any case if the ages were not well over 40?—I think one might say from general knowledge that the ages of tram drivers vary from 30 up to 50 at all events.

1719. And I gather that you feel even if one could show this was an occupational disease, it is like fibroid phthisis in its extremely gradual onset, and it might not be in the best interests of the workers to schedule it?—That is so. I think there is a good deal of difference between this and fibroid phthisis, because fibroid phthisis in a good many cases is very difficult to diagnose, and the diagnosis of this complaint is easy. The only similarity between fibroid

phthisis and Dupuytren's contraction seems to me to be the slow and progressive nature of both diseases.

1720. And also the fact that men showing the very first signs of it long before they are incapacitated may be dismissed?—That is so.

1721. And there may be periodical examination of workers?—Yes. I would like to say with regard to the examination for Dupuytren's contraction, while the opinion of the officials in the various trades to which this disease might apply might think they would be able to deal with the matter, it is quite a different matter to cases say of fibroid phthisis because a man's hand is easily seen, and the employer, in many cases, can see the deformity himself without the aid of a medical man. It is not like examining a man's chest for fibroid phthisis. You do not have to take a man's shirt off to find whether he has Dupuytren's contraction or not.

1722. (*Chairman.*) We had one case, at all events, before us of a man in an advanced stage of Dupuytren's contraction with both hands drawn over, and certainly who had arrived at the third stage, who said that his employers did not know the state of his hands. He had taken good care that they should not know?—Exactly; but if this disease is scheduled, I think it will be a matter of surprise to find how many people have got Dupuytren's contraction. One never thought that beat hand was a common disease; but I understand there were a thousand cases last year for which compensation was claimed.

1723. (*Dr. Legge.*) But apart from that, I gather also you lay still more stress on your belief that it does not answer the third, at any rate, of those questions that the former Committee put before them before scheduling?—That is so.

1724. Namely, it is not so specific to the employment that the causation can be established in individual cases?—That is so.

1725. (*Chairman.*) In cases of somewhat advanced disease, do you think it would be possible for the court to insist upon an operation being performed, or otherwise stop compensation unless the man undergoes the operation?—I do not think——

1726. We are told the operation is not a serious one and is not a very painful one?—No, it is not; but there is a chance of recurrence unless the doctor can follow the case up for months——

1727. I am not quite sure that you follow me. Do you think it would be a case in which the court could fairly say, "Unless you undergo this slight operation, compensation must be stopped"?—No.

1728. You know that in some cases there is power to do so even now—small cases?—Yes; but in a case of Dupuytren's contraction, I think it might be necessary to amputate one or two fingers apart from the multiple sub-cutaneous incisions of the fascia.

1729. I am not speaking of amputation for the moment; but undergoing the operation of multiple sub-cutaneous incisions?—There is no risk attached to the operation, and it would not be unfair to ask the operative to undergo this operation.

1730. Do you think in some cases that might lead to recovery?—In many cases it might with suitable after-treatment.

1731. Then what would you say to the reasonableness or not of insisting upon the man returning to the same class of work. It is a difficult question for you, because you do not think it arises from the work, but assuming it was established it had arisen from the work, do you think there would be a chance of recurrence from the man going back to that same class of work?—Assuming it is due to the work, I should say so.

1732. Now you are prepared to give evidence before us on another disease which this Committee has to consider, that is clonic spasm of the eyelids?—Yes.

1733. First, in your opinion is this disease, clonic spasm of the eyelids, a distinct and separate disease from miner's nystagmus?—No, it is not.

1734. Is it a sequela of miner's nystagmus?—I should like to say it is associated with miner's nystagmus, and is produced in the same way; that it is really a symptom of the same disease.

1735. In other words, that a person suffering from clonic spasm of the eyelids has one stage of miner's nystagmus?—That is so.

1736. If you are right, it is already covered by the Act, is it not?—I think that great difficulty does arise in some cases. It should be covered by the Act; but I think myself that the disease miner's nystagmus is most unfortunately called so. It simply refers to one symptom of a general disease.

1737. What is nystagmus?—The nystagmus itself is simply an oscillation of the eyeballs.

1738. (*Dr. Legge.*) What is the derivation of "nystagmus"?—Νυστάζω, meaning "I nod."

1739. (*Chairman.*) Does this oscillation of the eyeball lead to a nodding of the head?—No.

1740. (*Dr. Legge.*) A nodding of the eyes?—No. If I may be permitted to explain, the old physicians who first noticed the symptoms of nystagmus found it was most commonly associated with children who had nodding heads. Nystagmus is a symptom which is common to a good many diseases, among which may be mentioned Friedreich's ataxia and disseminated sclerosis, and some congenital diseases of the eye.

1741. But it is by usage attached to this?—To miner's nystagmus—when it is prefixed by "miner's."

1742. To a disease of which at all events the chief symptom is the oscillation of the eyeballs?—That is so. If I may use an analogy, exophthalmic goitre is a general disease, of which the exophthalmus and the goitre are two symptoms. It is even more fortunate in having two symptoms under one name; but there are other symptoms, such as symptoms of the heart and of the nerves, which are not covered by the name; and with miner's nystagmus the name only refers to one symptom, while the disease itself embraces a good many symptoms, one of which is clonic spasm of the eyelids.

1743. Assuming for the moment that the idea is that the only matter before the Committee is whether it should be included—clonic spasm in miners—then, in your view, it is one of the symptoms of miner's nystagmus?—That is so; but let me explain the difficulty that at present arises with regard to those cases in which clonic spasm of the eyelids is present and the actual oscillation of the eyeball is absent. If a miner suffering from clonic spasm of the eyelids with some other symptoms, such as giddiness, headache and vomiting, applies to the certifying surgeon for a certificate of disablement, he is often met with a refusal because he has not got the principal symptom of the disease.

1744. Is that only because the certifying surgeon diagnoses wrongly?—Exactly so. But when one takes the whole of England, Scotland, and Wales one cannot expect certifying surgeons to be experts on every industrial disease, and this is a condition about which very little is known. As a matter of fact there are only two references that I can find in the whole of the literature with regard to clonic spasm in connection with miners' nystagmus.

1745. But on the other hand, although the certifying surgeon may be mistaken, that is no sufficient reason for putting in as a separate disease what is not a separate disease at all, but only a symptom of a disease already included. Would it not be almost making it ridiculous?—It does make it ridiculous; and what I venture to suggest is that another name for miner's nystagmus be adopted to embrace all the symptoms so that a miner who is disabled on account of some of these symptoms would be able to apply for compensation with success.

1746. Something of that kind has already been done in the schedule?—I would like to point out, in the first place, that the disease now known as miner's nystagmus is not only confined to the unnatural movement of the eyeballs, but the symptoms include headache, giddiness, vomiting, tremors, twitching of the muscles and eyelids, and in some cases even wry-neck may be found.

1747. You are speaking of symptoms of miner's nystagmus?—Yes; but it will lead up to the point I

want specially to make. "In very few of the cases "are all these symptoms present, and it is only in a "very advanced stage of the disease that one finds "a miner suffering from all these troubles. In a "certain number of cases the oscillation of the eye-"balls—that is to say, the nystagmus—is absent."

1748. There you speak of it as "nystagmus"?—I think I sufficiently explain it—"and in this class of "case clonic spasm of the eyelids may be the most "prominent objective symptom." If we could trace out a case, or a number of cases, of miner's nystagmus from the very beginning to the end, one would find that the symptoms come on slowly. They do not come on all at once; and nearly always clonic spasm of the eyelids presents itself before the actual oscillation of the eyeballs. One can say that the oscillation of the eyeballs—the nystagmus itself—is never a first symptom, but clonic spasm of the eyelids, when it does occur, often precedes it.

1749. The very use of those words, quite properly, shows the difficulty. You see the oscillation of the eyeballs, and that is—you yourself use the expression—the nystagmus itself?—I put it in really to bring it before the lay members of the Committee, because I see the difficulty. Then, again, if one follows up a case of miner's nystagmus with the oscillating symptoms, and watches the man through treatment, one finds that the oscillations disappear, but that in some cases the clonic spasm of the eyelids remains afterwards. So that one may get in the early stages—taking the life history of the case, so to speak—of the complaint, clonic spasm of the eyelids, without oscillation of the eyeball, and at the end of the case one may find the same conditions.

1750. Do you know of cases where that clonic spasm *per se* incapacitated for work?—Not *per se*; but along with the other symptoms such as headache, giddiness, vomiting, or muscular tremors.

1751. But no oscillation?—Exactly so. I think I could say there is a considerable number of those cases.

1752. (*Chairman.*) Have you seen the evidence of Dr. Laws on this?—No, I have not.

1753. I should like you to look at it. I think we must ask you to come again, because we consider this evidence is of very considerable importance, and you might read Dr. Laws' evidence before you come?—Then I can deal with writer's cramp at the same time.

1754. Yes?—I shall continue my evidence on this point when I come again?

(*Chairman.*) Yes.

The Committee adjourned to Saturday, the 11th January.

FIFTH DAY.

At the Home Office, Whitehall, S.W.

Saturday, 11th January, 1913.

PRESENT:

MR. ELLIS J. GRIFFITH, K.C., M.P. (*Chairman*).

Sir THOMAS CLIFFORD ALLBUTT, K.C.B.
His Honour JUDGE RUEGG.
Dr. THOMAS MORRISON LEGGE.
Mr. ARTHUR LOCKE (*Secretary*).

Mr. KENNETH BLACK recalled, examination continued by Judge Ruegg.

1755. You gave evidence before us on the last occasion, and you now wish to supplement it to some extent?—Yes.

1756. You spoke on the last occasion of the examination of persons at the workhouse?—Yes.

1757. And we asked you if you thought it would be possible to find out a little more in detail what the occupation of these men had formerly been. Have you been able to discover anything with reference to that?—Yes.

1758. Will you tell us what the result of your investigation is?—Yes. On December 19th last I personally examined the whole of the male inmates of the workhouse proper at Bagthorpe, Nottingham. The inmates of the infirmary—where the patients were for the greater number younger and there was less Dupuytren's contraction—were not examined. The age, occupation or occupations of each inmate were ascertained, together with the length of time he had worked. Details of each case of Dupuytren's contraction were carefully noted. The number examined was 270. The number with Dupuytren's contraction, stages 1, 2, 3, and 4 was 57; that is, 21 per cent. The average age was 67·6, and the average number of years worked was 41·8. The number free from the contraction was 213. The average age was 61·8, and the number of years at work 41·4. From a comparison of these figures it is interesting to note that the average age of the men affected with the disease is 5·8 years higher than those unaffected, whereas the average number of years worked is only 1·4 higher. As the condition of Dupuytren's contraction develops very slowly and has existed for many years in those affected, it would appear that the amount of work done is a less important factor than the age of the individual in the prevalence of the disease. Of the 57 affected with Dupuytren's contraction, 38 were cases with digit contraction; that is, stages 2, 3, and 4, which is 14 per cent. of the total of 270. The remaining 19 cases were without digit contraction; that is, stage 1 of the disease.

1759. The disease was well marked, but there was no contraction of the fingers?—Yes. In these 19 examples in class E. the average age in years is 68·8, whereas the average number of years worked was only 35. From this it would appear that the first stage of the disease occurred in those men who were on an average seven years older, but who had done on an average 5·4 years less manual work in their lives than those who were not affected at all.

1760. Now we come to the part we particularly asked you to give us further information about?—Of the 270 examined, 20 had worked as lace machinists, and of these three were affected with Dupuytren's

contraction (stages 1, 2, 3, and 4); that is, 15 per cent. Of these three cases, two were affected with digit contraction (stages 2, 3, and 4); that is, 10 per cent.

1761. You will put in this next table?—Yes.

1762. Do I understand that of the whole of the 270 only 20 had ever worked as lace machinists?—Yes, that is so.

1763. At any time of their lives?—Yes.

1764. And, of these 20, three only were affected with Dupuytren's contraction?—Yes.

1765. In any stage?—In any stage. The table is as follows:—

Total.	Average Age.	Average Years at Work.	Affected with Disease.	
			Stages 1, 2, 3, and 4.	Stages 2, 3, and 4.
270 inmates -	63	40·7	57 (*i.e.*, 21 %).	38 (*i.e.*, 14 %).
20 twist hands -	64·1	43·7	3 (*i.e.*, 15 %).	2 (*i.e.*, 10 %).

It appears from this table that at the Bagthorpe workhouse there are 20 men, or 13·5 per cent. of the total of the male inmates, who have been lace-machine minders. These 20 men were, on the average, older, and they had worked for a longer period than the average of the total inmates, and Dupuytren's contraction was less prevalent among them.

1766. I do not follow myself what you mean by that, "Dupuytren's contraction was less prevalent." Twenty men had worked for a longer period, that is clear; but what do you mean by "Dupuytren's contraction was less prevalent" among them?—That is the total in this table; 21 per cent. of the 270 were affected with the disease; in twist hands 15 per cent.

1767. (*Sir Clifford Allbutt.*) The percentage of 20 was smaller than the whole?—Yes.

1768. (*Judge Ruegg.*) Did you notice that many of these were bilateral cases?—Yes; I cannot say how many.

1769. Some of them were bilateral, and some of them were not?—Yes. I have not calculated that in my tables. It is noteworthy that of the 57 men with the disease, a number were affected in the left hand only.

1770. (*Sir Clifford Allbutt.*) That number you have not got?—No. I could ascertain that, of course—and in a few of the bilateral cases the left hand was more affected than the right, where the right hand had been used more than the left. One of the most advanced cases of all was that of a lath-maker, 64 years of age, who stated that he had done manual work for three years only.

1771. Could you give us any idea of what the particular work done by a lath-maker is?—No.

1772. The splitting of laths?—I do not know.

1773. Would he use a hammer or chopper?—I do not know. The remainder of his life he had either done no work or had acted as a foreman.

1774. May I submit the next?—In my remarks on the occurrence of Dupuytren's contraction among 1,329 lace-machine minders examined by me, it was stated that nine cases, or ·677 per cent., were affected with digit contraction. In addition there were 14 cases of Dupuytren's contraction without digit contraction (stage 1). This brings the total to 23 cases of all stages, or 1·7 per cent.

1775. That means, if I follow, that of the whole of the lace workers you have examined, 1,329, 1·7 per cent. are affected with this disease?—Yes. I would like to say that previously I had only recorded cases with digital contraction as true cases; I now believe that these others are best included.

1776. On the last occasion I think you told us that all the medical practitioners you had communicated with had not answered; you expected to receive further replies. Have you received any further replies?—Yes, from 20 additional medical practitioners, and they report 30 cases of the disease. I submit this table:—

—	Total.	Males.	Females.	Manual Workers.	Non-manual Workers.	Right Hand.	Left Hand.	Both Hands.
New cases -	30	25	5	17	13	5	6	19
Previously submitted	101	90	11	46	55	47	23	31
Total -	131	115	16	63	68	52	29	50

The occupations of the 30 additional cases are given in Table I. A. In Table II. A. are the lace-machine minders, the additional cases. Table II. A. shows the 14 cases of lace-machine minders affected with Dupuytren's contraction without digit contraction. Table III. gives the occupation of the 270 males examined at the Bagthorpe workhouse. The following are the Tables:—

TABLE I. A.

ADDITIONAL RETURNS FROM 20 DOCTORS SHOWING 30 CASES OF DUPUYTREN'S CONTRACTION.

Occupations.

Manual Workers.	*Non-Manual Workers.*
3 Farmers or farm labourers.	4 Ladies of no work.
2 Labourers.	4 Clerks.
2 Bricklayers.	2 Men of no work.
1 Laundry work.	1 Merchant.
1 Hairdresser.	1 Auctioneer.
1 Painter.	1 Doctor.
1 Saddler.	13 Total.
1 Collier.	
1 Horse driver.	
1 Steelworker.	
1 Engine driver.	
1 Railway labourer.	
1 Barman.	
17 Total.	

TABLE II. A.

Lace-Machine Minders in Nottingham and District.

14 Cases affected with Dupuytren's Contraction without Digit Contraction (Stage 1).

No.	Sex.	Age.	Hand.	Duration of Disease.	Time Working.	Fingers affected.	Remarks.
				Years.	Years.		
1	M.	63	Right	20	45	Ring	
2	M.	54	"	—	40	"	
3	M.	54	Both equally	40	34	"	
4	M.	—	" "	1	32		? Left side due to cut.
5	M.	65	Left	20	55	Ring and little	He is a right-handed man, and he does not think that the condition is due to his work.
? 6	M.	61	Right	5	40	—	This has followed from a cut when a child, and therefore a doubtful case.
7	M.	28	Both	3	12	—	
8	M.	71	Right	20	60	—	
9	M.	50	"	10	30	Ring	
10	M.	45	"	2	32	—	
11	M.	52	"	30	35	—	
12	M.	60	"	5	50	—	
13	M.	59	Both. Left very slight.	5	45	Right forefinger. Left ring.	He broke the right forefinger five years previously, and the condition has since come on.
14	M.	67	Right	4	29	Little finger	

TABLE III.

The occupation of the 270 males examined at the Nottingham workhouse is stated in the following table:—

Occupation.	No.	Affected with Dupuytren's Contraction.		Occupation.	No.	Affected with Dupuytren's Contraction.	
		Without Digit Contraction. (Stage 1.)	With Digit Contraction. (Stages 2, 3, and 4.)			Without Digit Contraction. (Stage 1.)	With Digit Contraction. (Stages 2, 3, and 4.)
Lace-machine workers	20	1	2	Gardener, gardener's labourer.	5	—	2
Lace-pattern readers	3	—	—	Farm labourer	7	—	2
Pattern maker	1	—	—	Hay trusser	1	—	—
Lace dresser	2	—	—	Plasterer, plasterer's labourer.	5	1	3
Colliers	19	1	4	Saddler	3	1	1
Pit banksman	2	—	2	Butcher	3	—	1
Iron turner, sawyer, moulder, labourer.	11	1	2	Plumber, plumber's labourer	3	1	1
Boilermaker	1	—	1	Carter, carter's labourer	4	1	1
Rivetter	1	—	—	Market labourer	1	1	—
Driller	1	—	—	Warehousemen	2	—	—
Fitter and fitter's labourer	8	1	1	Fork and spoonmaker	1	—	—
Blacksmith	5	—	1	Coachbuilder	1	—	—
Smith's striker	1	—	—	Whipmaker	1	—	—
Hosiery maker, trimmer	7	1	—	Woodseller	1	—	—
Framework-knitter	6	—	1	French polisher	1	—	—
Builder's labourer, scaffolder	4	1	—	Dyer	1	—	—
Bricklayer or labourer	9	2	2	Casemaker	1	—	—
Brickmaker	2	—	1	Cutler	1	—	—
Painter, painter's labourer	7	—	1	Bottlewasher	1	—	—
Cobbler, shoemaker, slipper maker.	7	—	—	Hawker	2	—	—
Joiner, carpenter	4	—	1	Upholsterer	1	—	—
Sawyer	1	—	—	Brewer, maltster	2	—	1
Porter, engine driver	4	—	—	Blindmaker	1	—	—
Railway labourer, platelayer, shunter.	4	—	3	Litho printer	1	—	—
				Tailor	5	—	1

Occupation.	No.	Affected with Dupuytren's Contraction.	
		Without Digit Contraction. (Stage 1.)	With Digit Contraction. (Stages 2, 3, and 4.)
Baker, confectioner	4	1	—
Tripe dresser	1	—	—
Leather dresser	2	—	—
Laundry labourer	1	—	—
Parchment maker	1	—	—
Lath maker	1	—	1
Powdry dresser	1	—	1
Mechanic	1	—	—
Slater	2	1	—
Carriage straightener	1	—	—
Ribbon weaver	1	—	—
Sugar boiler	1	—	—
Jacquard maker	1	—	—
Grocer	1	—	—
Fishmonger	1	—	—
Shop assistant, shop keeper	3	—	—
Draper	2	—	—
Groom	2	—	—
Waiter	1	—	—
Soldier	4	1	—
Sailor	1	—	—
Clerk	4	—	—
Accountant, book-keeper	3	—	—
Smallware dealer	1	—	—
Actor	1	1	—
Barber	1	—	—
Musician	1	—	—
Valuer	1	—	—
Silk mercer	1	—	—
Traveller	1	—	—
Casual labourer, fixed to no definite trade, odd jobs, no regular employment.	29	2	1
No trade in life	9	—	—
	270	19	38

The total number of doctors who have replied is 135, and of these there were three who were themselves afflicted with the disease—that is, 2·22 per cent.

1777. You draw the inference from that that the percentage among doctors is greater than amongst lace minders?—Yes.

1778. (*Sir Clifford Allbutt.*) There would be a little more disposition on the part of medical men who have had the disease to reply?—Yes, I think so.

1779. So that probably you would get all those who had Dupuytren's contraction?—I do not know.

1780. How many did you write to?—About 230 to 250.

1781. Then the 2·22 per cent. is probably a percentage of 250 as a guess. I mean, I think all those who had it were likely to reply?—Yes.

1782. (*Chairman.*) That would be 1·5 per cent. What stages were they in?—I saw two of the cases. One was in the first stage, and the other in about the second stage. The third I did not see, but I understood he had contraction. Keen of Philadelphia has contributed perhaps the most valuable papers of all on the subject of this disease.

1783. (*Judge Ruegg.*) We have had that before?—The only point with regard to that was that there was a question asked with regard to the cases given. It was stated that the occupation was noted in 220 cases. It should have been 123, of which 49 were manual workers and 74 non-manual workers. I have referred to the original papers, and the quotation is incorrectly given.

1784. It did not account for the full number on the last occasion, I remember?—No. Out of the 198 cases where the family history was noted, the disease was found to be hereditary in 50; that is, 25 per cent. According to Buck's "Reference Handbook of Medical Sciences," 1886, vol. III., page 159 and "Philadelphia Times" 1881–1882, XII., page 370, Keen collected the notes of 253 cases of Dupuytren's contraction. The "occupation was noted in 123 cases, and of these 49 were "manual workers and 74 not manual." The number was erroneously given in the writer's previous paper to be 220 instead of 123.

1785. (*Chairman.*) The non-manuals are 25 per cent. of the manuals, are they not, according to that?—Yes. Then he goes on to say, of these 198 cases a gouty history was inquired for and was present in 95 instances—that is 48 per cent. Keen also points out that the skin covering the thickened palmar fascia was investigated by Goyrand and Richer, and the latter examined the skin microscopically, and they found that it was normal. Keen concludes that its cause lies deeper than any local influence, and that a constitutional vice like gout or rheumatism, if sought for, will nearly always be found.

1786. (*Judge Ruegg.*) Then you have set out rather fully arguments for or against the external or internal causation of Dupuytren's contraction. You gave us that last time. We do not want a repetition of them. Are these new arguments or are they only a repetition of what you told us? We have dealt with sex, age, digits affected, and the bilateral affection, and you dealt with the course of the disease, and as to whether it was hereditary?—Of course this is somewhat different.

(*Judge Ruegg.*) If it is only the same thing put in a different way, I should suggest that Sir Clifford should now ask any questions he thinks necessary on that point.

1787. (*Sir Clifford Allbutt.*) The only remark I have to make is this, that probably the constitutional cause is accounted for by the smouldering onwards of the disease from a hypothetical lesion which otherwise might have remained within the smaller compass or even entirely healed. The consequent liability is a legal point. Of course you do not pretend to say that the constitutional disease might not have taken its origin in a minute lesion or in a strain which occupation apart might have disappeared. Then it is for legal authorities to say where the liability comes in?—Yes.

(*Sir Clifford Allbutt.*) There are some smaller points which I do not think I need trouble about.

(*Judge Ruegg.*) My impression is that you told us of this last time, but not in quite such detail.

1788. (*Judge Ruegg.*) Do you want to make any reference first to point one, Sex?—Yes.

1789. Is there anything which you wish to add to what you told us before with reference to this desease manifesting itself by different manifestations in different sexes? We have had a great deal of evidence to show that it is more prevalent in males than females?—Yes. With regard to males, they are subject to gout or gouty manifestations, whereas in women gout or gouty manifestations are rarely met with. This may explain the reason why Dupuytren's contraction is so much more prevalent among men, for Keen observed that 48 per cent. of cases affected by Dupuytren's contraction had gout or gouty manifestations.

1790. (*Sir Clifford Allbutt.*) Arthritic gout in the foot is more common in men than in women. But we were told that gout on the whole in any manifestation is commoner in one sex than in another. I do not profess to say off-hand, but I should have thought in practice there was not very much difference?—One writer, I think it is Keen, gave in cases of gout 98 per cent. in men and 2 per cent. in women.

1791. Gout in the foot?—Yes.

1792. (*Judge Ruegg.*) You say, "In the working "classes the disease appears to be less common than in the well-to-do." Are you speaking of males or females there, or generally?—Generally.

1793. What is your authority for that?—Keen's figures; and some authorities say it appears to be less common, such as Adams, who had a large experience

at the Orthopædic Hospital, and my own figures from the returns of doctors.

1794. You say they had it themselves?—The actual figures, the cases they have seen. They are more common in non-manual workers than manual workers.

1795. If we took it that of your 250 doctors all who were affected replied, it would then make, as the Chairman has said, 1·5, which is roughly the same as 1·7 among the lace machine people?—No; the returns from the doctors are cases they have come across—not merely themselves, but everybody. There were 131 cases returned. Of those, 63 were manual workers, and 68 non-manual workers. I only make a note about the doctors themselves; that is subsidiary.

1796. Do you not think that is largely accounted for by the fact that people in a better position with a disease of this kind are far more likely to go to a doctor than working people? We had evidence from one gentleman who said they really came to him with something else than this disease, and he discovered the disease accidentally. They did not come for it unless it absolutely caused incapacity. They came for something else, and then it was discovered accidentally. Do you not think, if you are right in saying that doctors find it more prevalent in the better classes, that is the reason?—I think that would apparently explain that. Then against that there is the fact that the working classes would be in excess of the non-working classes, especially in manufacturing centres. There is a point under "Age," I think, "This, so far as my investigations suggest, hardly appears to be the case."

1797. Namely, that the longer they work the more liable they are to the disease?—Yes, "for at Bagthorpe "Workhouse those affected with the first stage of the "disease actually worked, on the average, less than "their more fortunate fellows, and those affected in the "later stages, and who were some years older, had "done very little more work in their lives than the "non-affected.

1798. (*Sir Clifford Allbutt.*) Of course your difficulty all through is that we have not a rule of the normal incidence on one population and the other?—No.

1799. And we are very much at sea. So far as your figures give us an approximation to such incidence they would be valuable. The only definite figures are the doctors' figures?—Yes.

1800. Those give us 1·5 per cent?—Yes.

1801. (*Judge Ruegg.*) You wish to say something about the digits which are affected, do you not?—Yes. The disease in different persons occurs in a similar way and almost always affects the same digits, namely, the ring and little fingers.

1802. We have had that before?—Whether the individual affected is old or middle-aged, male or female, whether manual work is done or not, and whatever the nature of the work, it is notable that the disease is similarly repeated in them all. This has never been satisfactorily explained. Further, the hands are used by the upper and the lower classes, but the part of the hand in almost all its uses that receives the greater stresses is the thumb or the centre of the palm or outer-side, and not the little finger or inner side.

1803. (*Sir Clifford Allbutt.*) I have tried that in my own way at home for I was not quite clear about it. When they use the hand *here*, supposing they do grip the thing over the top, which is rather doubtful, *this* tendon springs forward very considerably (*the tendon of the third finger*). I am not laying very much stress upon it, but I am not sure that I accept the contrary. I rather think a good deal of stress does come upon this tendon. I am not stating that positively, but I am hesitating about a generalisation to the contrary?—The disease is the same. It occurs in the same place repeatedly. That is the point I was wishing to make. Then with regard to the bilateral nature of the disease.

1804. (*Judge Ruegg.*) It is admitted, I think, that it is very often bilateral. There was a suggestion that it might be due to what was called some sympathetic factor. What do you wish to say about that?—The examples given or suggested with regard to this sympathetic factor are injury to an eye, and lead poisoning affecting two limbs; and I should add both feet may develop corns, or both knees from excessive kneeling may be affected with the condition called housemaid's knee. With regard to an injury to an eye, I have stated that the sound eye may become affected, but not from the injury directly, but to inflammation applied to the other eye, and inflammation due to a specific organism. Then with regard to lead paralysis, that is due to the poisons circulating in the system. Then as regards corns on the feet, they occur where the boots exert pressure, and where the pressure is most the corny thickening of the skin is greatest. Dupuytren's contraction does not always follow this rule, for it occasionally occurs in the left hand in a bilateral case in a person who uses his right hand more than his left. Then as regards bilateral housemaid's knee, this differs from the disease under consideration in one very important pathological factor, namely, the skin over the knee-cap in all cases where much kneeling is done becomes thickened just in the same way that corns are local thickenings of the skin and due to pressure. The deeper structures may become affected later, and lead to an enlargement of the bursae over the knee-caps. In Dupuytren's contraction dissectors and microscopists have demonstrated that the skin covering the thickened palmar fascia is generally normal and even thinned, or if it is thickened, it is only in the later stages. If Dupuytren's contraction is due to external pressure, it is probable that the skin, as in other conditions due to chronic pressure, would be the first to suffer changes. It is hardly likely that Dupuytren's contraction will be found to be the one exception to the general rule.

1805. (*Chairman.*) Is the suggestion there that it is not due to external pressure?—Yes, because the deeper structures are affected first; the skin is affected later. That has been examined, as I mentioned, microscopically. It would appear that no very strong arguments have been put forward to explain why Dupuytren's disease is so frequently bilateral, for both hands are subjected in work to different pressures.

1806. (*Sir Clifford Allbutt.*) I am not sure that chronic pressure on the skin such as to produce a corn quite covers the whole ground. You might have tensile stress, might you not? The fascia might be dragged or pulled, I am not saying it is so, but it might be?—Yes.

1807. Or a cutaneous irritation might penetrate down into the fascia?—Yes.

1808. Or the fascia might undergo some tensile strain not propagated from the skin?—I follow.

1809. It is very hypothetical, of course?—Yes.

1810. (*Chairman.*) There is what they call constant pressure, and sudden pressure. I am speaking entirely as a layman?—Yes.

1811. I understand you say neither constant pressure from day to day nor a sudden violent pressure at any particular time would be, in your opinion, a cause of Dupuytren's pressure?—I was rather speaking there of chronic or constant pressure.

1812. I quite agree. Do you think that sudden pressure would have anything to do with it?—A sudden pressure does occasionally cause an injury to the deeper structures and not to the skin. The man has a sudden blow and the skull is fractured; it makes no change to the skin when that does occur.

1813. (*Sir Clifford Allbutt.*) Whether it is a considerable lesion on one or two occasions or a multiplicity of small ones.

(*Chairman.*) Yes. In your view, pressure, whether sudden or constant, would not be a cause of Dupuytren's contraction?—No, I do not think so. Then with regard to its hereditary nature, Keen obtained a family history in 25 per cent. of his cases.

1814. Have you elaborated that? Have you made any inquiries?—No, I have not as regards that.

1815. (*Sir Clifford Allbutt.*) Have you any objection to substituting the word "stress" for "pressure"? That was rather my point. Would not "stress" cover both?—Any "local stress"?

1816. Yes. I did not mean to dictate to you; I merely mean that such is my point?—Yes. May I add, the disease is a progressive one. In all diseases one

of the first rules of treatment is to remove the cause. If local stress is the cause of Dupuytren's contraction, then the removal—such as the stopping of manual work—should lead to improvement in, or at all events arrest, the course of the disease, but this does not appear to be the case. One man, in particular, in the lace trade, emphasised the fact to the writer that when he did no work the condition became worse, and that when he was at work the condition improved.

1817. I do not know that one can assume that the stopping of manual work would cause any improvement, because we all admit this process once started may go on smouldering by some constitutional peculiarity, and it is a legal point what started it. Granted that it did take its initiation from an injury, it might well go on smouldering independently in obedience to gout, for instance?—Then as regards class, I have pointed out Keen's figures that he found a greater percentage among the non-manual workers, and he further points out that some of that class of non-manual workers may use their hands and so induce injury or pressure in the palms, but any error from this cause would be offset by the absence of such injury or pressure in some of those persons classed as manual workers. Then, further, however enthusiastic a non-manual worker is in recreations which necessitate palmar pressure, it is improbable that he is subject to so much pressure or for so long a time as an individual who has to toil daily with his hands to earn his living. Then as regards the country.

1818. (*Judge Ruegg.*) Writers say it is unknown in India and Japan?—Yes. It has been stated that in certain countries the disease is practically unknown, namely, in India and Japan. It is hardly likely that the Indians and Japanese do less manual work than Europeans.

1819. (*Sir Clifford Allbutt.*) What about gout in India and Japan? Do you know?—No.

1820. (*Judge Ruegg.*) Assuming for a moment this disease is to be included, do you think it would be right to place the onus of proving the disease upon the workman, or, assuming he is engaged in such an employment as lace making, to place the onus upon the employer to show that it was not contracted in the employment?—I think the onus should be placed upon the workman.

1821. (*Chairman.*) Have you ever seen a workman's case where the onus could be satisfied according to your theory? Would you not give evidence as regards any workman in the kingdom that "It cannot be; it has nothing to do with your work; it is constitutional"?—Yes, that is my belief.

1822. Yes; but you say you would put the onus on the workman. In other words, you would put an onus on the workman that you could never satisfy. It is putting such a weight on his back that he can never carry?—I cannot say.

(*Judge Ruegg.*) Of course the view taken by this gentleman is not taken by other experts.

1823. (*Chairman.*) Yes; but according to your view it is putting an onus on the workman that he can never carry?—That I do not know.

(*Judge Ruegg.*) Not if your evidence is to be accepted.

1824. (*Chairman.*) But you would give evidence, concerning any workman in the kingdom, against it. To be perfectly frank, that is what it comes to?—Yes; but there might be half-a-dozen doctors give evidence for the workman, and there might be two or three or half-a-dozen against.

(*Judge Ruegg.*) I am quite sure there would be that.

1825. (*Chairman.*) He could not carry the burden of the weight you are putting on his back?—No.

1826 Lace-machine workers and colliers are the two definite employments at the top of the list?—Yes. An actor is at the top of the list—100 per cent. There is only one actor.

1827. (*Judge Ruegg.*) The colliers stand high. Out of 19 colliers there are four with digit contraction, and five out of the 19 with the disease?—Yes.

1828. It is a very high percentage?—Yes. I should very much like to augment these figures by an examination of other infirmaries, because from the information one gets there is so much Dupuytren's contraction that it would be very helpful.

1829. (*Chairman.*) Quite. The more figures we have, the greater the area of your investigation, the more likely are we to get at the real average?—Yes. At the same time, in Nottingham one would rather expect to find a large number of colliers and lace-machine minders in the workhouse, because those are the two important occupations.

1830. (*Judge Ruegg.*) It is pointed out to me that if the actor is 100 per cent., the persons with no occupation are free altogether. There are nine of those, and none of them have it?—That is so.

(*Chairman.*) A bricklayer or labourer is the highest of all, four out of nine; and plasterers and plasterers' labourers are four out of five.

1831. (*Sir Clifford Allbutt.*) Should you say that any of these men had shifted to the workhouse on account of the contraction?—No. Of course, there may be an exception, but I should not think anyone had.

1832. That did not strike you as a generalisation?—No.

1833. (*Judge Ruegg.*) None of them said to you in answer to an inquiry, if you made such an inquiry, that it had been the disease that had incapacitated them from work?—No, I do not remember that one did.

1834. Perhaps you did not ask them that?—No, I did not ask them that.

1835. (*Dr. Legge.*) I was going to ask whether you had made a mental note of all these cases, and how many in your opinion were incapacitated by it?—I did not; but I think the majority of the men themselves were incapacitated from old age, and so on. I think a number would have been incapacitated provided they had been younger men.

1836. Supposing the disease were scheduled, how many of those that you saw, do you think, might make an application?—Probably nearly all; especially as those men are getting on in years. Apparently, from what I have seen now, it does appear to be remarkably common in men in advancing life. Some of my friends, knowing I am interested in the disease, show me their hands, and say, "Is this what you are looking into?"

1837. (*Chairman.*) Outside these figures?—Yes, quite outside these figures.

1838. (*Judge Ruegg.*) Speaking quite generally, on the last occasion it was suggested that incapacity for work did not result until they had reached what we have called the third stage?—Yes.

1839. (*Dr. Legge.*) I want to clear up some points in your previous evidence. In reply to Question No. 1446, you said that the number of males you examined at the workhouse was 447. To-day you say 270. Is that simply because you say you have not had time to examine more?—No. I point out that the second examination was an examination of all the males in the workhouse proper. Previously I had examined all the males in the workhouse and a number of males in the infirmary, part of the workhouse itself. I limited myself to the workhouse proper, because they were older men and there was a greater frequency of the disease. There were very few cases in the infirmary proper.

1840. Then were these 270 that you examined on the 19th December practically all included amongst the 447?—Yes.

1841. Then I notice the number of cases of Dupuytren's contraction on December 19th was 57?—Yes.

1842. And in answer to Question No. 1472, you gave 86, a considerably larger number?—Yes. But I think, in addition to that, it includes stages 1, 2, 3, and 4.

1843. That makes the difference, does it?—Yes. There were 52 in stages 2, 3, and 4; and I think I go on to say so many more cases in stage 1.

1844. You had excluded stage 1?—Yes. The percentage was 19 per cent. including all the stages, giving the first figures, 600 odd cases of the men; and the last time it is 21 per cent., a little higher.

1845. (*Judge Ruegg.*) Do you want to add anything?—On one point. You asked with regard to a

man becoming incapacitated. He would be incapacitated only in the 3rd and 4th stages, probably; but at the same time it does strike me as probable, that a man even in the first stage might say that the condition was painful, and then he would be incapacitated, not from the condition itself, but from the pain in the condition, so that, if a man knew he had the condition and claimed it was painful, I do not think it could be proved it was not painful.

1846. (*Sir Clifford Allbutt.*) The pain at any rate would be very transitory—just at the first flush?—Yes. But the colliers in the district I live in complain of their backs. As they get older men they will say they have twisted it, and it is a very difficult thing to prove they have pain or no pain.

(*Judge Ruegg.*) I am afraid that is a general objection that can be urged against a great many things in the Act.

1847. (*Dr. Legge.*) With regard to the examination you made in the factories themselves, you examined 1,329 men, I think?—Yes.

1848. There, again, I suppose you excluded stage 1?—Yes.

1849. So that the number you found affected with Dupuytren's contraction would be higher if you had gone through them again and included stage 1?—Yes. I took a note of all the conditions of Dupuytren's contraction and other conditions of congenital contraction and contraction due to scars; and I have pointed that out in my supplementary evidence. That accounts for the new percentage, and I have given details of the 14 additional cases.

1850. Your final conclusion is that of those you examined at work 1·7 were suffering?—Yes.

1851. In Dr. Collis's examination of 1,360 he found 85, which works out to 6·2. I just want to put it to you again: do you not think that it may be due to the fact that you went to all these big factories at Long Eaton and saw younger men and did not see so many of 40 years and over?—No; not altogether, I do not think I saw so many old men as probably Dr. Collis did. Of course I went into a smaller number of the factories. In that I have not included contraction due to definite scars, wounds, and congenital contraction which occurs in the little finger, although I have notes of those cases.

1852. But Dr. Collis did not include those either. It is so stated in the report?—Then I can only explain that by what you suggest; that possibly Dr. Collis went into a number of smaller factories, and perhaps the men were older, and therefore to get a true percentage I think it would be necessary for the whole number of lace-machine minders to be examined—everybody at work.

1853. (*Sir Clifford Allbutt.*) Do you consider that the non-digital form, to use a rough expression, is an early stage, or do you think it is a mild form of the disease?—The last time I gave evidence I did not think it was the disease—not the true disease; but I have now seen cases where you have a slight contraction in one hand and no contraction in the other, and, as I can see from the position it occurs in, I do think now it is a first stage of the disease or an early stage of the same condition.

1854. In other words, given time they would probably all become digital cases?—Yes.

(*Chairman.*) We are very much obliged to you.

The witness withdrew.

Dr. F. Shufflebotham recalled, examination continued by Judge Ruegg.

1855. The Chairman has asked me to continue your examination, as I examined you on the last occasion. I think you dealt on the last occasion with the disease of Dupuytren's contraction so far as you, at that time, wished to bring it before us?—That is so.

1856. Is there anything you wish to add to your evidence? We do not want a repetition, but is there anything new? Generally, you inclined to Dr. Black's opinion that this is not due to local pressure, but is due to constitutional causes?—Since I gave my evidence last time, I have had an opportunity of reading the evidence of Mr. Robert Jones and also of Dr. Black, and I have heard the evidence he has submitted this morning. I would not go beyond this, that I think something might be said in favour of the pressure theory; but, as on the last occasion, I would not pin myself down to saying it is the sole cause. I think it may be a contributory cause.

1857. You mean contributory, given a gouty diathesis or something of that kind; that, in the case of a person who is subject to it, the pressure would bring it on, whereas, in the absence of pressure, probably it would not develop. Is that what you mean?—I would not like to say that. I am of the opinion that the cause of Dupuytren's contraction is unknown. When one investigates it as thoroughly as possible, we really do not know what is the exact cause of this disease; but associated with the disease we find in some cases rheumatism, in other cases gout, and in other cases hereditary predisposition. In some cases there are none of these conditions, but we find it might be attributed to the nature of the employment. I do not want to put it any higher than that. Of course, when one reads the whole of the evidence, as I have had the opportunity of doing during the last month, I must say, I feel convinced that something can be said for the pressure theory; and with regard to the smoothness of the hands, about which a great deal has been said, I think it rather tells in favour of the pressure theory than against it. If one accepts Mr. Robert Jones's pathological explanation of the disease that it is fibrositis, the part of the hand over which the skin is found to be smooth is the part which would be least protected, and therefore would be most liable to chronic pressure, thus producing this very chronic and insidious inflammation to which Mr. Jones referred. I pointed out on the last occasion, I admit, that the skin over the collier's hand is thickened in certain places, for instance, above the bases of the fingers over the hypothenar eminence and over the ball of the thumb. I also pointed out that the centre of the hand was where one finds the skin smoothest, and this is the point where Dupuytren's contraction begins. I do not bind myself to the explanation; but I do think something might be said for the fact that where the skin is smooth and unprotected the contraction begins.

1858. (*Chairman.*) You mean you do not exclude the pressure theory?—I do not exclude the pressure theory in certain cases. Of course, one does get cases where there can be no possibility of any pressure, people who have not been engaged in manual labour or in athletic exercises; so that I do not exclude the pressure theory in a certain class of cases.

1859. Amongst others?—That is so; amongst others.

1860. (*Sir Clifford Allbutt.*) I do not see what the disease gains by having the smooth skin over it. You said it was rather a favourable condition?—In the Nottingham lace workers what struck me was this: that the skin over the workmen's hands was particularly smooth and soft, so that the subjacent tissues would be more liable to be injured.

1861. They lack the protection of the skin?—Yes, that is what I intended to convey.

1862. (*Chairman.*) It was a circumstance in favour of the pressure theory?—Yes, that is so.

1863. Giving the pressure theory more scope?—That is so.

1864. (*Dr. Legge.*) It is chronic, and in these other cases of the corns, and so on, it is often repeated?—Yes; but I was referring rather to the colliers' hands where one finds these collosities—very defined areas, where one finds an area of skin over the centre of the

hand where there is not the same protection as one finds over the base of the fingers and over those areas to which I have referred.

1865. (*Sir Clifford Allbutt.*) I do not know how far we are getting away from our main point; but as the questions have gone so far, I might ask if you stated or if you do state that this is unduly prevalent amongst colliers?—I have found a considerable number of cases among colliers.

1866. More than you would, say, in any rank of life?—I would not like to say so. I live in a district where there are 25,000 colliers employed, but I do not give any statistics on the point.

1867. (*Chairman.*) You have been in the room the whole of the time?—I have.

1868. You heard me put to Dr. Black a question as to a constant pressure and a sudden pressure. Is your mind at all affected by that consideration, whether the constant pressure would make any difference to sudden pressure?—No, I do not think so. There was one point, if I may say so, that you put to Dr. Black with regard to the procedure in a Court of Law if this disease were added to the schedule. I think you asked him whether he would be prepared, suppose this Committee did accept this pressure theory and added it to the schedule, to take up the case on behalf of the workman who wished to prove that his case of Dupuytren's contraction was due to his work. I think that one has to consider each case on its own merits. Suppose, for instance, there was no history of rheumatism, and there was no history of gout, and that this Committee decides that the pressure theory is a contributory factor, then I think one could reasonably say by the process of elimination that the man had made out his case.

1869. That there was no other way of accounting for it?—That is so.

1870. That is by keeping an open mind as to the pressure theory, of course?—Yes.

1871. Once you have a shut mind to the pressure theory, nothing would?—I have an open mind.

1872. That is the point rather that I was putting to Dr. Black. If you bolt the door against the pressure theory, there is an end of it?—That is so.

(*Sir Clifford Allbutt.*) If the pressure is persistent, atrophy is the effect. It is frequent intermittent pressure.

(*Chairman.*) Yes.

1873. (*Judge Ruegg.*) Is there anything you wish to add further on that?—I do not think so.

1874. Then will you kindly return to the second disease which we were dealing with at the time of the adjournment last time, that is clonic spasm of the eyelid. I think you told us that in your opinion that was not a separate disease at all?—That is so.

1875. It was one of the symptoms, in your view, of the disease already included in the Act, namely, miners' nystagmus?—That is so; but I would like to say that in the schedule to the Act this disease is called "nystagmus" and not called "miners' nystagmus," and I attribute a great deal of importance to that point.

1876. You say that "nystagmus" is an unfortunate name, because it only describes one symptom of a disease?—Yes.

1877. Namely, oscillation of the eyeballs?—That is so.

1878. I did not quite gather on the last occasion whether you considered clonic spasm of the eyelid as a sequela of miners' nystagmus, or as a preliminary symptom of it?—It may be either. In some cases clonic spasm of the eyelid appears as an objective symptom before the oscillation of the eyeball itself. In other cases one finds it after the oscillation of the eyeball has disappeared, so that one may regard it as an early symptom or as a late symptom, or it may be a continuous symptom throughout the whole course of the disease.

1879. Do you find nystagmus appears as a condition of work in workmen other than miners?—I remember some years ago finding it in a coachman.

1880. Could you account for the cause of it in that case?—He had a very marked error of refraction which might have accentuated or aggravated the incidence of the disease. I take it, probably, with his eyes being in a fixed position of range—he drove a pair of horses—continued muscular strain might have set it up in the same way as in the case of a collier working in a mine.

1881. Is that the only case you have ever found in your experience outside the case of miners?—That is so.

1882. So that it is chiefly confined to miners?—Yes. It is a very, very rare disease except among miners, and among miners I should say it is a fairly common disease.

1883. I think it is generally attributed to working in insufficient light or bad lighting and having to fix the gaze carefully on the coal in an insufficient light?—And working in a strained position.

1884. If this is really a miners' disease, why do you attach importance to the fact that it is not so scheduled in the Act? It is simply "nystagmus" and not "miners' nystagmus"?—I am rather anxious that the disease should be called by a much broader name than nystagmus. I myself would like to call it, say, after the name of a doctor who has described the disease, after the manner of Graves' Disease, or Bright's Disease or Hodgkins' Disease. I want to cover the whole range of symptoms, and not simply pick out one symptom and say this is the name of the disease.

1885. It may be an objectionable name, but so long as this clonic spasm is a part of the disease, and in your opinion sometimes causes incapacity, and what you would call the primary symptom, the rolling of the eyeballs, is absent, then the man is suffering from nystagmus?—It is necessary, for this reason, that before a miner is able to get compensation he must have a certificate of disablement from the certifying factory surgeon, and throughout the whole of the country one cannot expect certifying factory surgeons to be specialists of every disease. I think there are a good many certifying factory surgeons who are confused by the disease simply being called by one symptom.

1886. In other words, if they fail to find the primary symptom they would refuse the certificate?—That is so, and I understand many cases have been refused.

1887. (*Sir Clifford Allbutt.*) Many diseases are called by their prominent symptom, such as hydrophobia or whooping cough. But surely nobody supposes that hydrophobia consists in a man shirking water?—That is so.

1888. I do not know whether I agree with you or not; but I suggest in the name "miners' nystagmus" there is a certain advantage, as it means not merely any oscillation of the eyeball, but a certain disease which includes oscillation of the eyeball, and which occurs above all in people engaged in mines?—That is so.

1889. When we speak of painters' colic, we do not mean that nobody but a painter has ever had it; so that we can speak of miners' nystagmus as a disease which is prevalent among miners but is not confined to them?—Yes.

1890. (*Judge Ruegg.*) It is not called "miners' nystagmus" in the schedule; it is simply called "nystagmus," and against it in the schedule is the word "mining"?—That is so.

1891. So that in the schedule it is identified?—Yes. The mere fact that this point is being brought before the Committee shows that in certain districts it is not clearly understood, and I understand that in some of the districts many of the miners have failed to obtain compensation when they have been suffering from all the symptoms of "miners' nystagmus" without the actual oscillation of the eyeball, and have been in consequence incapacitated for work.

1892. (*Sir Clifford Allbutt.*) Then might I go on a little further and ask you a question that you might not be able to answer; whether you have made any conjectures as to the mechanism of it; whether it is the strained muscles of the orbit; and what is the cause of these other symptoms, such as headache, giddiness, vomiting, tremours, and the twitching of the facial muscles or wry-neck—those may occur too—and, I

understand, twitching of the eyeballs?—Yes, that is so, without the oscillation of the eyeballs.

1893. Have you made any conjecture as to the causes of these other symptoms which would not cover oscillation of the eyeballs as well?—No, I cannot say that I have.

1894. Whether it is a strain of the muscles of the orbit or not, you do not know?—I do not know.

1895. I do not know whether you agree with Mr. Snell's evidence as to the occurrence of the disease in platelayers, or rather in foremen platelayers?—I accept what Mr. Snell says, but I have no personal experience on this point.

1896. But you think on the whole it is not unlikely?—I do not think it is.

1897. Because, if that is the case, deficiency of light is a subordinate factor, although defective light might bring it on sooner?—That is so.

1898. But it might come on without?—I think that is quite possible. It is said that Michael Angelo had, I will not say "miners' nystagmus," but suffered from this disease through painting a ceiling in the Sistine Chapel of the Vatican.

1899. (*Judge Ruegg.*) A man may be suffering from this symptom, clonic spasm of the eyelids, and yet nystagmus may never appear—what you call a primary symptom. In other words, he may suffer from nothing else but clonic spasm of the eyelids?—It is a very difficult question to answer, for this reason: "miners' nystagmus" is a disease that lasts for a very long period of time, and to answer that question one has really to trace up the history of a case from the very beginning to the very end, and that may extend over a period of years.

1900. I am only asking for your own experience; have you ever found such a case?—Yes, I have seen cases without any oscillation of the eyeball.

1901. Where oscillation of the eyeball has never appeared at any time?—As far as my own knowledge goes. I may say that in every case I have tested the miner in a darkened room, and I have put him in such a position as he would be in at work.

1902. I am afraid you do not follow me. You say it does not exist as an independent disease in your opinion?—Not the clonic spasm of the eyelid by itself.

1903. Yet you have known cases of clonic spasm, so to speak, by itself where nystagmus has never appeared as far as you know?—No, clonic spasm accompanied by subjective symptoms, such as giddiness, headache, feeling of nervous depression, and so forth.

1904. Have you found cases where clonic spasm alone, assuming you are right that it is a preliminary symptom of nystagmus, has incapacitated the man from working?—Not clonic spasm alone; but when these other symptoms of headache, giddiness, vomiting, and tremours have appeared, yes, certainly.

1905. Are they attributable to the spasm?—No, I think they are all associated, and they form part of this general disease.

1906. Nystagmus?—That is so.

1907. Then have you found cases where the nystagmus, the first general symptom—the rolling of the eyeball—has passed away; but the clonic spasm has remained, and where that alone has caused incapacity?—With the other symptoms to which I have already referred.

1908. Would not they probably pass away at the same time as the nystagmus proper?—In some of the cases they do not. I may say, with regard to the symptom of nystagmus itself, it varies from time to time. In a certain number of cases, as soon as the man gives up work the oscillation may stop; but if the man is put in a darkened room and he is put through the same muscular exercises that he is engaged in at work, then after, say, a quarter of an hour or 20 minutes, and sometimes only after 10 minutes, the oscillation of the eyeball commences.

1909. Ho w would you suggest this difficulty could be met; by a more comprehensive definition of the disease? Would it be met by saying in the schedule "Nystagmus, including clonic spasm"?—I believe myself it would be best met by describing the disease as "miners' nystagmus" in the first column and putting "mining" in the second column, and I think in the report that this Committee issues——

1910. Forgive me, before we pass from that; that would be confining it to miners; it would be restricting the Act.

(*The Committee conferred.*)

1911. Would there be any objection to scheduling this clonic spasm, if we came to the conclusion it should be scheduled in some way or other, as "Nystagmus, including clonic spasm," and keeping the word "mining" against it?—I see no objection to that, because in any given case the man must prove his own incapacity. It is always thrown on the man, so that I think that would meet the case.

1912. (*Chairman.*) That is your view?—It is.

1913. (*Judge Ruegg.*) This clonic spasm is really a form of blinking, I think you say?—That is so.

1914. You do not call it a disease?—No.

1915. But a symptom of a disease?—That is so.

1916. You do not say with regard to its association with ear or teeth trouble?—I say it is merely a symptom of some form of irritation of either the third, fifth, or seventh cranial nerve, and it may be associated with dental or ear troubles, with foreign bodies in the eye, with wounds of the cornea, inflammation of the conjunctiva or iris, or errors of refraction, and it may be a prominent symptom of neurasthenia or hysteria.

1917. Do you mean it may arise from these things?—It may be caused by these things. It may be associated with irritation of those nerves.

1918. I do not quite follow what you mean by "associated with"?—It may be a symptom.

1919. Is that so? Do you say that dental trouble or ear trouble or neurasthenia or inflammation of the conjunctiva will produce this extraordinary blinking; because it is only blinking?—Yes, that is so; but in these cases the symptom of blinking would only be a temporary one and would disappear as soon as the inflammation or irritation was removed. I do not think myself there would be any difficulty. One has to realise in what way it can be produced, but I do not think this really makes the matter any more difficult.

1920. May it not be said that this man has trouble with the ear or he has something the matter with the eye, and it is not nystagmus at all. It is quite true he has this symptom which is called clonic spasm, but it is not from nystagmus, and does not come from the industry?—That may be so, but one would be able to differentially diagnose it just as nystagmus is associated with other diseases. It is associated with Friedrich's ataxy, disseminated sclerosis and cerebral tumour; but one takes the whole of the symptoms into account before one takes a diagnosis.

1921. I am afraid you do not see my difficulty. I am speaking of the difficulty of working the Act, assuming for the moment that this disease is to be called "nystagmus," including "clonic spasm," whether it means a separate disease or only a symptom of nystagmus. You say that the symptom, whether it is a separate disease or only a symptom, may arise from a number of other causes?—That is so.

1922. Take the abstract case of a man who is suffering from something which is properly described as clonic spasm. He has no other symptoms of nystagmus, but he has these troubles which you describe, say, ear trouble; he is suffering from the disease?—No; simply from the symptom..

1923. And would he be able to get compensation?—No, I do not think so, because one would be able to decide whether that clonic spasm was due to ear trouble or not.

1924. Or whether it was due to the employment?—That is so.

1925. But the onus would be on the employer?—In the case of nystagmus itself the onus is on the employer now in case of Freidrich's ataxy and disseminated sclerosis and there is no difficulty in the matter.

(*Sir Clifford Allbutt.*) I do not recommend it, but supposing there was a name such as "miners' eye strain," for instance, to signify this group of symptoms in which nystagmus was not a constant but a very frequent symptom?

1926. (*Judge Ruegg.*) It would make it very difficult to deal with. A miner would come with this symptom, and let us say he has been engaged in the industry, you would not be able to say whether it was an incipient symptom of nystagmus or arose from one of those numerous causes that you say these symptoms may be attributed to?—By a process of elimination in the first place.

1927. If he was engaged in mining, that onus would be on the employer, and it would be almost impossible for him to satisfy it, would it not?—I have not found any difficulty in the cases that have come to me.

1928. You are not a certifying surgeon?—No; but I have been satisfied in my own mind that this was a genuine case of incapacity for work in the first place, and it was a case of a man suffering from disease, I will not use any term we are referring to—this general disease.

1929. What we are calling nystagmus?—Exactly. Another thing is this. I know that in some of these cases when they are followed up, the oscillation of the eyeball appears at a later stage.

1930. I understood you to say there were cases where it did not appear?—There are cases where it does not appear; but on the other hand there are cases where it appears often.

1931. You expect it in the ordinary case to appear?—Yes. But suppose the oscillation of the eyeball, as is a fact, does not appear for some weeks or months after the onset of the disease, if it is not included in the schedule the man is deprived of his compensation during that period of time.

1932. I understand the difficulty?—I may say this: that in the last week I have had two cases brought to my notice of this disease where these preliminary symptoms were accompanied by a great mental depression to such an extent that in two different cases the man threatened to commit suicide.

1933. Would it not be difficult for a court to ascertain the extent to which this system *per se*, clonic spasm, causes incapacity for work?—I do not think that the symptom *per se* does cause incapacity for work. I think it must be associated with other conditions.

1934. You think the man has got nystagmus, although the symptom of the rolling eyeball has not appeared?—In some cases I have seen, I am sure of it. I have no doubt whatever, and it is a point I wish to emphasise as much as I possibly can.

1935. I see a great practical difficulty?—If men fall about the pit and hurt themselves from attacks of giddiness, and those continue, and if they have attacks of vomiting, and there is no stomach trouble as far as one can tell, if they have attacks of headache, and if one finds muscular tremours and these persist, I have no doubt about the origin of their trouble.

1936. Is it a very rapid blinking of the eyes, generally?—Yes, it is fairly rapid. As a rule, one can tell by the demeanour of the man. A doctor who has studied these cases, and who has taken an interest in them, can almost tell by the way in which the man walks into one's room.

1937. Would a continual blinking by itself render the work difficult or impossible to do, apart from the general conditions?—I do not think so.

1938. It is the general condition of which that is a symptom?—That is so.

1939. Do you know of any cases where the man has had this symptom and has had other symptoms which satisfied you that he is really suffering from nystagmus, but he has been refused a certificate in consequence of the general symptom, the rolling of the eyeballs, not being apparent?—I am told a great number.

1940. But they have never come under your own notice?—No, not under my own notice.

1941. Is this condition aggravated by other things, such as over-indulgence?—Yes, it may be aggravated by excessive smoking or indulgence in alcohol.

1942. Do you think, if a patient who is suffering from clonic spasm is carefully examined with an ophthalmoscope in a darkened room, you would not detect some signs of this rolling of the eyeballs?—In some cases, yes; in other cases, no.

1943. Have you ever discovered what I call the primary symptom by tests when it is not apparent?—Yes, I have.

1944. When the man is suffering from it as a preliminary symptom, and he is taken out of the mine—that is the usual remedy, is it not, to remove him from the work?—That is so.

1945. He is taken out of the mine, and then they disappear like the nystagmus itself?—Certainly.

1946. And he may never arrive at the stage at which he has got the rolling of the eyeballs?—That is so. But by being taken out of the mine, I would like to explain, his earning capacity is generally reduced.

1947. I quite follow that. On the other hand, he may have had a very bad attack of nystagmus, and the whole of the symptoms may have disappeared except this clonic spasm?—That is so.

1948. If it is a sequela, have you known cases where, that being the last symptom to disappear, it has itself caused incapacity?—I do not think *per se* it does; but when it is associated with these other conditions it certainly does. I think it is really more important in the early stages than it is in the later stages.

1949. Probably, because in the later stages the man is recovering?—The man is recovering.

1950. And the other symptoms with which it is somewhat associated have probably passed off or are passing off?—That is so.

1951. In the case of the oscillation of the eyeballs several witnesses said there were so many per minute?—Yes, they say 60 to 300. You cannot count more than 300 a minute. The same thing applies to the clonic spasm. Sometimes it is a slight muscular twitch and sometimes it is a quick one. The condition can be aggravated, say, after drinking, or after excessive smoking, or after an accident.

1952. If the Committee thought it would be attended with very great inconvenience to alter the name—it is a very well-known name now in the profession—you think the difficulty that you point out could be met by altering the definition in that way: "nystagmus, including clonic spasm"?—I do.

1953. (*Chairman.*) You say that the clonic spasm is a symptom of nystagmus?—Of this disease that we call "miners' nystagmus."

1954. Supposing you were attending a man from start to finish, and supposing he is suffering from this disease, that is the diagnosis?—Yes.

1955. Then he gets better and better, until ultimately the only thing left is clonic spasm?—Yes.

1956. When he is suffering from clonic spasm, you say in effect he is still suffering from the disease. This is the last stage of the disease, nystagmus?—That may be so; but it does not follow that at that period he is incapacitated from work.

1957. Never mind that for the moment. As a matter of fact, until the last symptom of the disease has disappeared, he is suffering from the disease?—That is so, more or less.

1958. So that really at the ultimate stage when he is suffering from clonic spasm only in a certain sense—I mean that it is only objective spasm?—That is so.

1959. He is still suffering from this nystagmus disease, from which he has not completely recovered?—That is so.

(*Judge Ruegg.*) According to Dr. Shufflebotham if there is incapacity, the fact of that symptom only being manifest ought not to disentitle him to compensation. It is only to make the definition of the disease more clear.

(*Witness.*) That is so.

(*Chairman.*) So as to make it perfectly clear to anybody who has anything to do with it, that this is a symptom of the disease and he is still suffering from the disease.

(*Judge Ruegg.*) Or it may be the preliminary.

(*Chairman.*) Yes, it may be the preliminary.

(*Witness.*) I do not know whether you were in the room, sir, when I was emphasising the importance of the fact that it may be the most important preliminary

objective symptom, and it is in the preliminary stages one would expect to get greater incapacity for work than in the final stages.

1960. Of course, when it is a preliminary sign, there is no doubt then he is suffering from nystagmus?—Yes; but I think one can say the oscillation of the eyeball is never the first symptom of the disease.

1961. Have not you found ordinary persons who are not engaged in industrial occupations suffering from something very much like this?—No.

1962. There are persons who blink very rapidly?—Yes; but that may be due to an error of refraction or some of the other conditions to which I have already referred. I do not know whether I have made it sufficiently clear that I only regard clonic spasm of the eyelids as one symptom of this general disease, and that a man may be incapacitated from this general disease even when there is no oscillation of the eyeball, and when the main prominent symptom is the clonic spasm of the eyelid.

1963. (*Sir Clifford Allbutt.*) May I put it conversely? Can a man suffer from these subjective symptoms, and, if you please, nystagmus, without clonic spasm of the eyelids?—Certainly.

1964. Then I leave out nystagmus and say, can he suffer from the subjective symptoms without either nystagmus or clonic spasm of the eyelids?—Yes, most decidedly.

1965. That is the most difficult position; it is purely subjective?—That is so.

1966. Can you suggest any means of diagnosis except by the skilled observer?—I think that has to be left to the skilled observer and not decide one's diagnosis on one examination. I think that is a very important point in considering this disease; and one really wants to make frequent examinations.

1967. Would not you draw a distinction between the quasi-voluntary blinking and blepharospasm which is entirely beyond the control of the patient, and which is a very much finer vibration?—That is so.

1968. But they are rather different in nature, are they not?—Yes.

1969. Because the blepharospasm vibration which is scarcely perceptible may be a sign of cerebral deterioration and may be a serious symptom?—That is so.

1970. Therefore I rather hesitate at your sentence that clonic spasm of the eyelid or blepharospasm is merely blinking; I think the blinking is one kind and the blepharospasm is another. You see my point?—Yes, I do. As a matter of fact, I saw it myself on reconsideration.

1971. Then, on the other side, you make a very interesting remark, that in the majority of cases an error of refraction will be found. I forget what Mr. Snell said about that. You do not go beyond the majority?—No.

1972. Do you know, as a matter of fact, that there are cases, and not a few, of nystagmus in which there is no error of refraction?—That is so.

1973. Therefore an error of refraction is a contributory cause only?—That is so.

1974. Then of course we could not call it eye strain in this sense?—No.

1975. Have spectacles ever been systematically used in these cases?—Yes, I think so.

1976. With any success?—Yes; but then as a rule one recommends that the man comes out of the pit at the same time. It is one of the most important points in the treatment of these cases, the correction of the error of refraction.

1977. That is what you say?—That is so.

1978. You would not go so far as to say that coming out of the pit for a month and using spectacles, his eyes would recover. The man would want about six weeks to get thoroughly used to the glasses?—Yes.

1979. But supposing that, could he go safely back into the mine?—Not in so short a time.

1980. Would you keep him out permanently?—I would keep him out six months to see how he got on.

1981. But no care in the use of spectacles would enable him to go back in a comparatively short time?—I do not think so.

1982. You mention, as we all should, ear trouble. Do you think any of these symptoms are aural in their origin?—I am not a pathologist with regard to this point, and I can only say what I have read, and I accept what I have read.

1983. One of our M.D.'s, Dr. Abraham, both in his M.B. and M.D. theses brought forward a number of experiments such as putting people on rotating stools and twisting them round with great rapidity and so bringing on all these symptoms of nystagmus. I do not know about the blinking, but vomiting, and so on, which are attributable to violent disturbance of the circulatory canals?—Yes.

1984. It appears to me that the group of symptoms is identical; they can be artificially induced by spinning round?—That is so. The oscillation of the eyeballs can also be induced in the same way, I understand.

1985-6. Yes, that was included in the experiments. In some they are more readily induced than in others?—There is always a predisposition. The personal factor comes into all these industrial diseases.

1987. (*Judge Ruegg.*) Have you ever found it arising from such a disease as sclerosis and simply sclerosis?—What kind?

1988. Disseminated?—Yes, that is so.

1989. That is apparently what they thought in Scotland?—Yes; but one would eliminate the other symptoms.

1990. (*Dr. Legge.*) But supposing a case of disseminated sclerosis setting up nystagmus in a miner has led to a reading by the court that that is included under the present definition, do you not think that a sufficient reason for reconsidering the terminology?—I do, most certainly.

1991. And you have yourself said that nystagmus is a symptom?—That is so.

1992. Do not you think it might be a possible defence in a case that the Secretary of State only has power to add diseases, and that this is merely a symptom and not a disease?—Yes, I certainly do.

1993. Is miners' nystagmus a definite disease?—It is simply a term which covers a group of symptoms which we regard as a disease.

1994. This clonic spasm you speak of is another symptom really of the same importance in your view as the nystagmus, though not so frequent?—That is so.

1995. And there may be other symptoms?—There may be, certainly.

1996. And therefore merely to say "nystagmus, including clonic spasm," would not remove the possibility of some of these other difficulties arising?—Unless it is generally known that whatever words are put in the first column are intended to cover the whole of the disease.

1997. Would this meet the case without ambiguity: "miners' nystagmus," and then define it as "a disease "the principal symptom of which is oscillation of the "eyeball"?—"The disease known as miners' "nystagmus, the principal symptom of which is "oscillation of the eyeball."

1998. Yes?—I think that would meet the case.

(*Sir Clifford Allbutt.*) "Principal but not invariable."

1999. (*Dr. Legge.*) What I mean is, clonic spasm may really be a habit?—That is so.

2000. And that it is not desirable to lay greater stress on what may be a mere habit than is necessary?—I quite see. You do not wish to emphasise the fact that clonic spasm of the eyelid is of such importance as to justify a man making a claim for compensation for that symptom alone.

2001. I am anxious to cover the whole group of symptoms which are included under miners' nystagmus?—I am anxious to do exactly the same thing.

2002. You were saying there had been many of these cases. So far as I know there have been two cases brought to the knowledge of the Secretary of State?—I was told by a miners' agent that in his district, which is a large one, where 25,000 miners are employed, there were many who had failed to get compensation, and they realised they could not get it.

2003. (*Chairman.*) Why had they failed?—Because they had not the rolling of the eyeball and the certifying factory surgeon refused the certificate of disablement.

2004–6. Although they have the principal, though not invariable, symptoms of the disease?—No, they had not nystagmus. They had clonic spasm with other subjective symptoms which caused incapacity for work, but without the symptom known as nystagmus.

(*Judge Ruegg.*) Does nystagmus in medical terminology mean anything different from miners' nystagmus, or is it always miners?

(*Dr. Legge.*) No, it is not always miners'.

(*Witness.*) You see we have to have two different ideas with regard to nystagmus, one being a symptom of several diseases such as disseminated sclerosis, Friedrich's ataxy, and other well-known diseases, and also it is the most prominent symptom of this industrial disease that we call "miners' nystagmus."

2007. (*Judge Ruegg.*) You say that this difficulty arises from, I will not use the word ignorance, but not a full comprehension of all the symptoms of this thing called nystagmus?—That is so.

2008. Assuming we came to the conclusion that this clonic spasm was only a symptom of nystagmus and that appeared in the report of this Committee, which would of course be seen by all certifying surgeons, would not that meet the difficulty? Attention is pointedly called to the fact that nystagmus is not necessarily confined to this symptom of rolling eyeballs?—That is so; but it does not clear up the confusion that does exist through the unfortunate nomenclature of this disease. Now that it is pointed out to me, I am rather surprised, if I may say so, that nystagmus itself is called a disease. It is not a disease; it is only a symptom. If one looks in any standard work that deals with this subject, one does not find it under the head of nystagmus, but under the head of "miners' nystagmus."

2009 (*Chairman.*) What is nystagmus a symptom of?—It may be a symptom of this disease which we call "miners' nystagmus" or of other diseases of the brain and spinal cord.

2010. According to you, nystagmus is not an apt word to indicate the disease?—That is so.

(*Sir Clifford Allbutt.*) It is too narrow or too wide.

(*Judge Ruegg.*) One has tried many cases, and one has never found any difficulty with the disease being called nystagmus generally; but I agree these particular difficulties you have named have not come before me.

(*Sir Clifford Allbutt.*) I cannot put it into less than that, I am sorry to say; but here is my suggestion. "Miners' nystagmus; the name of a group of symptoms "most frequent among miners, of which oscillation of "the eyeballs is a common but not invariable feature."

(*Judge Ruegg.*) I would suggest "miners'" be struck out. Then there would be no objection. "Nystagmus, the name of a group of symptoms "most frequent among miners, of which oscillation "of the eyeballs is a common but not invariable "feature," and against that "mining."

2011. (*Chairman.*) Miners' nystagmus can never arise from any occupation except mining?—I do not go so far as to say that, because Sir Clifford Allbutt has mentioned cases of platepayers who were observed to have this disease, which was spoken to by Mr. Snell.

(Further discussion then ensued.)

2012. (*Chairman.*) The next thing is writers' cramp. Will you tell us your view shortly?—Writers' cramp is a condition which is recognised as an occupational disease by all the leading authorities on the subject, including Poore, Wilfred Harris, Head, Oliver, Osler, and Judson Bury. The disease is undoubtedly due to the continuous and excessive use of the muscles in performing the movements necessary for writing and typewriting, and is found among newspaper reporters, writing clerks, and typewriters.

2013. Have you seen a good many of these cases?—I have seen a considerable number of cases during the last ten years, and seven cases during the year 1912. As far as my experience goes, the disease is most frequently found among clerks employed in offices where only one clerk is engaged. Under such circumstances excessive work and continued overtime are to be expected, and as a consequence writers' cramp is produced.

2014. How does the disease come on?—It is nearly always gradual, and the principal symptoms which are generally associated with this condition are (1) irregular and involuntary spasm of the hand, (2) pain in the hand and arm, (3) paresis or paralysis, (4) tremors, and (5) inco-ordination of movement. As a rule spasm is the first objective symptom which the patient experiences, and it affects the thumb and forefinger during the act of writing. It may be preceded by aching and pain, and the hand becomes easily fatigued. At first the spasm may only exist during the act of writing, but in well-established cases it may occur during any movement of the affected hand and arm.

2015. Are there any other symptoms?—Pains of a neuralgic character may be present, and they may not only be confined to the hand but shoot up the arm. Occasionally there is a tenderness over the nerve trunks and their branches. There may be aching of the joints of the fingers as well as in the wrist joint, and muscular tremors are sometimes seen, more especially in the forefinger. Numbness of the fingers is an occasional symptom. Weakness and debility of the muscles of the hand are invariably felt, although the muscular power of the hand may be undiminished. In advanced cases there may be some slight paralysis, but this is rare. The electrical reactions are normal in every uncomplicated case of writers' cramp, but according to Poore there may be a diminution in reaction to the faradic current with increased excitability to the galvanic current in the small muscles of the hand. The above-mentioned symptoms lead to the man being unable to write legibly, and the writing may be so bad that even he himself cannot make out what it means. It is said that shorthand writers are not affected, but I have seen a case where the character of the shorthand notes was so much altered that no one could interpret them, not even the writer himself.

2016. What do you say as to the causation?—There are several elements in the causation of this disease. There is no doubt about the disease being occupational in nature. In addition to the authorities already quoted, I may remind the Committee that when Dr. Hale White gave evidence on telegraphists' cramp in June 1908, he admitted that there was no distinction between writers' cramp and telegraphists' cramp, and that both conditions were produced by the occupation. Just as in all occupational diseases, one factor is personal predisposition. Men are more commonly affected than women, but Dr. Head, who has written the last article in Sir Clifford Allbutt's "System of Medicine," explains this by saying that "excessive writing is more liable to "form part of the daily work of a man than of a "woman." Then we have as predisposing causes; heredity, a nervous temperament, anxiety, business worry, excessive use of alcohol and tobacco. An injury to the hand, such as a fractured carpal bone or a sprain of the hand, may also predispose to this complaint. In the majority of cases, a faulty and cramped method of writing has been employed. The exciting cause is always excessive writing.

2017. Now as to the diagnosis?—The symptoms which characterise writers' cramp are all common to many conditions, yet after a careful examination the diagnosis should not be difficult. Shaky and jerky writing may be found associated with many disorders, both physical and mental. Patients suffering from localised diseases or injuries in the hand or arm, such as neuritis, teno-synovitis or osteoarthritis may write illegibly and have many of the symptoms of writers' cramp, and subjects of paralysis, neurasthenia, and degenerative changes in the brain and spinal cord may be affected in the same way, but by carefully noting the objective symptoms in these conditions we shall be able to arrive at a certain diagnosis of writers' cramp by a process of exclusion, if at the same time we bear in mind the characteristic symptoms of this disease.

2018. Could you put that a little clearer in lay language?—I wish to say this, that while each symptom, taken separately, of writers' cramp may be common to other diseases, when, one looks at the disease as a whole

and bears in mind these other complaints where the symptoms may be common, one has no difficulty in coming to an accurate diagnosis of writers' cramp.

2019. By a process of elimination, as it were. It cannot be the other things it is common to, therefore it must be writers' cramp?—Exactly.

2020. Then as to the treatment?—In all cases of writers' cramp rest for the affected hand and abstinence from writing are essential. Without rest all other treatment is without avail. When the symptoms are of short duration three months' complete rest may be necessary before the trouble is cured, and in advanced cases one or two years may elapse before the symptoms have disappeared.

2021. (*Judge Ruegg.*) In some cases do they never disappear?—That is so.

2022. (*Dr. Legge.*) In many cases?—I am not prepared to say. Osler mentions a case of a surgeon who suffered from the disease for over 20 years and although he had tried all kinds of treatment there was no improvement in his condition.

2023. (*Judge Ruegg.*) I know a case of a barrister who has learnt to write with his left hand, and he writes now more or less satisfactorily with his left hand?—Writing with the left hand or the use of a typewriter may enable the patient to keep on at his employment, but after a time in those specially predisposed to the complaint there may be a recurrence. In the former case the disease would appear, of course, in the left hand. I have had a patient who developed the disease in the left hand in this way after having recovered from it in the right hand, and I had another patient who had a recurrence in the right hand after using a typewriter for 12 months. Subjects of writers' cramp who make no progress under continued treatment should be advised to change their occupation. With regard to the course of the disease, it is usually chronic. While the trouble generally begins in an insidious way, the disease may start comparatively suddenly, especially after the shock of a sudden family or business worry. If the complaint be taken in time and proper treatment commenced early there is a good chance of recovery, but often there is a predisposition to recurrence on return to work. I may say that Dr. Head, under the heading of the Prognosis of this disease, says, if in a case of writers' cramp, for example, (*a*) the writer is gravely affected, (*b*) there has been overwork with the pen, (*c*) there is no evidence of neuritis, and (*d*) other occupations not demanding fine movements of the writing muscles can be carried out without difficulty by the affected limb, a very grave prognosis must be given with regard to the recovery and maintenance of the normal power of penmanship.

2024. (*Chairman.*) Next as to the incapacity?—With regard to incapacity for work, I have already indicated that writers' cramp may cause complete incapacity for work, and the disablement may extend over many months. Age is an important factor in the prognosis, elderly people not recovering so soon and after recovery their writing may be so bad that they are not engaged by their former employers, and they are unable to find work elsewhere. The period of incapacity may be prolonged by excessive indulgence in alcohol or tobacco.

2025. (*Sir Clifford Allbutt.*) Is not many months rather a sanguine period to give? I should have thought many months was a comparatively short time?—I do not think so in many cases. I did not want to put it too strongly. I agree in certain cases it is a matter of years.

2026. If the case came into court, and the medical man gave a prognosis of many months, it might be too short?—That is so. The prognosis in many of these cases is very grave, and the incapacity for work may last for many years. Then I would like to say that writers' cramp and typewriters' cramp are similar in every way as regards symptoms, treatment, and incapacity for work to telegraphists' cramp, which is already included in the schedule to the Act, and miners' nystagmus, which is also scheduled, is an allied condition. There is no doubt but what, in the case of writers' cramp and typewriters' cramp, that the disease is so specific to the employment that its cause can be attributed to this source in individual cases. As regards writers' cramp, we have difficulty in nomenclature with regard to this disease, as writers' cramp, typewriters' cramp, and telegraphists' cramp are all the same disease. I venture to suggest that they be included under one term, which will cover all these cases. Sir Clifford Allbutt has suggested the idea of calling these diseases by the name of occupational palsy of the hand. This expression is sufficiently wide and definite to cover all the cases. It may be said with truth that a clerk or typewriter may bring on this disablement by working on his own account after he has finished his ordinary office hours, but this point would be considered when he applied for weekly compensation, should this disease be added to the schedule.

2027. What about pianists' cramp and violinists' cramp?—Those are similar conditions.

2028. (*Chairman.*) To the layman, palsy sounds a terrible name. I am only speaking for myself.

(*Judge Ruegg.*) My experience is that the more general the definition, the more difficulty it gives rise to.

2029. (*Sir Clifford Allbutt.*) "Paralysis" is a technical term; "palsy" hardly is, *e.g.* "shaking palsy." There is one point I might touch upon. You have seen it in pianists and violinists, and so on, or perhaps they do not come quite so much under your ken?—I have seen one case in a pianist.

2030. Is not the recovery more hopeful in a rhythmic occupation than in an arhythmic one. Writing is an arhythmic motion, and pianists recover better than writers, do they not?—Yes.

2031. I do not know if that has found its way to the books, but it is so?—Yes.

2032. (*Judge Ruegg.*) I suppose it would be very difficult to get figures to show to what extent this disease exists?—It would be a very difficult matter.

2033. Do you think it exists to a considerable extent amongst the employees of newspapers?—I do.

2034. More than in the case of commercial clerks?—Yes; because in the case of commercial clerks the hours are shorter.

2035. It may impose a very serious responsibility upon the employer who may have to compensate a clerk for life?—I must say I have seen several cases of this disease amongst clerks, where only one clerk has been employed, and where the hours have extended from 8 o'clock in the morning to 9.30 at night, and under those conditions the employer should be made liable.

2036. If you take clerks, it is a very overstocked profession, and a clerk is not much use for anything else. He is not in such a good position for getting another class of work even as an ordinary workman is?—That may be so.

2037. Take the case of a clerk who is of a literary turn of mind, and does a great deal of writing himself and a good deal of writing in the office. It would be very difficult to say how far his incapacity was due to his occupation, would it not?—I mention that as a difficulty in the matter, but that would be known. I take it his hours would be regular office hours. For instance, in the case of a solicitor's clerk, the hours would probably extend from 9.30 in the morning until 5.30 in the evening, and he has an hour in the middle of the day. He is not writing all the time. He is taking instructions: it may be answering the telephone and doing other kinds of work. But if he got writers' cramp, I think his employer would be perfectly justified in inquiring whether he was doing work outside the office hours.

2038. Do you think it is a disease which could be in any way simulated in the symptoms?—I do not think so.

2039. (*Chairman.*) That is a very important point?—I do not think there would be any difficulty in that matter.

2040. Do any of your cases happen to come from places like typewriting offices in London, where they do nothing but operate the keys?—I have no idea as to the frequency.

2041. (*Judge Ruegg.*) I do not know whether it is from your own knowledge or from the books, but you say it is more often found in men than in women. I should say we are to a large extent changing that with the lady typists?—I have seen seven cases in the last 12 months, and two of the cases were in girls.

2042. (*Chairman.*) What were those girls doing? Each of them was a clerk and typist.

2043. What kind of office?—They were clerks in offices where only one was employed.

2044. (*Dr. Legge.*) Will you give the ages of the seven patients you had last year?—The ages were approximately 39, 28, 44, 27, 32, and 23——

2045. (*Judge Ruegg.*) Was that a youth or a girl?—A girl. The other was about 32 or 33. That was a lady. The oldest was 44, a schoolmaster.

2046. In any of those cases that came under your personal observation, do you think the disability would be permanent?—In one case.

2047. It would be permanent?—I am afraid it might be.

2048. What age person was that?—About 39.

2049. (*Chairman.*) In any of these cases did you make inquiries as to whether the hours were long?—Yes, they were.

2050. I suppose if a man is writing when he is in a state of nerves, that makes it more likely that he will get it?—I think it must extend over a prolonged period of time.

2051. (*Dr. Legge.*) I should like to know what distinction you draw between such an occupational palsy as this, and a nervous breakdown in a clerk?—Nervous breakdown would affect the whole of his body, and this only affects his hand.

2052. Are not persons with writers' cramp in an unhealthy condition?—Yes. Very often one finds they may be in a highly nervous condition; but I think that rather concerns them because of their inability to do their work.

2053. Are you aware that since telegraphists' cramp was scheduled, the Post Office have made very elaborate inquiry into the causes?—Yes, I have heard so.

2054. Do you know the report of the Departmental Committee on telegraphists' cramp?—No. I have read the report of Dr. Thomson and Dr. Sinclair in the "Lancet."

2055. The medical opinion, after examining a number of cases, was that the disease was really due to a breakdown in the central controlling mechanism of the brain resulting in spasm and inco-ordination of the muscles which perform the specific act of telegraphing?—That is so.

2056. It is a brain condition. It hardly seems to comply with the three conditions the last Committee set up?—I think this. I see no difference, and I think it is generally admitted there is no difference, between telegraphists' cramp and writers' cramp, and if it has been thought proper to put one in the schedule, I see no reason why the other should not go in.

2057. Do the practical reasons in the case of telegraphists' cramp, that the Post Office have a definite staff of supervision and medical control, make any difference in your mind?—I do not think so at all, because that is simply a matter of organisation in the Post Office. But in any given office—we will take, for example, a newspaper office in London, or rather a provincial newspaper which has an office in London where they have a staff of telegraphists at one end of their private wire and at the other end they have their own shorthand clerks or longhand clerks taking down the messages, when they are both liable to the same disease, it seems very peculiar that one set of people at one end should be able to claim compensation, but at the other end of the wire they should be unable to claim compensation.

2058. (*Sir Clifford Allbutt.*) I think the point was really one of diagnosis, and some of the witnesses said they did not see how this movement, which was a very simple movement, could produce the alleged disease. That, I think, was questionable, but if proved then it would come in the same category?—Exactly.

2059. But the doubt was the adequacy of the cause. The movements are not so minute and various as in writing. It does occur in typists, does it?—Yes.

2060. Although the action is very simple?—Yes.

2061. (*Judge Ruegg.*) Do you consider the case that so much of this writing is done by piecework; that the excessive writing is very often due to the wish of the writer to work long hours and increase his pay?—That may be so; but that is a point that would be considered if any definite case were brought to the courts.

2062. It is the neurotic temperament which is at the back of writers' cramp, and, if you like, telegraphists' cramp. I do not say because the case of telegraphists' cramp has been included it is necessary for us also to include an analogous disease?—When it is admitted it is an occupational disease which causes incapacity for work, and when one has an analogous disease like telegraphists' cramp included in the schedule, I see every reason why writers' cramp should be included.

2063. (*Dr. Legge.*) You do not think the Sickness Insurance Act is going to meet the difficulties in the case of writers' cramp?—No, I do not think so, for this reason: that under the Workmen's Compensation Act, a man who is suffering from this disease and is incapacitated by it might obtain 1*l.* a week compensation, and further than that, compensation can go on for an indefinite period so long as he is incapacitated, and he is able to bargain with his employer to get a lump sum if he is not able to follow his original employment, so that he would be able to get in some other employment.

2064. You have said the prognosis is bad, and therefore it is undesirable to do anything that is going to prevent the sufferer seeking some other employment, definitely giving up his previous work?—In certain cases that is so.

2065. And the mere fact of scheduling it will tend rather to prevent them taking up some fresh occupation?—I am not going to say that. I would not like to say. One might say the same of any occupational disease. One might say the same of any case of lead poisoning, "I will go on having my compensation "money and never return to work in lead again."

2066. But here you have a disease going on practically for the rest of the person's life, and if they contract it, as one of your cases did, at the age of 23, and you are not going to encourage him to take up some other employment——?—I do not say that at all; but I do not know that I am very much concerned with that point.

2067. (*Judge Ruegg.*) That is a point for the Committee?—Yes, I think that is a point for the Committee rather than for me.

2068. (*Chairman.*) You neither encourage nor discourage?—No. I thought it was a proper disease.

2069. (*Judge Ruegg.*) A very large new class would be included in the Act?—That is so.

2070. Very much larger than the telegraphists?—Yes, certainly.

2071. (*Dr. Legge.*) How do you think a certifying surgeon is to certify that a person has writers' cramp?—In the same way a man's own doctor would say. He has the same methods of diagnosis as other medical men, and I see no reason why there should be any difficulty in the matter. As soon as the certificate of disablement is given, if the employer thought it was due to other causes he could ask for a reference to a medical referee or he could bring the matter before a judge.

(*Judge Ruegg.*) In some cases.

(Adjourned for a short time).

2072. (*Dr. Legge.*) I was on the point as to how a certifying surgeon could tell whether a person was suffering from writers' cramp. Do you think it would be possible for him to require, or for us to suggest if it were scheduled, that the patient should have with him certificates from his medical practitioner extending over a period of three months that he had been suffering in this way?—For three months?

2073. Yes, I suggest a period of three months?—I do not quite see what the object of that would be. In a definite case of writers' cramp the patient himself can give the history of the disease just as he can in a case of lead poisoning, without taking a medical certificate with him.

2074. But the certifying surgeon in the case of lead poisoning has definitely to find evidence of lead poisoning in the man. Here he has only the statement of the man that he is suffering from writers' cramp?—I think the certifying surgeon can find out whether the man is suffering from the disease or not, just the same as any other doctor. I have had cases of writers' cramp that have come to me where on the first occasion I have had no doubt what the disease has been.

2075. But is it not possible that several of the cases of what are spoken of as writers' cramp are merely due to fatigue, and that rest for a week or a month will remove the condition?—In the case of fatigue I quite admit that the writing may become illegible; but I should not regard that as a pure case of writers' cramp.

2076. But how is the certifying surgeon to tell whether it is fatigue or writers' cramp, unless the man has some certificates from the medical practitioner?—I think the man's statement itself will be sufficient. If he takes specimens of his writing at different times, that will be quite sufficient—if he takes some of his old letters, say, some letters he wrote the previous week; and I think probably with regard to clerks who are suffering from writers' cramp, the complaint comes from the office, from the employer. As a matter of fact, in some of the note-books of these people who suffer from writers' cramp one can see the writing is so disgraceful that the employer must consider whether he must or must not discharge the man.

2077. And if this condition is the result of a breakdown in the central controlling mechanism of the brain, how can you limit it to writers' cramp only and not also include other causes of breakdown?—With regard to that, I would say this: the incapacity for work in this disease simple depends upon the fact that the man is writing so badly and is unable to write sufficiently fast to either satisfy his employer or please himself.

2078. (*Chairman.*) Are there objective symptoms at all, like anything you could see on the fingers without any contraction?—No, there are not. Sometimes you get tremors.

2079. Which you have told us of?—Yes. There is nothing beyond what I have told you. But I regard as the most important symptom, the writing which the man shows. That is really a symptom, and it is an objective symptom in this disease.

2080. That is a sort of symptom that might be simulated, might it not?—I can indicate to the Committee how malingering could be carried out, and also how it could be tested.

2081. (*Judge Ruegg.*) Take an old clerk or book-keeper of 65 years of age, whose working life is nearly over. He says, "I cannot keep these ledgers any "longer; my hand is cramped, and I really cannot "write like I used to, and I will claim compensation"?—That is a point I have considered; but there are ways of testing whether he is malingering or not, that would be conclusive, I think.

2082. (*Chairman.*) You think so?—Yes, I do.

2083. Could you indicate anything to the Committee on this point?—Yes. (*The witness gave various illustrations.*)

2084. Malingering does not present, in your opinion, any difficulties really?—It does not.

2085. (*Judge Ruegg.*) It has been said of this disease and of all these progressive diseases that clerks change their situations very often, and this may have been the result of over-exertion in writing or in continuous or incessant writing in two or three employments. It may have been in the employment before the one in which it manifested itself. He may have been overworked, so to speak, for one year and the next year he goes into a more leisurely employment but writer's cramp develops. What do you say about that? In your view should the compensation necessarily, and the whole of it, come from the last employer?—No. I should deal with the case in the same way as lead poisoning cases are dealt with at the present time. At the present time a man may work under several employers, and I think it could be dealt with in the same way as it is dealt with in those cases.

2086. I, as the employer, should have the option of bringing in any other employer who had employed him in the same class of work for the last 12 months?—I should go beyond that.

2087. (*Dr. Legge.*) That is the limit of the Act?—Of course, if that is the limit of the Act, one cannot go beyond that.

(*Dr. Legge.*) I suppose it would be open to the Committee to suggest a modification?—(*Witness.*) I think in this disease the time should go over a much longer period than 12 months.

2088. (*Chairman.*) Will you tell us why?—For this reason. Suppose a man has changed his employer several times, say, once every five years, and that during one time he was in an office where there was only one clerk and he is working overtime all the time, and during that period he acquired this disease.

2089. I can follow. But assuming he did not; is that not the difficulty? Supposing a man were at one office for five years working overtime, and had not been to see the doctor at all, and then he goes to another employment where he is working less time, and at the end of three years he comes to you, say, and you say at once, "This is writer's cramp," it may have developed entirely within the three years?—That is so. Unless there were symptoms previously, I do not see how it could go back beyond the 12 months.

(*Chairman.*) I agree.

(*Judge Ruegg.*) There is very great difficulty in taking it back beyond 12 months. It will be difficult sometimes to find; but if you were to keep this liability hanging over the employer he never knows when he is free. He is never free to relinquish insurance. He must go on insuring for an indefinite time.

2090. (*Chairman.*) Quite; that is the difficulty?—Yes. I thought the judge was referring to cases where it was a recurrence rather than a case starting *de novo*.

2091. Is it a case where you can put your hand with anything like precision upon the exact time when the incapacity arose? It is so gradual. It is just like the case we have been dealing with before, Dupuytren's contraction?—This is not such an insidious disease. I do not see any difficulty in that way. When one considers the diseases that are already on the schedule, the same difficult question arises in any given case; in cases of lead poisoning, for instance. But I do not anticipate any difficulty in deciding that point if the disease is included in the schedule.

2092. (*Chairman.*) To use an analogous phrase, is there anything corresponding to the period of incubation; you know what I mean?—Exactly. Do you mean comparing it with Dupuytren's contraction?

2093. Could you say when a man came about that that it had not been going on for more than a year, two years, or three years, like any other thing—a period of incubation?—I think with regard to this disease the question depends on the degree of incapacity for work; and when the man claims compensation, I take it at that period he or his employer finds he is incapacitated for work, so that the time previous to the time he makes his application I do not think one need consider.

2094. You say the employer would find out if the man were incapacitated, at any rate within 12 months?—That is so.

2095. (*Judge Ruegg.*) You know the Act very well, apart from the medical aspect of it, and if you remember, the date of incapacity is regarded in the Act as the happening of the accident, that is, the date on which a man is supposed for the purposes of the Act to have met with an accident—the date when the incapacity manifests itself. If the employer can prove that the disease was contracted in another employment, he may bring the other employer in and practically escape liability. Would he be able to say, "I cannot work any longer. "Incapacity has resulted from this disease." Then would the employer be able to say, "Yes; but I will "bring in another employer and prove the man con-

"tracted the disease in his employment." In other words, can it fairly be called a disease which is contracted?—I think it can. I should say so. I think if the other employer were to resist such a claim, the way he would do it is this. In the first place, he would show the regularity or irregularity of the man's work, and he would present his books to the court to show whether the writing was so bad as to indicate whether the man was suffering from writer's cramp for that time or over a good period of time. If the work had been regular and the man's writing had not changed during that time, then I think the first employer could say that the disease was not contracted while the man was in his employ.

2096. (*Chairman.*) I assume if you looked at the man's career in writing, on looking back you could see whether the man wrote comparatively well at one time and then at a certain point got worse and worse and worse?—Yes, that is so.

2097. (*Judge Ruegg.*) This was the section I wanted to call your attention to. You would call this a disease, would you not?—Exactly.

2098. If the employer who is sued alleges that the disease was in fact contracted while he was in the employment of a previous employer and proves that the other one who has to pay compensation irrespective of date, would that apply in this case?—Yes, I think it would, and I think one would have to judge by the handwriting of the workman.

2098*a*. May I point out that the peculiarity in regard to this disease is, that it may be contracted in the sense that it may have commenced in the service of another employer, but the incapacity happens—the accident, as it is called in the Act—in the service of the second employer. According to the Act as it stands at present, by simply proving that it was contracted in the service of another employment, he escapes liability, but it really may have been the work which he did in his employment which has led to the incapacity?—It is very difficult.

2099. (*Dr. Legge.*) Then, supposing family bereavement had started it, which you said might be the case, that family bereavement could hardly be the point at which the disease was contracted?—No. It is perfectly true that a family bereavement or sudden grief might be the point when incapacity commences in a case of writers' cramp. But I may say the same thing happens in the case of miner's nystagmus; exactly the same condition holds.

2100. Then the employer would be asked to pay compensation for what was really the result of a family bereavement or business worry?—No, I do not think so at all; because the man would have writer's cramp to start with, and he would have writer's cramp at that time. I am not going to say that a family bereavement produces writer's cramp. All it does is to aggravate it to such an extent as to diminish the man's earning capacity at that given time. I may say there are various degrees of this disease. There may be complete incapacity for work, or there may be partial incapacity.

2101. (*Sir Clifford Allbutt.*) Still, if the spasm exists at all it makes the writing very uncertain from the beginning?—That is so.

2102. (*Chairman.*) A man may suddenly make a jab and spoil his entry?—That is so.

(*Sir Clifford Allbutt.*) The diagnosis is not only by looking at the writing, but by seeing how the man writes.

(*Chairman.*) Whether he has got it or not?

(*Sir Clifford Allbutt.*) Yes. That is with reference to the question you asked.

(*Chairman.*) Thank you.

The witness withdrew.

Dr. Otto Grünbaum called, examined by the Chairman.

2103. You are a Master of Arts, Doctor of Medicine of Cambridge, Doctor of Science of London, and a Fellow of the Royal College of Physicians?—Yes.

2104. You are Physician to the London Hospital and also Lecturer on Elementary Clinical Medicine, and a Pathologist?—Yes.

2105. You are going to give us some information on these cramp diseases on behalf of the North Staffordshire Branch of the National Union of Journalists, are you not?—Yes.

2106. Will you tell us first of all generally, before we come to the details, how many different diseases there are in this sort of general group of cramp?—It is very difficult to sum them.

2107. You begin, as it were, with writers' cramp, on which we are specially asked to give an opinion?—Yes.

2108. But beyond writers' cramp, of course there are other diseases very analogous and very similar to writers' cramp?—Whenever any series of muscles are used for a long time and make fine movements, they are always subject to some disease, provided the movements are not purely automatic, such as in walking. As far as I know, walking does not produce any definite disease—cramps—but practically any finer movements, especially of the smaller muscles, may lead to a disease of cramp nature. That, of course, results in there being a large number. I have put down a few: telegraphists' cramp, typewriters' cramp, violinists' wrist, pianists' cramp, and in addition to those of course there are some cramps of the feet in the people who dance.

2109. (*Judge Ruegg.*) I see you put down tennis elbow?—Yes, and hammerman's palsy.

2110. What is hammerman's palsy?—It is an alteration of the muscles of the shoulder owing to which the man who is accustomed to forge is unable to direct the stroke of the hammer.

2111. (*Chairman.*) It comes on the wrong place?—He can very often lift it, but his power of direction is greatly altered.

2112. Is there any general name, either technical or otherwise, for this group of diseases that come from general causations, or are we to take them clearly?—They are usually included under craft palsies, occupation neurosis. Of course, the latter term is a very unsatisfactory one.

2113. First of all, shall we discuss the group first, or the writers' cramp? Do you think they arise from an analagous cause?—I believe so.

2114. Is there any particular age at which people are specially susceptible to the diseases in this group?—That is very difficult to reply to. We have statistics on the matter; but then they deal with the time during which the individual has applied himself to the work. Supposing anybody took to writing late in life, writing continuously, I think it would be just as likely for them to develop writers' cramp between the ages of 60 and 70 as between the ages of 20 and 40.

2115. Of course, the earlier he began the more he has done?—Yes.

2116. (*Judge Ruegg.*) Would you mind clearing it up for me. You say: "Statistics based upon the "observations of Berger, Poore, Remak, Bernhardt, "and Jelliffe show that the disease ——." Are you referring to writers' cramp only?—Yes, only.

2117. (*Chairman.*) From now on you limit your evidence to writers' cramp?—Yes.

2118. You have taken these four authorities on the subject, which are recognised authorities?—Yes.

2119. Are those the joint figures, or are they made up from comparing the figures?—They are the joint figures: the total number of cases that have been recorded by those observers.

2120. These figures that you give us have nothing to do with the percentage; for instance the first, there are simply eight cases in all?—Yes.

2121. There are not very many cases in all; only a little over 200?—Yes.

2122. Then with regard to men and women?—It is very much commoner among men. Bernhardt refers

in his series of 79 cases to one woman who was a shorthand writer. The rest are male.

2123. (*Judge Ruegg.*) It is altering so rapidly now; women are doing so much more clerical work than they used to do?—Yes.

2124. How old are these authorities?—I think Bernhardt wrote his paper in 1908.

2125. (*Chairman.*) What country was he writing about?—He wrote in Germany. He was a Professor at Berlin.

2126. (*Judge Ruegg.*) How long ago are the others?—Jelliffe is quite recent; he is at Columbia University; I think he collected 49 cases.

2127. (*Chairman.*) Do you make any point of the hereditary nature of the disease?—No. I think it is very rare to come across any individual as regards whom in the tracing back of the family history it is quite free from nervous taint or taint of nervous disease.

2128. We are dealing with authorities up to this point, are we not?—Yes.

2129. We have not come to your personal experience. I should like you to tell us when you come to your personal experience—I am not sure that it does not come now—as to what you attribute it to. Does it depend on the special characteristics of the writing of the man?—No. I think practically everything stated here is the accepted view of the various authors.

2130. This is the orthodox medical view up to now?—I believe so.

2131. (*Chairman.*) Do you agree with the various ways of moving the fingers: "(1) Fine movement of "the fingers, (2) movement of the wrist, and (3) "movement of the whole arm (the actual movement "of the pen being caused by the action of the muscles "of the shoulder)." The finer the movements, the more precise the handwriting, the more danger of writers' cramp?—Yes, the finer the movements, if they are confined to the smaller muscles of the hand, the greater is the risk.

2132. (*Sir Clifford Allbutt.*) Finer and more complex, I suppose?—Yes.

2133. (*Chairman.*) Then, if you use the fingers alone without using the wrist or shoulder, writers' cramp is more likely to occur?—That is so.

2134. With regard to overwork, that is long continued work, what effect has that?—I believe that produces an effect in two ways; first, by tiring the muscles, producing fatigue of the muscles; and secondly, by diminishing the general resistance to a disease. The general health is impaired.

2135. You tell us here that writers' cramp usually covers two sets of symptoms, or two diseases perhaps, or the same disease. Will you just explain that?—That I must own to a large extent is a view of my own rather than a generally accepted one. It is based upon the fact that in a certain number of cases there is a physical alteration. That is to say, testing certain muscles, the reaction of degeneration is detected. In other cases which are equally bad, from the difficulty of moving the pen, there is absolutely no alteration in the electric reaction of the muscles. That may be the case even when the disease is of the same period of standing. I mean it is not at the beginning or the end of the disease. The disease may be of the same duration. In some cases physical alteration is observed, and in others no physical alteration. In the cases in which there is physical alteration, one cannot help thinking the disease is in the lower part of the nervous system. That, of course, is based upon general physiological grounds.

2136. How far does the temperament of the patient affect the production of the disease?—There one has to wander into surmise rather than definite evidence. It is asserted by some observers that the disease has come on after mental distress or mental shock, and it is said to be commoner amongst people who are easily moved—emotional individuals.

2137. Of course you are speaking of your own knowledge to a great extent, having observed these cases. Have you observed a great many cases of writers' cramp?—No, I have not observed a very large number. I have had considerable experience of craft palsies in the out-patient department of the London Hospital.

2138. That is the general word to include all this group?—Yes; and a certain number of cases of writers' cramp, and a few cases of writers' cramp in private.

2139. Writers' cramp would be the most common, I suppose, of this group?—Undoubtedly.

2140. What do you say first of all about the cause of writers' cramp?—I think undoubtedly the cause is due to writing over a very long period.

2141. What is the treatment?—Rest—change of occupation. Rest in young people may result in permanent cure, if the rest is for a considerable period.

2142. What do you mean; six months?—Six months or more. One cannot be at all certain of that.

2143. Is it apt to be recurring if they go back after the six months' period?—It is quite probable.

2144. And the younger the patient the more chance there is of its recurrence?—Yes, I imagine so.

2145. Let us have your views about the possibility of simulating and malingering in cases of this kind?—I have stated in the abstract that the detection depends upon the ratio of the knowledge of the disease possessed by the investigator to that of the malingerer.

2146. (*Judge Ruegg.*) I admire your sentence; is it your own?—I believe so.

(*Judge Ruegg.*) You say, "Malingering is possible in "almost every disease, and detection depends upon the "ratio of the investigator's knowledge of the disease, "to the malingerer's knowledge."

2147. (*Chairman.*) Do you mean the malingerer's knowledge of the disease, or his general knowledge?—Of the disease.

2148. That is the patient against the doctor?—Yes.

(*Judge Ruegg.*) The judge against the evidence.

2149. (*Chairman.*) The patient against the doctor in the evidence he gives to the judge. The doctor is the first judge of malingering, is he not?—Yes.

2150. And if the patient's knowledge of the disease is greater than yours, he may impose upon you?—Yes.

2151. That is the meaning of that?—Yes.

2152. (*Judge Ruegg.*) You never find that, do you?—I think I might illustrate that possibly. Some time ago there was a case of a man who had an accident to the side of his head, and he pretended he had paralysis of the muscles on that side of his face. He had studied the subject very well. He was told to put out his tongue. He knew that his tongue had to be put forward towards the paralysed side, because the muscles on the unparalysed side shove the tongue towards the paralysed side. He knew that perfectly well. But on drawing the tongue back he was caught out, because he did not know that the muscles drawing the tongue back, when the tip of the tongue is at the edge of the teeth, draw it over towards the non-paralysed side. He was unacquainted with that small detail, and therefore he was told that he was malingering, and he owned that he was. It is the small points. I could suggest quite a number of methods of determining whether a man was malingering.

2153. You would give advice to the malingerer as well?—I am not going to do; but there are quite a number of methods.

2154. Of course, as you know, we have had evidence from medical men on these points, and one of the points in controversy is as to whether malingering is easy or not—not if it is possible. It is always possible; but it is one of the circumstances one would like to take into account: whether malingering in this case of writers' cramp is easy or not?—I think it is easy.

2155. First of all, what, if any, are the objective symptoms? Here is my writing. Is there anything you can see in the writing to say whether a man has writers' cramp or not?—Nothing.

2156. How do you decide, supposing I come to the hospital, that I have writers' cramp?—One would like to know the onset. If we are to assume that the malingerer has learnt up about the disease and how it

ought to begin, the next thing would be to ask him to write with a pen, holding the pen in the ordinary position. After that one would ask him to hold it in a different way. For instance, you might give him a pencil and tell him to hold it like that (*grasping the pencil round*), to determine the kind of movement obtained when he was trying to write with an ordinary pen. Several things may occur. He may simply have lost all power, so that he can move slowly but weakly. He may have sudden contractions of the muscles, and either a series of movements or one continuous contraction of the muscles in addition to that; and, of course, the most difficult case to detect is one in which there is only pain when they try to write. Of course, one has to realise that in the earlier stages there may be neuralgic pains.

2157. That is the subjective symptom?—Yes.

2158. (*Judge Ruegg.*) Then you are entirely dependent upon the statement of the man himself?—With regard to pain, undoubtedly.

2159. (*Chairman.*) You cannot test it?—One cannot test it.

2160. You have to accept it or not, as the case may be. I am not sure that I am summarising it properly, but the only real objective test you have is the method of handwriting?—Yes. But then I might suggest, supposing a man had said he was suffering from writers' cramp, and was told to write on a blackboard——

2161. Then he would have a different shoulder movement?—It is a different series of muscles. His reply as to whether he could write on the blackboard or not would assist in determining whether he was malingering or not.

2162. And his method of writing on the blackboard again?—Yes. Then there is another, writing in the dark; and comparing the writing in the light with the writing in the dark. There are a number of ways.

2163. Going away from this more suspicious aspect of the question, of course you have come across genuine cases?—Yes.

2164. In those cases you have seen the muscles used in writing?—Yes.

2165. Which you think have been used excessively, at any rate for the power of that individual patient?—That expresses it.

2166. When these patients have come to you—the ones you know of your personal knowledge—do you happen to have any information as to whether they have worked what we may call excessive hours; whether they were very hard worked and have been one of a big staff, or have worked by themselves, or any of those industrial points?—They vary. Some of them undoubtedly have been overworked alone in an office. On the other hand, some have not. Some have not worked more than eight hours a day.

2167. (*Judge Ruegg.*) Continuous writing?—Nominally.

2168. (*Chairman.*) Is eight hours a long strain to be continuously writing?—I imagine sometimes clerks are supposed to write for that time.

2169. It would be with breaks, would it not?—Yes.

2170. You know these typewriting offices that are to be seen in London and provincial towns. Have you had any of the girls from those offices come to you?—No, I have not personally.

2171. Have you had any typewriting cases?—No, I have not.

2172. Have you heard of them at all?—I have heard of them.

2173. They are not very far removed from the pianist. I am not speaking as a musician or a typist; but there is something analogous. If playing a piano could give you cramp, you might expect that typewriting would give you the same thing. But they have not been to you personally?—No; they are somewhat rare; the movement is comparatively coarse.

2174. What do you mean by "coarse"?—The pressure on the key is almost the same in every case; it has not to be regulated.

2175. There is no emphasis?—Except, I believe, the full stop must be struck much more lightly; but every letter is struck with about the same force.

2176. (*Judge Ruegg.*) The piano is different?—Yes.

(*Chairman.*) There is not so much technique in playing the typewriter as playing the piano.

2177. (*Judge Ruegg.*) The disease need not extend over very many years, only a great length of time for the process of contraction?—Yes.

2178. Need not?—Need not necessarily.

2179. It may occur within a few months. Have you known cases where a person has been writing excessively and has contracted this disease within a few months?—I have heard of them; I have not come across them personally.

2180. I see the first figures given are of persons who have contracted it between the age of 10 and 20. I suppose, if they contracted it between 10 and 20, there was one who contracted it at the age of 10?—I suppose so. Some of these cases have been published in rather obscure places, and I have not been able to hunt them up. It interested me, but I was not able to find out the earliest cases.

2181. I suppose between 30 and 40 would probably be the age of the average clerk?—Yes.

(*Sir Clifford Allbutt.*) From 10 to 20 is taken as a decade, and 20 to 30, and 30 to 40, and so on. It is almost inconceivable that it should occur at 10.

2182. (*Judge Ruegg.*) I see you say, "The disease "incapacitates when the individual becomes unable to "write a legible hand." What do you mean by that? Do you mean unable to write at all?—They are still able to move the pen about on paper, but they are not able to read the writing.

2183. If you take the case of pain and fatigue, which you say may come on and may be evident and may be there before the character of the writing is really affected—do you say that may be so?—Undoubtedly.

2184. Before there are any evidences in the character of the writing itself?—Yes.

2185. That would be rather a serious thing. A person who wished to simulate could come and say, "There is nothing in my writing to show it, but I "suffer pain, and I write with great pain and cannot "go on." There would be no way of deducting that that you know?—No. But does that not apply to a large number of diseases?

(*Judge Ruegg.*) It applies to some, certainly.

2186. (*Chairman.*) With regard to pain, if it were a genuine case, would the pain be localised in some sort of way that you could test?—Unfortunately, no.

2187. You say here: "In those cases where the "medical man might make an accurate diagnosis in "which there is an altered electric reaction of the "muscles"; that is an objective symptom?—Yes.

2188. Sir Clifford Allbutt knows, but I do not. Would you explain what objective symptom? That would be the altered electric reaction of the muscles?—When an electric current is applied to the nerve going to a muscle, the muscle contracts and one can determine the minimum current necessary to cause the muscle to contract. In the case of writers' cramp one would compare the minimum amount of current necessary to cause the muscle of the left hand to contract with the amount necessary to cause contraction of the right hand.

2189. That would be a valuable diagnosis?—Yes. It should be the same in a normal individual. In some cases of writers' cramp it has been found that the irritability of the nerves to the muscles diminishes.

2190. (*Dr. Legge.*) Is that method of diagnosis within the power of every medical man?—It should be.

2191. I said, is it? The number of practising physicians who would have the means of determining the reactions of degeneration would be very small. You want to go to a hospital, do you not?—Yes, undoubtedly.

2192. (*Judge Ruegg.*) Then, of course, you have the difficulty caused by a man who has a hobby or some private work who does a great deal of writing; for instance, a clerk who is a clerk and an author, or a clerk who does a great deal of private writing, or, in some cases a clerk who ekes out his salary by working at night for someone else, for instance, doing books?—

Yes. I imagine that would have to be taken into consideration in an individual case.

2193. It would have to be done in each case, but it would cause some difficulty?—Yes.

(*Sir Clifford Allbutt.*) The difficulty would be yours, would it not?

(*Judge Ruegg.*) Yes. I do not think we could help you much about that. It is a matter of evidence.

2194. (*Sir Clifford Allbutt.*) Do you think there could be a case of complete cure?—A certain percentage get cured completely.

2195. And are able to take up writing as their occupation again?—Undoubtedly. I imagine this is merely an expression of opinion that the majority of cases that get cured are those in which there is some definite alteration of the nerve, either through accident or through drugs, alcohol, or tobacco; but that, as I say, is merely an expression of opinion.

2196. (*Dr. Legge.*) But those are not cases in which there is a reaction of degeneration, are they?—In some cases—in cases of accident.

2197. But not in the bulk?—No.

2198. (*Judge Ruegg.*) Then what time would you say, as a rule, the disease manifests itself before it leads to absolute incapacity? Is it months or years?—I should say an average of six to nine months.

2199. It may begin in one employment, and incapacity may occur in another and subsequent employment?—It may occur.

2199*a*. (*Dr. Legge.*) Would you amplify a little what you say on the top of page 2 as to the method of writing in all probability producing the disease? Do you mean the clumsiness in the operator himself in regard to the way in which he holds his pen?—Taking it all round, people who have very good handwriting are more liable to have writer's cramp than those people whose writing does not belong to the same class. But I mean the details of the method of writing depending upon whether it is from the shoulder or the wrist or the fingers.

2200. I think you say that writing with the fingers is the most likely to produce it?—Yes.

2201. (*Judge Ruegg.*) The old-fashioned way of teaching children to write was pointing their pen over their shoulder, which was very cramped. People write in all manner of directions now; but in the old copy-book style they used to write with their pens over the shoulder. That is a very cramped position?—I think that is specially calculated to develop writer's cramp.

2202. (*Dr. Legge.*) Your view is that is the primary cause, the secondary one being excessive writing. Do you mean some breakdown in the central nervous system?—I should prefer putting it that the primary cause was the writing, and the secondary cause was the weakness in some part of the nervous system.

2203. In what proportion of cases that have come before you would there be alteration in the nerve cells of the spinal cord; the nerve charges which you could detect by electrical methods—5 per cent.?—I am afraid my experience is not of sufficient value to express an opinion. In the literature Dr. Poore found a larger percentage than other observers, I think.

2204. Are you aware that in the case of telegraphists, cramp, in a recent report of the examination of a large number of people, there were no cases of reactions of degeneration in any of the cases observed?—I read that report. I did not notice the emphasis placed upon that, but I am not surprised. It is what one would expect.

2205. And you say in your précis, as regards the possibility of cure by rest, that it is not probable?—Yes. The percentage is comparatively small.

2206. You go on to say that change of employment. What do you mean by that; that they should take to some other form of writing, for instance, typewriting, in place of it?—No. Really what was in my mind was that some of these clerks should become shop assistants, or something of that kind, rather than carry out any fine movement.

2207. They have mistaken their vocation?—Yes. Their nervous system will not permit them to carry out the work they have undertaken.

2208. (*Chairman.*) Have you ever seen anything corresponding to the symptoms that you observed in these cases in the case of anyone who has not been doing writing?—In quite a different disease, that is in early disseminated sclerosis, which is a disease of the nervous system. You may get an altered writing, that the first moment may simulate the writing of writers' cramp.

2209. You are clear that this disease is occupational?—I have no doubt.

2210. (*Judge Ruegg.*) Do you think it exists to a very considerable extent among the class who would be affected by it, clerks and such like?—No, I cannot express an opinion.

The witness withdrew.

Adjourned till Saturday, January 25th, 1913.

SIXTH DAY.

At the Home Office, Whitehall, S.W.

Saturday, 25th January, 1913.

Present:

His Honour Judge Ruegg (*in the Chair.*)

Sir Clifford Allbutt, K.C.B. | Dr. Thomas Morrison Legge.

Mr. Arthur Locke (*Secretary*).

Dr. Arthur Rowley Moody, called, examined by Judge Ruegg.

2211. You are a Bachelor of Medicine and Master of Surgery of Edinburgh University, Consulting Medical Officer to the North Staffordshire Miners' Federation, the Pottery Workers' Union, and the Ovenmen's Union?—Yes, I am.

2212. I believe you are giving evidence on behalf of the Miners' Federation of Great Britain?—Yes.

2213. You have had a large experience of industrial diseases?—I have, especially amongst miners.

2214. And largely in North Staffordshire?—Yes; almost entirely there.

2215. We have had the first part of this evidence given to us many times. If you have had the opportunity of reading the evidence that has been previously

given, you will have seen that we have had the causes of Dupuytren's contraction and a description of it given often. I think we can take it quite shortly from you. To what causes do you attribute this disease?—As indicated here: first, heredity; second, constitutional diseases such as gout and rheumatism; and third, chronic irritation, as from pressure, friction, concussion, or any combination of those.

2216. You think that exhausts the causes?—Yes, so far as I know it at present.

2217. Do you think it may be said to arise from any one of these three causes you have mentioned independently of the others?—I do.

2218. Therefore it follows that you think it may arise from chronic irritation and from pressure alone?—Yes, I do.

2219. Assuming that the man whose hand is subject to pressure has gouty or rheumatic diathesis, how would that affect the disease?—It would very considerably predispose the man. It would come on with less irritation and friction probably.

2220. You have no doubt it is a disease which may arise from chronic pressure?—I have no doubt myself.

2221. You are aware that that is disputed by other medical men, are you not?—I have no doubt it will be.

2222. They take a contrary view?—I should think quite probably.

2223. It is a disease which manifests itself rarely amongst young people?—That is so.

2224. Have you found it present in what you describe as a gentleman? By that I suppose you mean a person of no manual occupation?—Yes; fairly frequently. I have it myself.

2225. Have you been able to trace the origin of it in those cases?—In my own case, for 20 years I was doing coachman's work; driving 20 to 30 miles a day.

2226. Driving yourself?—Driving myself. That was one thing.

2227. Do you attribute it to that—the pressure of the reins?—I am inclined to think, seeing it comes mostly in the whip hand of coachmen, that it probably comes from the pressure of the butt end of the whip, the long lever. But in my case the whip was more for show, because I liked horses that were pullers. There was heavy pulling on the reins, even if I were not using the whip.

2228. In which hand did it manifest itself?—It manifested itself in the right.

2229. That is not the driving hand?—No; it is the whip hand; but I had to use both hands for driving with most of my horses. I always endeavoured to get a puller.

2230. Do you attribute it at all to pressure in driving?—I think that was largely it; but at the same time I was for five years an hour or two hours daily in the gymnasium. This has been 12 years coming, and, two years before, I had ptomaine poisoning, and I have never been quite the same since. I think my digestive apparatus has never been the same, and possibly there may have been something manufactured there which has been irritating.

2231. You say that the present manifestation of it has been coming for 12 years. It has not yet reached what we call the first stage of the disease?—No, I have taken precautions that it shall not.

2232. You think but for those precautions it probably would have done?—I have no doubt. I am doing something every day.

2233. With regard to the other cases of persons you describe as gentlemen, have you had any evidence which would account for it appearing in their cases, such as rowers, golfers, fishermen, and so on?—Yes; there is nearly always something that on a careful inquiry can be found. I am an angler myself. I found I had to learn to cast with my left hand. The right hand gets tired quicker.

2234. Then your experience is that even where you found it existing in gentlemen, there is always the history of some pressure?—The more careful your inquiry, the fewer cases escape your observation, where there has been no history as far as you can make out, of irritation.

2235. (*Sir Clifford Allbutt.*) Will you repeat that please?—The more careful the inquiry into the history of irritation from amusements, or otherwise, the fewer cases you will find where you cannot attribute it to irritation.

2236. (*Judge Ruegg.*) Where there is not some history of local pressure?—That is so.

2237. The more you inquire, the fewer cases you find in which there is not some history of local pressure?—That is what I mean to convey.

2238. (*Sir Clifford Allbutt.*) Taking a start from the malady itself, and going back in the history of particular cases?—Yes.

2239. (*Judge Ruegg.*) You mean you get it by inquiry from the people themselves? It is the only way you can do it?—Yes; invariably.

2240. What do you say with regard to the manifestation of the disease in the foot?—I say it is extremely rare there.

2241. Comparatively?—Yes. I have seen only very few cases.

2242. Do you draw any inference from that?—I most certainly do.

2243. What?—The inference I draw is that the plantar fascia is protected from concussions, irritation, and friction by a boot, and that, consequently, it escapes, notwithstanding the fact that the foot, in my opinion, does the greater part of man's work.

2244. If it were due to constitutional causes only, then what would you expect?—I would say it should come just as frequently in the foot as the hand, in fact, more so, because it is constantly doing more work. At any rate, in a large proportion of people it does infinitely the greater proportion of man's work—the hard work.

2245. I am only suggesting it, but do you not think it may be an explanation, that the foot is always protected, and the hand is not?—I think that is largely the explanation.

2246. Do you say that you know it occurs in animals?—Yes. I do not think I would have brought it before the Committee's notice if I had not had my opinion confirmed by Dr. Hopf.

2247. Do you mind reading the reference to that?—"Wry-neck can be produced, as in man, by paralysis, inflammation, &c.; lacerations of fascia and tendons are common in horses as the result of strains. The least frequent is the laceration of the tendon Achilles. A pathological peculiarity in horses corresponding to Dupuytren's contraction in man is the condition which depends on a congenital or an acquired contraction of the flexor tendons of the fore foot." I came across that casually reading from this book. It is most carefully compiled. I have the opinion that the very common occurrence of "standing over" in horses, which is a thing a very large proportion of the old cab horses in London suffered from when they were going in the knees, was due to that.

2248. It is a new thing to us that the old horses are suffering from Dupuytren's contraction?—In the old fast horses the Dupuytren's contraction is in the fore legs, and in draught horses it occurs in the hind legs, where the greatest strain and friction is. I have put it to the test.

2249. I suppose you agree with what all the witnesses say, that this disease is much more frequent in males than in females?—No doubt.

2250. What inference do you draw from that?—It bears out my idea that this is frequently produced or assisted to be produced by friction—local pressure.

2251. It has been suggested as a possible explanation that gout and rheumatism are more common in the male sex?—Gout is more common; I do not know that rheumatism is so much more common in men. It may be, but it is very frequent in women.

2252. Have you found cases where the disease exists, and where there is no evidence of a constitutional predisposing cause?—I have, when I could find none on careful investigation—no history of rheumatism.

2253. Where you could find no history of predisposing cause you assume there is no predisposing cause, excepting pressure?—I have assumed that.

2254. I think the contrary has been assumed in some cases; that where there is no predisposing cause visible, yet the predisposing cause should be assumed to exist, although there are no objective signs of it?—That may possibly be.

2255. When you find no signs of predisposing cause, do you think it more reasonable to attribute it to the pressure simply?—I do.

2256. Then, again, I think it is the ordinary common opinion that it manifests itself generally after middle life?—Most frequently.

2257. Again, various reasons have been assigned for that. Do you say that is in support of your theory?—Yes. Of course it gives time for constitutional diseases to produce their effect. But it certainly gives local pressure time to get in its effect.

2258. You want to speak particularly with regard to miners. Have you found that this disease is common amongst miners in your district, which we may call the North Staffordshire District?—Of course, this disease is not brought directly under one's notice to treat, except in rare instances. It is only by accident one sees it in the course of investigation of other things. But I am sure it occurs in quite a proportion. Exactly how many I cannot say, but I see it fairly frequently, not in an incapacitating degree.

2259. In miners?—In miners.

2260. Who generally come to you on some other matter?—Yes, for some other injury.

2261. You say it is not common in Scotland or Wales, or the Cannock District. Let us deal with Scotland and Wales. Have you had experience in Scotland and Wales?—I am speaking from reports.

2262. You are familiar with the Cannock District?—No; I am not familiar with it. I have had reports.

2263. You are speaking from reports when referring to the Cannock District?—Yes.

2264. When you speak of North Staffordshire, you say it is more common there, and in Durham, and in the North of England. Are you speaking of Durham and the North of England from reports?—From reports sent to me.

2265. So far as your investigations have gone, you think it is more prevalent in North Staffordshire than in other districts of England?—I think it stands about half way between the North and such a district as South Wales, where it is not by any means common.

2266. How do you mean; half way between?—I think it is more common in the North of England and Scotland than it is in North Staffordshire.

2267. By the North of England do you include Scotland?—The North of England and Scotland.

2268. How do you account for that; have you any theory?—The miners and the miners' agents consider it is due to the hardness of the seams they work requiring a greater force and pressure from the picks.

2269. I remember asking this question before; is the coal harder in Staffordshire?—The deeper seams are harder.

2270. Generally, are the seams harder, do you think, in Staffordshire?—It depends on the depth at which the seam is found.

2271. Speaking generally as a district?—I do not think I can speak generally; but some of the seams are deeper, and the deeper the seam the harder the coal.

2272. There are some very deep seams?—Yes.

2273. I believe the deepest in England exists in Staffordshire?—I think it does.

2274. I suppose it is common ground that the coal in South Wales is soft?—That is so.

2275. You have to deal very often with beat-hand? It is not a very common disease, but I have to deal with it.

2276. It is a disease quite distinguishable from Dupuytren's contraction?—Altogether distinguishable and different.

2277. And not likely to be confused?—No, I think not.

2278. Even by a county court judge?—No. I had one case where it was a little difficult.

2279. You agree that the disease is frequently bi-lateral?—Yes, it is.

2280. Can you give us any reason for that?—Both hands are frequently engaged in the occupation in which the man sustains local pressure.

2281. Do you think when it manifests itself in both hands it is due to pressure on each hand?—I do. A miner has to work right and left handed.

2282. But we have had other cases where it is said that is not the history of the case?—Of course, I feel quite certain that it may come on from constitutional causes, or from heredity, and in that case it would be as likely to come in both hands as one—more likely.

2283. Do you think the disease manifests itself by some kind of sympathy, I can use no better word, like the case one hears of of an injury to one eye, and a sympathetic affection of the other. Have you considered that at all?—I have not considered it.

2284. What are the general signs you find which indicate to you that the disease has been due to chronic pressure? You refer on the top of page 3 of your proof, with regard to the skin?—The signs of roughening and hardening of the skin in certain areas of the man's hand. There is the history of the man's work and his occupation.

2285. Do you find that roughening of the skin generally in the hands of miners?—Yes, invariably so, I think.

2286. Do you mean that you find the thickening of the skin all over the palm of the hand, or just in the spot where the Dupuytren's contraction manifests itself?—I do not think you get it just where Dupuytren's contraction manifests itself. There are three or four favoured, almost common spots, for the hardening and roughening of the skin.

2287. Have you known miners who have been compelled to give up their work in consequence of this disease?—I have. I see that this proof of mine rather gives a wrong idea of that.

2288. Will you correct it and tell us what you wish to say?—I say here I have known a number. That rather suggests a great number. I would rather say I have known a few.

2289. Have you looked at the pictures that we have in Dr. Collis's report of the various stages of the disease?—I think I have not.

2290. Will you please look at them? In the case of your miners who have to abandon work, which of those stages have they arrived at, do you think? We call them stages 1, 2, 3, and 4. It has been suggested that stages 1 and 2 do not incapacitate, and it is not until you get into stage 3 that there is a very considerable contraction and incapacity results?—Most of them are in stage 3. There is one in stage 4.

2291. That is where the fingers are down?—Yes, all down. That was in a man who was getting quite a good living. He was a foreman of a coal yard, and he did his wheeling by means of a hook from the shoulders fastened on the handles of the barrow, and he moved it away quite handily.

2292. You mean until he had to give up?—No, that was after he had given up mining. This was the work he had taken up.

2293. He could do that by means of a yoke?—Yes.

2294. Do you think in those particular cases of miners there would be any difficulty in practice in proving that the disease was due to the occupation?—I think there would not.

2295. What do you say on this point? With regard to some of these diseases which are scheduled now, the onus is upon the employer, if the man is engaged in the industry, to show that the disease did not arise from the occupation?—Yes.

2296. Do you think if Dupuytren's contraction should be scheduled in that way, or as being due to a number of causes, that the onus should always be left on the workman to show that in his particular case it really was an industrial disease?—I think that predisposing causes are so important in this disease that it is probable it would be more just if the man had to prove his case.

2297. Assuming for a moment it is scheduled?—Yes.

2298. That the onus in every case should be on the workman to show it really was an industrial disease in this case?—Yes, I think so.

2299. (*Sir Clifford Allbutt.*) By predisposing you mean constitutional?—That is so.

2300. (*Chairman.*) Then you speak of Dupuytren's contraction resulting from injury; but that is quite a distinct thing, is it not?—I think so.

2301. Do you think there is any difficulty in discovering whether it is due to injury—traumatic—or whether it arose from the work?—No, I do not think there would be much difficulty in that. There would be the history of the injury or wound.

2302. Of course, it might possibly be the injury itself would bring it within the Act as an accident?—Yes.

2303. But it might be an injury outside work—at home?—Yes.

2304. You do not think that would be difficult to find out?—No, I do not think it would.

2305. Then you speak in cases of Dupuytren's contraction, of the alteration in the characteristics of the area of the palmar fascia. Do you want to say anything about that?—Yes, simply to emphasise my view that it is not purely and simply only hypertrophy.

2306. You say that because you find what?—Altered characteristics of the fascia.

2307. What are they?—The normal fascia is inelastic and not contractile. This is strongly contractile and inelastic. Then, again, the removal of the irritation very often gets rid of hypertrophy, but does not get rid of Dupuytren's contraction.

2308. You give us a case of a miner you know in your district who had an accident, you say, a long time ago, and suffered from traumatic neurasthenia?—That is a case of a man E————, a most interesting case.

2309. He has not worked since?—No.

2310. Supposing that case came before me, you say there are slight signs of Dupuytren?—There were at that time.

2311. That was clearly the result of an accident?—The contraction was the result, I take it, of the man's occupation. The accident was to the man's back.

2312. He met with an accident, suffered from traumatic neurasthenia, and then you found some signs of Dupuytren's contraction?—In examining the man I came across that sign.

2313. Do you attribute that in any way to the accident?—Not in the least.

2314. They are quite distinct?—Absolutely.

2315. You tell us that you discover the disease generally by accident?—Yes.

2316. You wish to mention two cases, one that came under your own observation and one that came under the observation of Dr. McCullough?—In my own case the man in 1908 suffered from beat-hand. He recovered from that and returned to work. He said six months before I saw him he had signs of Dupuytren's contraction coming on, and when I saw him, the little finger of both hands and forefinger of the left hand were completely flexed, and they had to be removed. That is the one in which there was the quickest course I have ever known.

2317. Do you say that incapacity resulted in six months?—Yes; that is taking the man's history. I had seen the man in 1908 for beat-hand.

2318. And you had not seen any signs of Dupuytren's?—I could see no signs then.

2319. You did not examine him specially with reference to that?—No.

2320. Still, you had examined the hand?—Yes, certainly, in 1908.

2321. And you had found no signs of Dupuytren's?—No, not the least signs then.

2322. Six months afterwards you found Dupuytren's in an incapacitating degree?—Six months before the man came to see me he said this contraction had begun in both hands. When he came to me there was no help for it, he had to go to the Infirmary and there they removed his fingers.

2323. In that man's case were there any other evidences of constitutional causes?—Yes, I think there were.

2324. That he was rheumatic or gouty?—He was rheumatic.

2325. Still, it was very quick?—Yes, very quick; much the quickest I have ever known.

2326. After the operation what was his condition? Did you follow his history?—Up to 18 months ago he was not following his occupation. He was doing odd work.

2327. Could he follow his occupation?—He could not.

2328. Not the occupation of a miner?—No, most certainly, he could not.

2329. Dr. McCullough, who is a medical referee under the Act at Bishop Auckland, has communicated one case to you, has he?—He has. May I read his communication?

2330. Was it in reply to an inquiry?—It was in reply to inquiries by Mr. Thomas Ashton, the Miners' Federation Secretary. It was sent out by my wish. He says: "I have seen many cases of Dupuytren's "contraction amongst miners. In one case the "patient has to have fingers amputated at the Cottage "Hospital to-morrow, as he is unable to work through "this condition. It is not always attributable to "continued pressure, being sometimes due to rheu-"matism or gout. But I have no hesitation in saying "that in many cases it is entirely due to pressure "on the palm from a pick, shovel, or similar tool. "Dr. Brewis quite agrees with me in this view."

2331. What is Dr. McCullough's special opportunity of knowledge; he is in the Durham district?—Yes; he is medical referee at Bishop Auckland under the Workmen's Compensation Act, and Medical Officer of Health and Honorary Surgeon to the Cottage Hospital, so I think he would have good opportunities.

2332. He would see the Durham miners?—Yes.

2333. Do you wish to say anything about the treatment of the disease?—Do you think it advisable for me to say.

2334. You deal with three different stages of the disease. I think in our diagrams we deal with four. You deal first with the case of the thickening of the fascia in a ridge-like cord from one or more fingers without contraction of the fingers. That is your first stage?—Yes.

2335. The second stage is, the contraction of the cord and consequent flexion of the finger. Do you mean one finger?—One or more.

2336. But not to such a degree as to interfere with occupation. Then, thirdly, flexion to such an angle as interferes with work?—Yes.

2337. (*Dr. Legge.*) I think 1 and 2 of our cases come under Dr. Moody's 1, and 3 is the same as his second, and the fourth as his third?—You see that has been on 12 years, and yet there is no contraction. (*The witness showed his right hand to the Committee.*) There is contraction, but it is only apparent when compared with the other hand. I could hyperflex them as it were, but I cannot do it on that one (*the right hand*).

(*Sir Clifford Allbutt.*) On my right hand is a small contraction of 25 to 30 years standing, but as yet without any digital contraction.

2338. (*Chairman.*) Then the treatment you recommend for the early stages is not quite within the province of this Committee. You recommend the hyper-extension of the affected fingers?—I do.

2339. Do you think if that is taken at an early stage it is effective?—I think very effective.

2340. At what stage do you think in your experience it becomes ineffective?—Where there is marked contraction.

2341. What do you say when it gets as far as No. 3?—Certainly when it gets to No. 3.

2342. Dr. Collis's No. 3?—Yes. If mine gets any worse I am determined to try ionic medication on it, and I shall be very interested to see what that will do.

2343. You suggest a treatment that I do not think we have heard about; that is the Bier treatment?—A great many try a kind of Bier treatment.

2344. What is it?—It is by passive congestion. It is too costly to get the special apparatus of Dr. Bier, so I make them get an elastic band which fits round the wrist so tightly that it causes a considerably greater amount of blood to collect in the hand, and I suppose it gets the leucocytosis more at work on the diseased area. At any rate, I believe it has been of some use in my case, and I get them to try it.

2345. Why is it called the Bier treatment?—Dr. Bier is the man who developed this.

2346. (*Sir Clifford Allbutt.*) He is Professor of Surgery at Bonn.—Yes, I think he is.

2347. (*Chairman.*) Then, at the second stage you recommend hot water?—Yes, holding it in hot water.

2348. And for the further stage of the second stage?—I believe in multiple subcutaneous incisions. I remember seeing one very successful case. I assisted Dr. Shufflebotham in doing that one. He was a master baker who had two fingers of the right hand and one finger of the left completely flexed into the palm, with ulceration of the skin. That man got perfectly well. I see the man now, and it is quite a number of years ago. His hands are quite useful.

2349. You say something about ionic medication?—Yes, I feel I should like to see that tried.

2350. That is rather your own treatment, is it not?—It has been most successful in some few cases where it has been the despair of myself, at any rate, and a great many other doctors.

2351. Neuritis?—Traumatic neuritis.

2352. When it gets to the last stage, do you recommend operation?—Yes, I do.

2353. You do not suggest that ionic medication would be of any assistance in the last stage?—No.

2354. You say any stage. You mean any stage when it is subject to treatment?—That is so.

2355. You say that in your own experience there are a number of miners who have had to relinquish their work because of Dupuytren's contraction. Can you give us anything more definite than that; first, could you give us any number or percentage?—I cannot give any percentage. I wish I could. I think I will suggest to Mr. Ashton that it would be a wise plan for the miners to have a whole-time man who could get up details and facts of this kind for their use.

2356. You think it does exist to a considerable extent amongst miners, do you?—I am sure there is quite a percentage of them suffer from it. I could not say how many; but judging from the number I see in the course of my examination of them suffering from the effects of injury, there are many. But I do not think there is anything like a big percentage of them that would be in any way incapacitated from it.

2357. Not at present?—No.

2358. Do you think that in the ordinary course it incapacitates them before the age at which incapacity, we will say, comes on in the case of a miner?—I think a very small proportion indeed would be in that position.

2359. What is the age of the miner?—Between 50 and 60 they begin to leave the pit in considerable numbers.

2360. And a very small proportion over 60 work, do they?—That is so.

2361. I understand you to say you think if this disease had been scheduled more of these cases would have been brought under your notice?—I feel quite sure of that.

2362. We have dealt with your conclusions, have we not?—Yes.

2363. (*Sir Clifford Allbutt.*) You used the word, perhaps casually, "concussion." Was that with any particular significance?—No, I just meant friction or irritation.

2364. Mechanical violence, that is all?—That is so.

2365. As regards the relative stresses on the hands and feet, of course, as the Judge has said, the foot is a protected part; moreover the stresses do not fall upon the mid-foot tendons in the same way as they do upon the hand. They fall upon the heel and the toe?—Yes, that is so.

2366. They are scarcely parallel cases, I think?—Possibly not.

2367. At any rate one would be a little cautious in comparing them?—Yes.

2368. Then, as regards Hopf's book, my extract of his words is: "Contraction congenitally acquired of the flexor tendons of the forefoot." Dupuytren's is not contraction of a "tendon," is it?—No, it is not. He has made an error of judgment there.

2369. I think we may dismiss Hopf from this point of view?—My own opinion is that horses do suffer from contraction of the fascia.

2370. He has given a wrong anatomical explanation?—Yes.

2371. I suppose you would find it very difficult to establish any relation between the degree, the numbers, and the results?—I think it is most difficult.

2372. That is to say, the constitutional factor is so large?—Yes.

2373. Apart from the constitutional factor, and not considering the question of your treatment for a moment—I dare say you have treated your own hand very carefully—but putting treatment on one side, supposing it starts, as in you and me for example, in whom there may be no constitutional factor of any great importance, do you think it would go on?—Yes, that has been my experience of it.

2374. Even in persons who, so far as we can judge, are free from any constitutional bias?—Yes.

2375. Having once started it will probably go on?—That has been my experience of it.

2376. As regards the locality, as to which you have made some very interesting remarks, the tools are the same but the coal may be different?—Yes.

2377. (*Chairman.*) Are the tools almost identical?—Almost. They vary a little in shape.

2378. (*Sir Clifford Allbutt.*) If they vary in shape, that is a certain answer to my question?—That is so.

2379. You could not tell us much about that?—I cannot about that. My own idea about it is that the picks, shovels, wedges, and so on, are on very similar lines all over the mining areas.

2380. (*Chairman.*) The Secretary of the Mining Association could tell us that at once?—He could.

2381. I was thinking a little more of the shape?—Yes. The weight has to be heavier in the hard seams.

2382. The shape is of more importance than the weight, I think?—Probably.

2383. (*Sir Clifford Allbutt.*) As regards Scotland, up to quite recent years gouty affections were very little known?—They were rare in Scotland.

2384. And they are rare in the North of England, the border land, Northumberland?—Yes, although the worst case I have ever seen in my life was in a Scotchman.

2385. (*Chairman.*) He had come South?—Yes, he had taken a public-house.

2386. (*Sir Clifford Allbutt.*) What do they drink in your district, for instance?—Mostly beer.

2387. Have you considered whether temperance or intemperance in beer has anything to do with the matter?—Except on general lines. That I believe; but it does in most things.

(*Chairman.*) If we may take it it is common, it would be valuable to see if we could establish, at all events amongst miners in Scotland, that Dupuytren is in excess.

2388. (*Sir Clifford Allbutt.*) Beat-hand is wholly mechanical in causation. There is no constitutional effect in that?—That is my opinion.

2389. And in Dupuytren's contraction the stress is one cause among others?—That is true.

2390. In this case it differs from beat-hand in character, broadly speaking?—Yes.

2391. And the other is mixed up with an unknown constitutional proclivity?—That is so.

2392. So that the muscular stress in any case in Dupuytren is contributory?—In my opinion wholly the case in some cases, so far as I can discover.

2393. But in some cases you presume that no constitutional abetting is needed at all?—That is so.

2394. Then, in some cases the local strain is more than a contributory cause?—The whole cause in my opinion.

2395. And in all cases you think it is the initial cause?—I do.

2396. (*Chairman.*) What has been the initial cause?—In all cases in miners that I have seen, I believe pressure has been the starting point.

2397. Whether you find constitutional causes or not?—Yes, I have found constitutional causes in quite a number.

2398. Still, you attribute it——?—I attribute its onset to the occupation largely.

2399. In all cases, I understood you to say, you attributed it to pressure?—I think I would like to qualify that. I think it would be difficult to say that in all cases it had always started through local pressure.

2400. I foresee some terrible fights about this?—I do myself.

2401. (*Sir Clifford Allbutt.*) Have you any means of distinguishing in particular cases between the degree of constitutional and mechanical causation. Suppose a person to make an application for compensation, and you are asked: Is this mainly due to his occupation, as in beat-hand, or is it largely gout?—I should begin to investigate his joints.

2402. I thought you would probably say that?—Yes, and see if there are the least traces of the presence of recent or old rheumatism or gout. I should see if there were any signs of thickness over either fascia, or in any regions of the spine, and I should then examine the man's mouth to see if that were clean, or if he had pyorrhœa or other causes setting up irritation, and inquire into his history generally. I would examine his heart and see if there had been at any rate any rheumatism which had caused any injury to that organ, and so on.

2403. (*Chairman.*) And if all those results were negative?—And there was no history of any hereditary depression, I think then I should say it was most likely to be due to the man's occupation.

2404. It would be a reasonable assumption to make, you think?—I do.

2405. (*Sir Clifford Allbutt.*) Does beat-hand relatively frequently occur in connection with Dupuytren?—No, I think it is rare.

2406. I thought it was. We were told so before?—I did not mention that case, because I think they are often associated.

2407. You do not refer to workhouse practice; you have no workhouse practice?—No.

2408. As regards shopkeepers, you have no comparative statistics about them, and the professional classes, and so on?—No.

2409. And you look upon this process as what has recently been called fibrositis?—I do.

2410. There is something more, as you say, than fibrous hypertrophy?—Yes.

2411. You say you agree with Dr. McCullough that in some cases—he says in many cases, but perhaps that is rather further than you go—it is entirely due to pressure on the palm without any constitutional causes?—I would not like to say in many cases.

2412. I thought it was a little stronger than you had put it?—So much depends on the way in which you investigate to see if there is any predisposing cause.

2413. (*Dr. Legge.*) As a predisposing cause of this fibrositis, I am glad you mentioned one thing, pyorrhœa. That we have not had mentioned before. Will you expand that a little? Whose work is it?—I do not know, I am sure.

2414. Where did you find the reference to it?—That is my own experience. I am not referring to anyone else.

2415. You meant pyorrhœa alveolaris?—Yes, I did. What put me very largely on that was a case we had of an injury. I am not sure whether it came before Judge Ruegg for compensation, or whether it was settled; but it was a case of a man who received an injury in a forge. He was an underforeman, and he got rheumatoid arthritis, and the slight Dupuytren's contraction he had had previously went ahead quickly. I attributed it to pyorrhœa and alveolaris. I think Dr. Shufflebotham got this man admitted to the Cambridge Hospital, where they specialise on that subject. I am not quite sure; but we got him somewhere specially for treatment, and the man made considerable improvement. Since then my attention has been drawn towards this, and it is one of the things I should always eliminate before I said there was no predisposing cause.

2416. And if you cure the pyorrhœa, you might cure the condition or arrest it?—I think you might arrest it, or make it so that it would go ahead much more slowly.

2417. In regard to the treatment, you would always advocate that operative treatment should be undertaken?—Yes, if the case were severe enough.

2418. Do you think it is a point the Committee ought to consider: the limitation of compensation if the disease were scheduled dependent upon operative treatment?—You have asked me a question that I think is rather difficult to answer.

2419. I should like to have your opinion.

(*Chairman.*) I am afraid I do not quite follow why you put it. Do you mean it has to be scheduled?

2420. (*Dr. Legge.*) I may point out that section 8 of the Workmen's Compensation Act, sub-paragraph (6), states that "the Secretary of State may "make orders for extending the provisions of this "section to other diseases and to other processes, and "to injuries due to the nature of any employment "specified in the Order, not being injuries by acci-"dent, either without modification or subject to such "modifications as may be contained in the Order"; and among those modifications contained in the Order he has already in one case—glass-workers' cataract—prescribed that compensation shall be given for six months, but not for more than four months unless an operation for cataract is undergone. That is: no compensation without undergoing the operation?—Yes, I think I understand quite clearly what you wish. It is as to what compulsion should be put on the man to undergo this operation to enable him to resume work?

2421. Yes, practically?—It is a difficult matter to say. As I say, I look upon it largely in the same light as the question, how much pain must a man be asked to stand in resuming his work? I think my answer to that would depend somewhat on the conditions and circumstances.

(*Chairman.*) Besides, I think it must be admitted that the circumstances have changed The manner in which this Act of Parliament is worked has changed since that was added to the schedule.

(*Dr. Legge.*) It has been added recently; I believe about two years ago.

2422. (*Chairman.*) I think it is more than two years ago; but in England at all events the practice of the Courts was that they could not make the man undergo an operation for anything. We have rather withdrawn from that, and now there is what we call a general power to stay compensation unless the man submits to what in the opinion of the Arbitrator is a small operation which any reasonable man would not hesitate to undergo. That exists at present?—Yes, I quite agree with that.

2423. (*Dr. Legge.*) You say in your evidence you have known a few miners leave their occupation through Dupuytren's contraction and take up other trades, such as shopkeeping. It is desirable that they should take up that and be occupied, is it not?—Yes, it is much better.

2424. There would not be the same inclination to take up any other trade such as you mention if there is not a compulsion to undergo an operation?—Yes, I think if you find the man's heart and kidneys are right, and his general health pretty good, he should be compelled—I should almost go so far as that—to undergo this operation in the case of incapacity through the deformity.

2425. (*Chairman.*) I understand Dr. Legge's question to be if the disease is included at all would you recommend that it should be included in those limited terms in the Act itself?—No, I should not.

2426. Or would you leave it to the discretion of the Referee as at present?—I think it should be left to his discretion.

2427. Will you look at the words of this Order No. 2?—Of course, that is an operation which is largely undertaken without a general anæsthetic.

2428. (*Dr. Legge.*) It is a point that you make: that it is a local anæsthetic?—Yes.

2429. And it is a much more serious thing than where a general anæsthetic is given?—Yes, that is where the risk occurs.

2430. (*Chairman.*) You spoke of this being caused by certain things, and you used the word "concussion" in the course of your evidence in chief. You said the effect of concussion on the palmar fascia. Then I understood that you withdraw the word "concussion." But what is your view as to the effect of concussion—not constant, continuous hard pressure or a dragging pressure, but the effect of absolute collision?—I think that acts as an irritant itself. I think the constant repetition of a succession of knocks acts as an irritant. I do not see how it can fail to.

2431. I understood when Sir Clifford Allbutt put the question to you about concussion, that you rather withdrew it?—I was thinking that Sir Clifford Allbutt at that time meant a concussion which produces a hurt.

2432. (*Sir Clifford Allbutt.*) I was not using "concussion" in the technical medical sense; but so far as any distinction of the kind could be made, it is the difference between a blow and——?—A vibration almost. That would be too fine.

2433. Whether it is direct or tangential. Is not that the point; whether it comes from friction or a direct impact?—Yes.

2434. (*Chairman.*) What we should ordinarily call concussion. In other words, assuming for the moment that the coal in Staffordshire is particularly hard, and the blow which is given with the pick produces more what we call ordinary concussion than it would in a softer material, do you think that has an effect?—I most certainly think that has an irritating effect.

2435. (*Sir Clifford Allbutt.*) I suppose what you would call in your country the difference between direct stresses and shearing stresses?—Yes.

2436. (*Chairman.*) I want to see how far you agree with this, speaking of the disease generally: "Its "heredity is well known, also its frequent association "with the rheumatic and gouty diathesis." That you do not object to?—Not at all.

2437. Then further on: "Although it must be "admitted that prolonged pressure over the palm of "the hand from the constant use of, or grasping of a "hard body, may, in the long run, produce that "condition, yet, side by side with this fact, it must be "remembered that the same condition of affairs may "arise spontaneously, without the interference of local "pressure." You go as far as that, I think?—Yes, I do.

2438. This is the part I particularly want to draw your attention to: "No doubt this spontaneous "development is associated, in many instances, with "the gouty diathesis, and it must be remembered "that, in those cases where it so develops, the patients "frequently manifest no outstanding signs of the "constitutional tendency." That means no objective signs?—Yes.

2439. "That means you do not require to find "characteristic or well-marked symptoms of the "existing diathesis to prove that the Dupuytren "affection present is of that nature." Do you follow that?—It is rather to decide, then, if it be produced by that predisposing cause?

2440. You put it in the opposite way, do you not? You say: "If I find the disease and find no character-"istics of existing gouty diathesis, I assume it is not "of that origin"?—I should say that I am entitled to assume that is most probable. I would not go so far as to say that it certainly is that; but if I can eliminate two predisposing causes, except constant pressure, I think I am entitled to say it should be put down to that cause.

2441. It is put here rather conversely. It is suggested that you do not require to find characteristic or well-marked symptoms of the existing diathesis to prove that the Dupuytren affection present is of that nature?—That man would say this: that the only sign of gout may be the Dupuytren's contraction.

2442. That is really what it comes to?—I would say that that man has not sufficiently carefully looked for a local irritating cause.

2443. You do not quite agree with that?—I do not.

2444. (*Sir Clifford Allbutt.*) I do not think your word "predisposing" is so good as mine. I ventured to suggest "constitutional"?—That is better.

2445. Because, supposing a man to be free from gout, but owing to the stresses of which you spoke, some multiple lesions are started in the fibrous tissues under the skin, then gout might come in not as a predisposing cause, but as a secondary contributory cause?—Yes, it may.

2446. So that it is not predisposing?—No.

2447. Therefore, I thought perhaps it would be more convenient to use the word "constitutional"?—I think it would be better.

2448. You spoke in an interesting way about the methods of treatment which you would recommend. Supposing for example a person claimed compensation, and it was proposed to him that by submitting to a certain kind of treatment he would get rid of his trouble, would you even then, from the Dupuytren point of view, allow a patient in whom this contraction had commenced and gained anything like a hold—whatever his treatment—to go back to the same work?—I think it would not be advisable. I think it would be better for this man to get employment of another kind.

2449. (*Chairman.*) You know how important in practice that question becomes in many of these cases?—It does. But it is likely that about a mine other work could be found which would not produce a stress in the same particular way.

2450. We have great difficulty as to that?—Great difficulty.

2451. But assuming he has arrived at what we have called Dr. Collis's second stage and the treatment has been beneficial—I would not say he is absolutely cured—what do you say about his going back to work?—I still say the man would be well advised to try some other trade. A miner, as a rule, is a man who, if he has good health, is quite capable of doing general labouring work. Of course, he does not get the same wages.

2452. But would you recommend him to work as a labourer; would not the work of a labourer probably carry on the same disease?—Yes, I think it would be better if the man could do nothing.

2453. When you get him to the third stage, what do you say about that?—In my third stage I say the finger ought to come off.

2454. That is our fourth—completely flexed?—In the third stage he wants multiple incisions.

2455. Supposing he has had multiple incisions and that has been beneficial, how do you answer the question about his going back?—I would say he should not.

2456. It is a serious question for the Committee to consider?—I look upon it in the same way as nystagmus.

2457. Now you are going to tell us something about clonic spasm of the eyelids. Is it a separate disease in your opinion?—No, I think it is a symptom of a disease.

2458. And that disease is a disease known as what?—Miners' nystagmus.

2459. "Miners' nystagmus" or "nystagmus"? Do you say it is confined to miners?—No, I have known it in others.

2460. If nystagmus exists in other cases, is this one of the symptoms of it?—Yes, it is.

2461. We only want to consider it in so far as it relates to this disease of nystagmus. You appreciate that nystagmus is already within the Act?—I do.

2462. The question is, if this is a symptom of nystagmus, is it not already within the Act?—It should be.

2463. It is?—As a matter of fact it has not been applied in that way.

2464. Do you say that is owing to a mistake of diagnosis?—A mistake of knowledge that it was included. It has been generally considered that oscillation of the eyeball was the only incapacitating cause, clonic spasm, photophobia and the other symptoms, giddiness and headache, which are very frequently associated with what is called miners' nystagmus, are not allowed as a cause why a man should receive compensation unless they are associated with oscillation of the eyeballs.

2465. Do you know of any case where the certifying surgeon has refused a certificate?—Yes, I know cases of my own.

2466. Would you mind telling us cases of your own where you think at all events a man was suffering from miners' nystagmus?—In the first case mentioned, I believe further compensation has been refused to the man, although he has been receiving compensation. The oscillation of the eyeballs has gone, but the man is still absolutely incapacitated. He has marked photophobia, with injection of the eyes and eyelids and clonic spasm. What I say here gives an absolute picture of the man.

2467. You think in that case compensation has been refused?—I am almost sure it has.

2468. You mean the certificate has been refused?—No—Compensation.

2469. Do you know whether he has appealed to the medical referee in that particular case?—I believe it is a question of compelling payment through the Court.

2470. But there is an appeal from the certifying surgeon to the medical referee?—Yes, there is.

2471. Do you know if it has got as far as that yet?—I believe it is going to him.

2472. But you do not know whether the certifying surgeon has refused, and the medical referee on appeal has also refused?—I cannot say about that.

2473. That is one of the primary objects of establishing these medical referees, in order that they may correct any mistake which is made by the certifying surgeon?—I believe that in Dr. Court's case some reference is made to that. At any rate in one of these reports I have, I feel quite certain it is.

2474. What reports are you reading from?—This is sent to me from the Nottingham Miners' Association. It is a report by Dr. Court of Chesterfield. His statement was: "A miner, aged 33. He left off work "in February on account of his eyesight. His eyes "began to be bad two years ago. Just before leaving "off work he suffered from pain in his head, his eyes "rolling and twisting about. He could not bear to "look at the light. He stumbled about in the pit. "He consulted his own doctor in February, but he "was not told that he had miners' nystagmus. He "saw Dr. Bingham, the Certifying Factory Surgeon, "who told him that there was no nystagmus"—I take that to mean oscillation—"so that he could not claim "compensation. He has been an outdoor patient at "the Nottingham Eye Infirmary since last July. On "examination I found that there was no oscillation of "the eyes, the chief symptom of miners' nystagmus, "but he has spasm of the eyelids, dimness of sight, &c., "which are associated with nystagmus. He is not "able to work underground, but he can do some kind "of work on the surface." Then this is a further letter: "I enclose a report upon the examination of "Walter Taylor, who was accompanied by Mr. George "Davidson of Alfreton, on Saturday last. This case "is one of a man who suffers from the symptoms "associated with miners' nystagmus and always are "present in the bad cases, yet, owing to the absence "of oscillation of the eyes, a claim cannot well be "sustained to compensation in the present state of "the law. I have no doubt of this man's incapacity "for work, and that it has been brought on through "the nature of his employment, and, should you think "it advisable to go to the Courts, I am prepared to "back up my opinion."

2475. That does not show whether he has gone to the Medical Referee or not?—It does not say.

2476. You say there are cases in which you think a mistake has been made. I am not quite sure that it is right to put it on the present state of the law?—No, I feel quite confident that that has happened.

2477. Do you find this clonic spasm is what we may call an early manifestation of the disease?—It is frequently early. Sometimes it is a late manifestation. Sometimes it remains after most of the other symptoms have passed.

2478. It has been suggested that it does not appear except as a lingering symptom, so to speak, of the disease, not as a preliminary symptom?—In the case of this very man the clonic spasm was not the first symptom. The first symptom was profound mental depression; but following shortly on that came clonic spasm, and then the other symptoms that have been spoken to, photophobia and vertigo, and then the oscillation of the eyeballs began. The oscillation of the eyeballs has now ceased, but even on making the man resume the position of a collier in a darkened room for a considerable time, the clonic spasm is still pronounced, and the other symptoms of nystagmus.

2479. And do those symptoms cause incapacity?—Absolute incapacity in this man.

2480. Did that man get a certificate?—He has been receiving compensation.

2481. Under a certificate?—Yes.

2482. So that he got his certificate when the oscillation appeared?—Yes.

2483. And of course that would be a question for the Arbitrator as to whether the disease had disappeared or not?—That is so. It is held now that if the oscillation has disappeared the complaint has disappeared so far as compensation is concerned.

2484. Who has held that?—Well, I am quite sure that is held both by the lawyers and the doctors in our district.

2485. It has never been held by me?—No, I do not think we have ever brought that on before you.

2486. After all it really comes to this: that the doctors, mistakenly you say, assume that the disease did not exist unless we have present what we have called the primary symptom?—Yes.

2487. But that is a medical mistake; nothing to do with the state of the law?—I should be glad to have it made quite straight and plain.

2488. It is suggested that after all this discussion it will be perfectly plain to Certifying Surgeons that this is one of the symptoms at all events of this disease?—I think that would be all we should require.

2489. It is suggested that the difficultly might be met by widening the definition of the disease in some such way as this: "Miners' nystagmus; the name of "a group of symptoms most frequent amongst miners, "of which oscillation of the eyeballs is a common but "not invariable feature." Do you think that would meet the difficulty?—Yes, I think so. I think it would be quite acceptable.

2490. Do you think it would meet the full difficulty?—Yes, I think it would, because oscillation of the eyeballs is sometimes pronounced and yet the man is not incapacitated.

2491. It is suggested if you take the trouble to make a sufficiently careful examination in nearly all these cases, you will find oscillation of the eyeballs?—By careful examination with the ophthalmoscope you would make some cases apparent where it did not seem to exist, and I think you can then find that the oscillation, is notwhat I may call a clean to and fro or up and down oscillation, but it is associated with a slight rotary movement at the same time as I say like *that (twirling with the finger)*.

2492. (*Sir Clifford Allbutt.*) A subjective sensation?—No, it is an objective movement, the movement of the eyeball. I am giving my own view. I say in many cases when you examine with the ophthalmoscope you find the movements are not a plain to-and-fro movement or up and down, but there is a slight rotary movement at the same time associated with it.

2493. They are objective?—Yes.

2494. (*Chairman.*) As we are taking hearsay evidence, I think it would be as well if you would shortly quote the cases you have in your proof in order that they may appear on the notes. The next one is

Dr. Scott, who lives near Sheffield. Did he communicate a case of his to you?—He did.

2495. Will you tell us the particulars?—"This "man came to consult me with reference to his eyes "some time ago, but I did not give him a certificate "that he was suffering from nystagmus as he had no "oscillation of the eyeballs. He was suffering from "nictitation of the eyelids. This case is not scheduled "as one under the Workmen's Compensation Act, "1906." That man was under the same impression.

2496. Is Dr. Scott a private practitioner?—He is the doctor to the miners there.

2497. He is not a certifying surgeon?—No.

2498. Then you give a quotation from Mr. Joseph English, who is the miners' agent?—Yes. "Man on "books over two years suffering from nystagmus. "He was examined three weeks ago by a doctor, who "certified that he had recovered from nystagmus. I "then had the man examined by Dr. Bennett."

2499. Is Dr. Bennett a medical referee?—He is an eye specialist. "He said the man had got into the "habit of constantly blinking the eyelids, but that "was not nystagmus. After I had received that "certificate from Dr. Bennett, I could go no further, "but I am of the opinion that blinking of the eyelids "should be included in the scheduled list of diseases."

2500. That is going a long way. We must assume, between Dr. Bennett and this gentleman—the miners' agent—that Dr. Bennett was right?—That is so.

2501. Then do you wish to quote anything else?—There is a letter from Dr. Ritten. This is an exact word-for-word translation from the report in "L'Ouvriers Belgique," the Belgian miners' paper. This is confirmed by Dr. Shufflebotham, who was present at this Congress. I asked him about this point, in view of the letter I had had from Mr. Locke.

2502. What do they call the disease?—"Augenzittern," and it means trembling of the eyes.

2503. You say: "which I took to include nystagmus and clonic spasm." That is your opinion?—Yes, that is my opinion. Their report was that it affects Belgian miners in different districts to the extent of varying from 12 to 47 per cent. of the men engaged. In the Liège district, 25 per cent. of the men suffer from it. At that same Congress, Dr. Shufflebotham brought before the notice of those present the possibility of miners suffering from the disease known as miners' nystagmus without any symptoms of oscillation of the eyeballs, and this opinion was confirmed by Dr. Dransart.

2504. Does that mean at no time the oscillation of the eyeballs appears?—I think in some cases it never appears.

2505. Was that what was confirmed by Dr. Dransart?—Yes, that view was confirmed by Dr. Dransart.

2506. Still, I understand now that your opinion is that if this more extended definition was given to the disease itself, nystagmus, that really might meet the whole of the difficulty?—Yes, I feel it would. I would like to say here that in my view it is possible, I think, that on the Continent the extreme prevalence of trembling of the eyes either as oscillation or as clonic spasm may be explained partly by the great prevalence of ankylostomiasis, which reduces greatly the vitality of the men. It is notorious to all men who have any experience of this nystagmus that it comes on very frequently after either an injury or an illness. I have frequently known men, and I have two now, where it came on some time after the men had received an incapacitating injury.

2507. Have you ever found it following ankylostomiasis?—No, it is very little present in English mines except in Cornwall; but this would follow on the weakening effect of an injury, and I have known it frequently to come on after attacks of influenza or other serious diseases.

2508. (*Sir Clifford Allbutt.*) Any debilitating cause?—Yes.

2509. (*Chairman.*) Most of the symptoms of nystagmus after the oscillation of the eyeball has passed away except this blinking, the clonic spasm, are subjective, are they not?—Yes, they are.

2510. Then it is suggested that the only objective symptom is this clonic spasm that can very easily be simulated?—I think it is most difficult.

2511. Why do you say that?—To a man who has seen the real thing the movements are altogether different from voluntary movements. The movements are not so coarse.

2512. Do you mean by that quicker?—They are quicker and finer, and if a man attempts to do it quickly and voluntarily he must bring other muscles into play, except the muscles which blink the eyes, the orbicularis and others. I think it would be impossible to do it. I also think it would be impossible to simulate photophobia, the dislike of light, the rolling up of the eyeballs out of the reach of the light, and so on. I do not think it would be possible for them to simulate it, at all events before a man who knows it.

2513. That has been urged as an objection to making use of those words, "clonic spasm," in the definition. In the proposed definition I have read to you, you notice they do not appear. They do not use the words "clonic spasm" or "blepharo spasm." We simply say "or other symptoms." It is suggested that if the words were used, it might lead to a considerable amount of simulation of this particular symptom?—I think it would be absolutely impossible. I am quite confident I could not be deceived in it.

2514. (*Sir Clifford Allbutt.*) It is absolutely impossible you say?—To simulate successfully to a person who has seen the real clonic spasm.

2515. I suppose the way in which one has to try to put it together in one's mind is this: that the position and the light, or the two together or either—the occupation—throws a strain upon the muscles of the orbit?—Quite so.

2516. That is the initial lesion?—That is my opinion.

2517. Then that is shown very often by the oscillation of the eyeball?—Yes.

2518. Then is the oscillation of the eyeball obligatory, or is there any other criterion of eye strain—not refraction, of course, but this particular eye strain—without oscillation at some period?—Yes, I think that the men sometimes suffer from the other symptoms of nystagmus disease without at any stage of the disease having oscillation.

2519. That is a very clear answer. Can you fill up the gap and say whether you assume that the muscles of the orbit have been strained, although they do not fall into oscillation?—I do think they have.

2520. And that the subjective symptoms are still due to the strain upon the orbit of some kind or other?—Yes.

2521. When that has gone long enough or in a neurotic person, it brings in all these other oscillations, vibrations and the rest of them?—Yes, it does.

2522. Then we take a later stage, one perhaps approaching recovery, in which the nystagmus disappears, but some of the other train of things may remain?—Yes.

2523. That is in accordance with many nervous habits and tricks of various sorts that one hears about it?—It is.

2524. It does not follow that the malady itself is continuing because some of these tricks still remain? It does not.

2525. This makes me a little question your certainty of diagnosis. Where is your criterion? How are you to prove in a particular case that this is not one of those things like twitching of the neck or the shoulder that people get into, which is not to be called quite voluntary. It can be controlled more or less, but it is semi-voluntary. It is not like a choreic movement?—No, I think it is rather like those tricks people have of twitching the eye or nose.

(*Chairman.*) I do not think Dr. Moody said he could detect it in that way. He said he could detect it when it was entirely simulated; not so to speak a bad habit contracted.

2526. (*Sir Clifford Allbutt.*) It is very very difficult to say. Of course the thing can be deliberately simulated; but, on the other hand, we know if a man's

mind is in a state of indecision with regard to compensation, and other worries, he is in the very state of which you are speaking, that of mental stress whether due to injury, or influenza, or legal proceedings, or anything else which makes him a good subject for this sort of nervous twitching?—The way I think I would proceed to satisfy myself on that point would be, to alter the man's position with regard to light. If you put them away from the light, the clonic spasm improves considerably. If you bend the head slightly backwards, like the oscillation, the clonic spasm also improves in that position most generally. If you bend them forward or put them in the position in which they have been accustomed to work, both the oscillation, if it exists, and the clonic spasm, if it is present, are made worse. Now if it is at all a habit, I do not think that would be influenced in the same way.

2527. Then you would say, if the man was unaware of these points, that would be your criterion; that you could diagnose him by those tests?—Yes, those would be some means.

2528. Take your first case. The man before ceasing work suffered from profound mental depression, suicidal promptings and so on. That is not peculiar to miners?—No, it is not.

2529. How then would you associate that with nystagmus and miners' trouble, and so on?—Because in so many cases I have had the two cases associated in men who have previously been free from it.

2530. Here they are not associated you say?—Yes, it was associated with this eye trouble.

2531. It does not say so?—This is the man who was suffering from it.

2532. You say: "I know the case of a man who for "many weeks before ceasing work suffered from pro-"found mental depression, with suicidal promptings." That is all that is stated?—This is a man who was suffering from clonic spasms, with other objective symptoms. For instance, take the hypermetropic person, who has a good deal of reading to do, and so on. They blink very much in the same kind of way. Their eyes are rather bloodshot, and they have eye strain.

2533. They come to you with all these subjective symptoms, not knowing what the matter is, and you then guess it is eye strain. You find they are hypermetropic or astigmatic, or whatever it may be; but they blink very vigorously too?—They do.

2534. I do not know whether you have been asked how far refraction strain enters into these cases?—It does enter.

2535. To any great percentage, do you think?—Yes.

2536. Is it customary to test the refraction in these cases?—I have tested a considerable number of them, and I find it is very frequently associated; but I could not say in what proportion.

2537. Could you say that in two or three months after the adoption of proper spectacles a man could go back to his work?—I could not. I am quite sure it would hasten the recovery.

2538. Give him six months then?—Yes.

2539. It takes a man a couple of months to get accustomed to his spectacles, and so on?—Yes, it does.

2540. Give him six months?—I think it would do; but I do not think it is very advisable for these men to go back to work.

2541. You have not data enough to say with regard to that?—No.

2542. Dr. Ritten's extract, as it is given to us here, is rather indefinite, is it not?—Yes.

2543. You could not make much of Dr. Ritten. We do not know what he meant technically by "Augenzittern"—eye quivering—to begin with?—Exactly.

2544. Then he says: "In the Liège district 25 per cent. of the men suffer from it." We do not know what "it" is?—It would be the combination I suppose.

2545. I think we cannot rely much upon a supposition. In your "thirdly," on page 10, you say: "In my "experience oscillation of the eyeballs ceases frequently "before the stopping of the clonic spasm." In this case you see the oscillation was present at some time?—Yes, at some period.

2546. My difficulty is in the cases where you never have observed the oscillation, because I can quite understand if you have the datum that the man had oscillation during some period, and he gets partially well, that is your thirdly—it is quite intelligible; but our difficulty is concerning cases in which, so far as we know, there had never been oscillation. Where is your criterion?—You would suspect when you see these men facing an ordinary window like this that it was a case of corneal ulcer. They are so frightened of the light, and it so intensifies their symptoms.

2547. That is what I was really hesitating about. It seems to me to bring in corneal ulcer and the refraction difficulties. It seems to me this sort of symptom might arise from manifold causes.

(*Chairman.*) Where the primary symptom is absent altogether?

(*Sir Clifford Allbutt.*) Yes, and all this blinking.

(*Chairman.*) Yes, but where the nystagmus exists.

2548. (*Sir Clifford Allbutt.*) Supposing a man with blinking to have corneal ulcer, you could not say the blinking was due to his calling, could you?—No.

2549. Yet he would have all or many of these symptoms?—But you would see the corneal ulcer.

2550. Quite so in the particular case; but it is a general criterion I am wanting. When you saw ulcer, it would take the case out of your category, would it not?—Yes, it would.

2551. And there may be many other irritations not so easily seen as corneal ulcer?—Then again it is very rare for people suffering from corneal ulcer to complain so much of vertigo.

2552. It is a very tight blepharo-spasm?—Yes, very tight. But I do not know that they complain of the giddiness and the whirling round of things.

2553. But they can tell each other of this feeling?—Yes, they can of course.

2554. I am not speaking of coaching each other; but there is a tradition in the mines that this sort of sensation occurs?—Yes.

2555. Therefore it appears to me we are still in want of some definite criterion?—There are many other curious symptoms these men complain of that I do not think—even in uncertain vision—in other cases they complain of in the same way. These men say that when they are passing in the street they are afraid, although there is plenty of room on the footpath, that they may jolt into someone, and they feel helpless.

2556. Those symptoms are very common in ordinary neurasthenia which does not specially pertain to mining?—Yes.

2557. Miners are often neurasthenic like other people. Some neurasthenics dare not cross the street?—But these are symptoms in men who are not otherwise neurasthenic. I mean there are some who are neurasthenic, of course.

2558. I was suggesting it would be rather difficult to exclude neurasthenia?—Some of them evidently, in my opinion, are not such, but I am quite sure a proportion are.

2559. Then it really comes to this: that you would trust those three or four tests of position, and so on that you were speaking of, as points to guide you to your diagnosis?—Yes, and I feel sure I could diagnose it correctly.

2560. By that means?—Yes.

2561. (*Chairman.*) By the means you have told us?—Yes. The history of the man's occupation, his subjective symptoms, and then the alteration in the symptoms due to position, and the incidence of light and so on.

2562. (*Sir Clifford Allbutt.*) And the various positions that you place him in?—Yes.

2563. (*Chairman.*) Before we pass from that, I understand you are putting these questions with regard to the very rare cases where the primary symptom of nystagmus is not present at all. I may be wrong?—That is so; they are very rare.

2564. Have you ever met one?—Yes, I have.

2565. Do not you think there are many cases where the medical man may well say there has never been a primary symptom, and it is only that he has not detected it?—That is quite possible, because a man, of course, may have oscillation of the eyeballs and no subjective symptoms, and they may have been present some time before the man complained or ceased work.

2566. Of course it would make the diagnosis much more difficult where the primary symptom, as far as the doctor knew, had never been present?—Much more difficult.

2567. Then those would be very rare cases?—Extremely rare.

2568. The real question is in the case of a man who has not suffered from nystagmus, whether these symptoms may not be mistaken for the after effects of nystagmus. Of course there is that risk in everything?—I think it is a very slight risk.

2569. (*Dr. Legge.*) Have you ever known any of these cases get quite well?—Yes, quite well.

2570. And have you known of any that have returned to work in the mine?—Yes.

2571. With what result?—Invariably recurrence.

2572. In what length of time?—A varying period of time. Sometimes it has been only comparatively short. At others they have worked at it for some years before it has returned. That they have had to come out of the pit again.

2573. (*Chairman.*) You have had no cases of working for years?—Yes. A man worked at Chesterfield two years, and then he had to be found a job on the surface again.

2574. (*Dr. Legge.*) Then in cases of nystagmus in this condition which might not have been quite so severe, when they have got quite well, have you known of cases that have gone back to work and have had no recurrence?—No, I do not think I have.

2575. And your experience would extend into hundreds?—Yes, it will.

2576. But of those hundreds, what proportion do you think would attempt to return to work and have a recurrence?—It might be 10 per cent. possibly.

2577. (*Chairman.*) Does it depend upon the severity of the attack largely?—Yes. I should always strongly urge them not to go back.

2578. The severity of the attack or the time that elapses before they go back to work if completely cured?—The length of time that elapses between coming out and ceasing work and being fit again for work.

2579. Can you give us any idea as to what that time is?—No; it varies so much it is almost impossible.

2580. (*Sir Clifford Allbutt.*) Have you formed an opinion as to whether there is any parallel between the oscillation and the subjective symptoms?—No, I think not. I have seen severe cases of oscillation and a miner who was not suffering from nearly so frequent oscillations.

2581. (*Chairman.*) So long as you thought there were symptoms of nystagmus—this oscillation and clonic spasm—and the oscillation had gone, so long as the spasm continued, I suppose you would not recommend a man to go back to work?—I would not.

2582. Not so long as any symptoms that you thought were really symptoms of nystagmus remained?—Down a mine, certainly not.

2583. I mean down a mine?—No, I would not. I am quite sure it would invite a quick return.

2584. Then take the case of the symptoms which have entirely disappeared. Assuming a man as far as you can tell is cured, do you think any period should elapse before he should return underground; you do not recommend him to go underground at all, do you?—I think it is much better not if it can be helped; but I think in the best interests of the man and the company a period should elapse for the parts to resume their natural tone and condition first.

2585. What sort of period can you give us any idea?—That such work should be found for the man so that it should not be a burden. I should say six months.

2586. You mean some other work?—Yes.

2587. Then if he showed no signs, do you think there would be no great risk even in going down the mine?—I advise them always to watch themselves carefully; and at the first sign of any return, to report and apply for work on the surface again.

2588. I am only speaking of my own duties in the Potteries. You think it would not be an unreasonable thing for a man to go down to work again after he has been apparently cured and there are no remaining symptoms when a period of six months has expired?—No, I think it is right to ask a man to do that.

2589. It is bad enough, but the worst that can happen is for him to get it again?—Yes, but he notices it earlier this time and probably takes it in hand quicker.

2590. And is cured in the same way?—Yes, exactly.

2591. Do these attacks, if they are repeated, increase in severity each time necessarily?—They do not necessarily increase in severity if they are taken in time.

2592. It is all a question of the time at which they are taken?—Yes.

2593. It does not follow in the case of a man who has had nystagmus that the second nystagmus will be worse than the first?—No, I think not; but I have no doubt it will keep getting worse if the man remains in his occupation.

2594. (*Dr. Legge.*) I suppose you hope that at some time they will get better light in the mines, which will make it easier for the man to get back to work?—That is quite true; but at the same time I believe the position has a tremendous lot to do with it, and I do not know how far the position of coal-getting can be altered.

2595. (*Chairman.*) Do you know the position in which the man has to hold himself?—Yes, I have worked in a mine.

2596. But do you think that has as much to do with it as insufficient light?—I think it has more to do with it really. I am sure both influence it; but when you are fixing your eyes on anything, it is the movement of the head which does the coarse movements; the fine movements you do only with your eyes. When the head is fixed in a certain position, you must do every movement, coarse and fine as well, with the eyes.

2597. If you get your head in a very awkward position, is the strain greater upon your eyes?—Yes. The only cases outside diseases of the eye and nervous diseases where I have known mystagmus to come on from the position, was the case of a woman who suffered from severe wry neck which pulled the head down on one side, so that when her head was in the ordinary position she suffered in a distressing way from nystagmus.

2598. There is one other question I forgot to ask you. Do you think that nystagmus exists to any appreciable extent except among miners?—I do not.

2599. There are some cases, are there not?—Yes, there are cases.

2600. Where they may arise from the employment as well?—That is so.

2601. It is suggested that if we put in this definition of the disease "miners' nystagmus," we should limit the present disease?—It would do an injustice to a few.

2602. Can you cite anybody you know?—I do not know any of my own knowledge.

2603. Still, I suppose it must be taken that there is the possibility, to say the least, if we in any fresh definition, confine this to miners' nystagmus, of our cutting somebody out of the Act who is at present within in?—I believe it has been found amongst engineers' helpers who have to clean under engines with their heads in a strained position.

2604. On the other hand, there are other things which are quite outside conditions of work which will bring on nystagmus?—Yes, certainly. How would it be to call it Snell's Disease?

2605. What?—This that we are discussing.

2606. Nystagmus?—Yes.

2607. I am afraid we should be out of the frying-pan into the fire if we give it a new name. It is pretty well known in the profession generally under the name of nystagmus, is it not?—Yes, it is.

2608. Books have been written upon it?—Do I understand that men in other occupations who are suffering from this complaint would not be entitled to recover because it is called miners' nystagmus.

2609-11. Yes, that is the suggestion?—I think it would be just as reasonable to say that a certain class of occupation that produces Bright's disease must be excluded because of the name. This name "miners'" to me conveys a train of symptoms of a disease, and to say just because of its name other people suffering from that disease must be excluded, I do not think is common sense.

(*Chairman.*) May I say on behalf of the Committee that we are very much indebted to you.

The witness withdrew.

Dr. W. Brown Moir, called, examined by the Chairman.

2612. You and the other medical gentlemen who are here are giving evidence on behalf of the Mining Association of Great Britain?—Yes.

2613. You are a Bachelor of Medicine and Doctor of Medicine of the University of Glasgow, a Member of the Royal College of Surgeons of Edinburgh, and you are in charge of the Insurance work for the Scottish Mineowners Insurance Association, and have been so for 13 years?—Yes.

2614. Prior to that you were in general practice?—Yes.

2615. And you held a hospital appointment for five years?—Yes.

2616. You were house surgeon and house physician at the Royal Free Hospital, London?—Yes.

2617. You have considered the question of this disease known as Dupuytren's contraction?—Yes, I have.

2618. Have you made any special study of it?—No special study except a general examination of the mass of men that have passed through my hands.

2619. Will you tell us, with reference to that, what is the number of men who have passed through your hands that you allude to as a mass of men, and for what purpose?—I am examining for compensation purposes for the Scottish Mineowners Insurance Association. There are 16,000 men in the year on our books. Of course I only see about 3,500.

2620. Those are men who have been injured and are receiving compensation?—That is so.

2621. Then your examination is directed to some injury or disease which is already scheduled to the Act?—Yes.

2622. You have no particular reason to consider in their case Dupuytren's contraction?—No, unless it comes up.

2623. You do not look for it?—I am not looking for it.

2624. But it does come before your notice accidentally?—Yes.

2625. We have had it described to us many times, and I think there is no difference between your description and that given to us before. What do you say about heredity?—I have never seen a case in my own experience in a young person, and those cases that I have seen are so far advanced in their life history that you have to consider the constitutional elements more than heredity.

2626. You say, "Its heredity is well known"?—I am speaking of the general knowledge of the fact that it is. It runs in families.

2627. Have you had any experience of that yourself?—Not in my own family, but I know those who have.

2628. You have heard of cases?—Yes.

2629. You say it is especially an affection of the male population?—That is so.

2630. (*Sir Clifford Allbutt.*) Where is your practice?—I have not practised at all for the last 13 years.

2631. You are not to speak of a particular locality?—No.

2632. (*Chairman.*) Where do your cases come from?—The whole of Scotland.

2633. You are the doctor in charge of the miners? Yes, we overlook 113,000 men.

2634. You say it is an affection more especially affecting the male population. That seems to be generally agreed?—Yes.

2635. Can you give the Committee any reason for or explanation of that?—It seems to me that men use their hands more than women in hard operations involving considerable pressure.

2636. I suppose that must be taken to be so on the whole?—Yes, although it is seen in women as well.

2637. Then that points to its being due to pressure?—Pressure as an exciting cause.

2638. In your opinion is pressure an exciting cause?—If the other conditions are present I think we cannot get away from the fact that prolonged pressure has an effect in determining it.

2639. That is the only reason you can give why it has manifested itself so much more frequently in men than in women?—I think so, and probably another reason I would say is this: that being associated with rheumatism and gout, especially rheumatism, men are so much more exposed than women.

2640. To what?—To the elements, climatic conditions; therefore, rheumatic conditions are more apt to arise.

2641. What do you say as to gouty conditions?—I am applying this to rheumatic conditions.

2642. You think that rheumatism is more common in men?—I think so.

2643. Do you say the same about gout?—Yes.

2644. Then you think gout and rheumatism are——?—They are certainly more common in men than women.

2645. We have heard a suggestion that gout is, but rheumatism is not?—I think there is more of the male element affected with rheumatism than the female element.

2646. You think local pressure or prolonged pressure may have an effect on the palm of the hand or the constant use of or grasping a hard body may in the long run produce this condition. Do you mean by "produce" there, actually produce it—by really producing the cause?—Determine the onset of it. On the whole it is not the actual pressure that sets it up, but the pressure is the exciting cause that causes this particular thing to start in that particular place.

2647. What is the actual cause?—A constitutional tendency to it.

2648. I am reading your proof. When you say in the third paragraph, "Although it must be admitted "that prolonged pressure over the palm of the hand "from the constant use of, or the grasping of, a hard "body may in the long run produce this condition, "yet side by side with this effect, it must be "remembered that the same condition of affairs may "arise spontaneously without the interference of local "pressure." I gather from that that your view is that one or the other may produce it?—Yes.

2649. Then you point out that it is in many instances associated with gouty diathesis?—That is so.

2650. And in some of those cases where it so develops, you find the patient frequently manifests no outstanding signs of the constitutional tendency?—I mean by that that you do not require to have a person twisted up with rheumatism to get this.

2651. No, not twisted up, but do you require to find objective signs of it?—He may have the latent conditions of rheumatism.

2652. Objective?—No, rheumatic pains.

2653. Not objective?—No.

2654. He may have had it at some time or may never have had objective signs?—Yes, but he has a rheumatic diathesis.

2655. I think you must mean that because you follow it by saying: "That means you do not require "to find characteristic or well-marked symptoms of "the existing diathesis to prove that the Dupuytren "affection present is of that nature"?—That is so.

2656. Would you mind explaining or amplifying that a little. If you find none of these latent signs of gouty diathesis, how do you prove that it is of that nature?—A man may have vague feelings of pain. He may have dyspeptic feelings, and also he may have intercurrent attacks of rheumatic affections, floating, not fixed, yet he has a rheumatic diathesis.

2657. I gather you mean that you arrive at your conclusion by subjective symptoms and by explanations of the man himself—the history of his past symptoms?—Yes. Of course as time goes on the diathesis will manifest itself more fully—objectively.

2658. But we are dealing with a case, as I understand, where there are not objective symptoms. You cannot find any objective symptoms, but you do find Dupuytren, and you find a liability in the history of the man in his work to local pressure. Which do you say you would attribute it to, to local pressure or constitutional?—It takes so long for the local pressure to have affected him that it seems to affect him most at that particular time of his life when his constitutional tendencies are manifesting themselves also. That is what I mean.

2659. What is the earliest time you have ever found this disease manifest itself?—I have never seen it except in elderly people, middle-aged men.

2660. But have you ever been able to trace the shortest time when it has manifested itself?—No, I cannot give you any definite time.

2661. Have you found it appear in the rich and non-labouring classes?—I have seen cases in general practice before I became attached to the particular work I am now doing.

2662. Have you inquired into the causes of those cases?—Those were just the cases I was thinking of when writing that. They were mostly of a rheumatic nature, people who had undoubted rheumatic symptoms and required rheumatic treatment.

2663. You found either rheumatism or gout present?—Yes.

2664. Either the present or past history of it?—Yes, certainly.

2665. Have you ever inquired whether the hand in those cases has been subjected to any particular pressure? I suppose there would be no object in inquiring, would there?—No. In the cases I am thinking of the hand was not subject to any particular pressure.

2666. But have you inquired, because we have had cases in which on inquiry it has been suggested?—No; those special cases I am thinking of at the present moment that occur in my general practice were dissociated from the use even of a walking stick.

2667. That means that you did make inquiries?—Yes, and there was no pressure.

2668. No history of pressure?—No, not in those cases. Two were in ladies.

2669. The treatment, whether it arose from pressure or another cause, would be the same?—Yes.

2670. Therefore there would not be the same reason for inquiring, that there will be now if we schedule it to this Act, what it was due to, in every case?—No.

2671. You have not had any experience amongst lace workers?—No, only analysing the reports I have personally had.

2672. We have had that, and I think we may leave it. You say you have examined a large number of men in the mining industry; 3,000 cases annually?—That is really under it. I see over 100 men a week.

2673. You say you have had no experience of this disease arising *per se* out of the miners' employment. What do you mean by *per se*?—I mean any cases I have seen in connection with miners have been cases where there have been distinct injuries to the hand, either due to operations or suppurating wounds.

2674. What you call traumatic Dupuytren?—Yes.

2675. We exclude that. That can be clearly ascertained and differentiated from the other?—Yes.

2676. All the cases that you have seen have been traumatic?—Exactly. The only case there, is that of the old pit sinker, who had the second finger of each hand affected, and yet he had the history of injuries to his hands from time to time in the earlier history of his life.

2677. Yet the three cases that came under your experience you think were traumatic?—I never see the development of a hand coming into this condition with no history to it.

2678. Of course your experience is not so valuable as it would have been, because there is nothing to cause you to look for it?—No, there is nothing to cause me to look for it, and it is entirely in the mining world, of course.

2679. I quite follow that. You agree that it manifests itself bilaterally sometimes?—Yes.

2680. Would you say often?—To speak from personal experience, I can only recall that one man. I have heard of people in the early days of my practice where it was bilateral.

2681. But it seems to be a common condition?—I know it is. A medical friend of mine has it in both hands.

2682. Do you draw any inference from that?—It is constitutional.

2683. You tell us you see a large number of miners who are affected with beat-hand?—Yes.

2684. And you have never seen Dupuytren's contraction as a sequence?—Might I amplify that by saying from the 1st July 1907 to the 30th November 1912 we had 763 cases of beat-hand, and I never saw this condition as a sequence? Probably the history has not gone far enough.

2685. I do not think it is suggested that it is a sequence of beat-hand. You find that miners suffer many wounds to the hand, do you not?—Yes.

2686. It is a very frequent place of injury?—Yes. As regards that, we have a statistical department which has carefully kept all our cases, and this is an extract. From the 1st December 1910 to the 30th November 1912 we had 2,948 cases with injuries to the hands except burns in those two years. Burns are not included.

2687. And you do not remember any case of Dupuytren following on that?—Not one. You see you get contracted tendons from these wounds, but that is not Dupuytren's.

2688. Assuming Dupuytren may arise from pressure or from constitutional causes, do you think it would be difficult to distinguish in a given case which it was from?—Difficult for the tribunal?

2689. Yes, which has to decide it?—I think so.

2690. It is suggested that supposing you exhaust all the possibilities as far as you can of gout and rheumatism, and then find Dupuytren, it would be reasonable to attribute it to employment, assuming the employment is such as might cause it. What do you say about that?—Of course there are some employments which I have no experience of.

2691. Do you say it is not caused by pressure?—I do not think so.

2692. It is suggested that it is not very prevalent in the North of England. Is your coal in Scotland soft or hard?—It varies.

2693. Comparing it with Staffordshire coal, do you say it is harder or softer?—I really could not say.

2694. Or with the South Wales coal?—I know some parts are very hard. I have a great many cases of beat-hand. The men who get that most are the men who are working in the hard coal.

2695. You give as a reason for thinking this cannot be so often due to pressure, that one would expect to find it in railway signalmen, sailors, and fishermen?—That I have gathered from conversation with medical men who are in touch with men employed in these trades.

2696. You say, as far as you know, it does not exist among railway-men?—They do not seem to notice it at all.

2697. Or sailors, in your experience?—No.

2698. Dr. Hume, who is present, and is going to give evidence presently, gives a list of men who are non-miners, and I see sailors do appear there rather highly in comparison to others. To gather whether it is much more frequent among sailors than others, one would want to know how many sailors were examined?

(*Dr. Hume.*) That was not done. I was solely contrasting miners with non-miners.

2699. (*Chairman.*) Still, it does exist in sailors, but you have not come across them?—No, I have not.

2700. You go a very long way, because you assert, from the whole of your experience in the mining world, and the pains, injuries, and affections of the hands in that employment, that Dupuytren's contraction arising *de novo*, and free from all history of traumatism either shortly before, or years before, the appearance of the symptoms, is unknown to you?—Yes, that is quite true. I have never seen any of these miners come to me with their various injuries to their hands with this particular affection, without some history of injury.

2701. It is suggested that they do not complain of it even if they have it. They certainly do not complain of it until it arrives at a very advanced stage. They probably would not speak to you about it unless you discovered it yourself?—That is so. In the early stages they are quite workable. You would not know.

2702. Then really it comes to this, that you have never found it?—I have never found it in connection with miners.

2703. We may almost sum up your evidence in this way, may we not: that you have never found it in connection with miners?—That is so.

2704. You put certain questions to yourself and answered them?—Questions were put to me.

2705. The questions you are asked are: "Is this "disease attributable to any industrial occupations, "and, if so, is the occupation of a coal miner one "of them?—(*A.*) I am not aware, nor have I "any experience of this disease being attributable "to any industrial occupation, and certainly not in "that of a miner's occupation apart from traumatic "causation. (*Q.*) If not, to what industrial occupations "do you consider it may be attributable?—(*A.*) I am "not aware of any industrial occupation which *per se* "gives rise to this condition apart from other factors "contributing thereto. (*Q.*) Is the disease hereditary "or constitutional?—(*A.*) It is admitted that the disease "is frequently hereditary, and intimately bound up "with constitutional tendencies. (*Q.*) Is it more com-"mon amongst men accustomed to manual labour than "otherwise?" You really cannot answer that?—No, I cannot. I simply say generally I have seen more of it before I had to do with workmen than I have ever seen since I had to do with them.

2706. What we may call the general classes?—Yes.

2707. Was that in hospital?—No, in general practice.

2708. Where was your practice?—It was in the West End of Glasgow. I was 15 years in practice there.

2709. Then you had little to do with the working classes at that time?—Very little indeed.

2710. How many cases came before you at that time?—I had a very large practice.

2711. Can you give us any idea?—I have four cases distinctly in my mind.

2712. What classes of people were they?—One was a doctor's wife, and another was a retired hotel-keeper, a very free-living man. Another was a maiden lady about 60 years of age, and she was very rheumatic; she had it marked in both hands. That is all I recollect at this moment.

2713. Have you anything to say about treatment?—No, I have nothing to say about that; it is generally unsuccessful.

2714. (*Sir Clifford Allbutt.*) There is only one question I wish to ask, and that is concerning the prevalent notion that gout is not known, or very little known, in Scotland. Would that notion influence you at all in your conclusions about this matter, that you have not seen it? You do not see Dupuytren's contraction, and you do not perhaps see gout?—You do not see much gout there.

2715. I do not know how far that prevalent notion is true or untrue. I understand gout has become more prevalent in Scotland in recent years. But it was almost unknown there?—I have seen a good many cases of gout. I am thinking of one gentleman who was an estate factor. He was very gouty, and he certainly had the twisted fingers, but that was not Dupuytren's contraction.

2716. (*Dr. Legge.*) Would you say that approximately 90 per cent. out of these men whose hands you examined were less than 40 years of age?—Yes, they would be about that.

2717. Really you do not see many over 40?—I see a great many over.

2718. Can you give an approximate proportion of the men who are under 40 years of age and who are over 40 years of age, because we understand the disease is really not found except in men who are over 40?—I should say that 75 per cent. of the men I see would be up to 40 years of age.

2719. (*Judge Ruegg.*) As you have a great deal to do with insurance companies, assuming for the moment the disease were scheduled—I am not saying it will be—do you think there would be any difficulty in working it?—I think a great many cases would be mistaken for Dupuytren's contraction which are not Dupuytren's contraction at all.

2720. What sort of Dupuytren's contraction?—These ordinary contracted fingers from septic conditions of the hand.

2721. Wounds?—Wounds.

2722. Do you think that would be mistaken for Dupuytren's contraction?—I think it would.

2723. You think there is the possibility?—Unless a case was thoroughly examined by a thoroughly qualified surgeon to pronounce on the case.

2724. They would be competent surgeons then?—The characteristic symptoms of Dupuytren's contraction might be overlooked, and cases just of ordinary contraction might come in and pass as Dupuytren's contraction.

2725. You think there would be a risk of that?—I think so.

2726. Is there anything else that you suggest?—No; that is the only thing that occurs to me.

2727. You do not think it could be simulated?—No.

2728. (*Sir Clifford Allbutt.*) You accept the postulate that the tendon is not touched?—Yes, the tendon is free.

2729. (*Judge Ruegg.*) Is that not a symptom that can be ascertained at once?—They might slip in.

2730. (*Judge Ruegg.*) You see the certifying surgeon would have to give a certificate, and he would take very good care to make himself acquainted with any disease that was in the Act. Do you think he would be likely to be mistaken?—I hope not.

2731. There is an appeal also from him to the medical referee?—Yes.

2732. (*Sir Clifford Allbutt.*) In septic wounds of the hands the tendon is very often, I would not say always, adherent?—Yes.

2733. That is the point of distinction between the two diseases, I understand?—Yes.

2734. And you are speaking of cases in which the tendon is free?—Yes.

2735. (*Judge Ruegg.*) You were going to speak to us of this blepharospasm, or spasmodic contraction of the eyelids. What do you say about that?—I may put it this way. I have only had 182 cases of nystagmus before me.

2736. Is it a separate disease in your view, or is it a symptom associated with nystagmus?—I think it is a symptom associated with nystagmus.

2737. And may it appear before the ordinary symptoms of nystagmus?—I think it may.

2738. In conjunction with other symptoms?—Yes.

2739. And in your view may it incapacitate?—I think the blinking alone would not incapacitate.

2740. Yet with the absence of the rolling eyeballs?—In the absence of the rolling eyeballs I do not say it would, except in so far as it is an expression of the man's oncoming nystagmus, and his saving his eye from the light.

2741. But when you find it in a miner accompanied by some of these other symptoms, would you say it is a sign of approaching nystagmus, or would you say the man had nystagmus, although he has not what we may call the general symptoms?—Almost nearly all of the cases I have seen have been cases where nystagmus has been present, and where this has been an after-symptom, and where if you look carefully you will find evidence of nystagmus were still present in a fine form.

2742. Where you have observed it, is where it is an after-symptom?—Yes.

2743. You have never observed it as a preliminary?—I cannot say in cases I have seen it was a preliminary symptom.

2744. Let us consider it as an after-symptom for the moment. Assuming it is an after-symptom, do you find it after the nystagmus, the rolling of the eyeballs, has passed away?—I have seen that.

2745. Has passed away to all ordinary observance?—Yes.

2746. But you say by careful examination you can still find it?—Sometimes in certain positions of the eye there is a trembling of the eyeball still.

2747. You have never found a case where with careful observation that is not also present; some evidence of nystagmus proper, I may call it—symptoms?—I do not think I have ever seen a case where the blinking was not still associated with a trace of nystagmus.

2748. It is suggested that the word "nystagmus" is an inappropriate name; that it only describes one symptom of a disease?—Yes.

2749. You mean not associated with the leading symptom of nystagmus, which is the rolling of the eye?—Yes. This blinking that we are now speaking of I have always seen in my experience always associated with active rolling of the eye, or conditions in which you get slight rolling of the eye in certain directions. That is, he had not quite recovered.

2750. It would require careful examination to discover that?—Yes. Sometimes you have to make a man stoop a bit before you can get it.

2751. It has been suggested that men have been refused certificates of incapacity because what one may call the symptom of nystagmus has not been present, although these other symptoms of clonic spasm, attended with other symptoms which have incapacited, have been. What do you say about that?—I am in rather a peculiar position with regard to these cases, because the nystagmus cases that I see are generally sent straight to the specialist for his certificate before they are passed on to me. You see what I mean? I do not determine whether a man has nystagmus or not; I generally have him sent to me with the certifying certificate that he is a subject of nystagmus.

2752. Have you ever found a man sent to you suffering from nystagmus who has not got what we call the primary symptom of nystagmus—that is, the rolling eye?—I have always found there was some slight rolling present. I have seen it this way. I have had to make him look in certain directions, or make him stoop before I could find it.

2753. I quite follow. Have you ever found cases after what we will call for convenience the primary symptom has passed away, incapacity for work remains, resulting from other symptoms, the chief of which is this clonic spasm?—Yes, I have seen cases where after the actual nystagmus symptom had passed away there was still defective vision, and he would state that he saw objects still dancing.

2754. And you have found a clonic spasm?—Sometimes, and sometimes not. I have often seen this, that when a man was observed carefully the spasm was present; but when his attention was directed to something, then the lids were perfectly quiet.

2755. You agree that the man may be suffering from nystagmus and in a form which may incapacitate, although the primary symptoms may have passed away?—Yes.

2756. Then it is suggested the same thing may occur before the primary symptoms disappear? What do you say about that?—I have no experience of that.

2757. If that is so, you say the disease is already covered by the word "nystagmus"?—Yes.

2758. It is suggested that the definition as "nystagmus" is bad; that the word nystagmus is somewhat confusing, and that a fuller definition of the disease, including clonic spasm, might be convenient. What do you say to such a definition as this? It is only suggested: "Miner's nystagmus, a group of "symptoms most frequent among miners, of which "oscillation of the eyeballs is a common but not invariable feature"?—I have never seen a case of this particular disease where that oscillation did not occur at some period.

2759. That is not the question. I thought you admitted that there might be these symptoms when the primary symptoms passed away, and in some cases they might be incapacitated?—Yes.

2760. To meet any difficulty in that way, have you any objection to such a definition as this: "Miner's "nystagmus, a group of symptoms most frequent "among miners, of which oscillation of the eyeballs is "a common but not invariable feature"? Would that make any difference? According to you, if a certificate is refused under such circumstances as I suggest to you by the certifying surgeon, that is really only a mistake on the part of the certifying surgeon who has refused a certificate when a man is really suffering from miners' nystagmus, and he has refused it because he cannot find what we have called the primary symptom?—My experience of nystagmus is not wide enough to answer that.

2761. Do you say there will be any difficulty with regard to clonic spasm and it being simulated?—Yes, for I think clonic spasm is very easily simulated.

2762. You look upon it as being easily simulated?—Yes.

2763. Might that raise a difficulty in your view?——Yes, of course, without other symptoms present.

2764. Do you ever find that nystagmus is ever simulated?—No. A man cannot simulate nystagmus.

2765. He cannot simulate the primary symptom?—No.

2766. But you think he could simulate some of these other symptoms such as the spasm?—I am sure he could.

2767. In your view do you think it would be sufficient to leave it where it stands, simply "nystagmus," as it is in the Act at present, as you know?—Yes.

2768. You would leave it as it stands?—As it stands.

2769. (*Sir Clifford Allbutt.*) I have only one question to ask on what has been impressed upon us. The name nystagmus is used to signify the particular symptom, or this alleged group of symptoms of which nystagmus is one. Now, is it within your experience that the nystagmus itself may disappear, but yet that the other part of the group of symptoms may still remain?—Yes, that is so.

2770. That without taking you far into the enumeration of those symptoms, which are symptoms with great subjective discomfort, they may continue after the oscillation has ceased?—Yes, that is so.

2771. Or would you say, as I rather gathered you did say, that some remnant of that oscillatory movement might always be detected as a test?—Yes; and I am told by my oculist friends that when we cannot test the position by the naked eye, with the ophthalmoscope it can be seen.

2772. The blepharospasm itself, as far as I understand, is negligible?—Yes it is merely an indication.

2773. And, as an indication, is not worth very much?—No.

2774. Putting it shortly, can you have nystagmus without nystagmus? You see what I mean?—Yes. I have never seen a case.

2775. Supposing, for instance, a person is whirled round on the experimental stool we hear about; he then has nystagmus and all the other subjective symptoms besides, referable to the semi-circular canals of the ear. Is the nystagmus an essential part of the trouble; or, putting it in another way, is the nystagmus the cause of his discomfort or merely a concomitant condition?—It is a concomitant condition. I suppose the real cause of his discomfort is situated in the higher centres, the brain.

2776. Where are the other symptoms situated? If not in the eyeball, in the nervous system somewhere, strain, or whatever it may be. Because it is rather important to us to know whether it could be plausibly alleged that a man had all the symptoms of the affection, but in a particular case without the oscillation of the eyeballs?—I have never seen such a case.

2777. (*Dr. Legge.*) Have you never seen night blindness?—No, except in so far as men saying they have it.

2778. You have never known it as an incapacitating cause?—No.

2779. You agree as to the hardship there would be in the case of a workman having this blepharospasm, and the certifying surgeon and the medical referee both saying they could not find nystagmus, and therefore refusing to call it nystagmus?—Yes, there would be hardship.

2780. And if that could be got over by a better definition ——?—You mean making the definition all-embracing?

2781. Yes.—Certainly.

(*Judge Ruegg.*) It would only embrace the disease, I believe.

2782. (*Dr. Legge.*) Yet you would not like to have inserted in that wide definition a definite reference to blepharospasm?—My idea is that blepharospasm, as a condition by itself, should not be inserted. As a symptom of nystagmus it is all right.

2783. But is this objection to introducing blepharospasm, even into the description of nystagmus, because it can easily be simulated?—That is so.

2784. If the description could be so worded as to avoid that and yet include it——?—Among the symptoms?

2785. Yes, that would completely satisfy your point of view?—Yes.

2786. Have you ever seen nystagmus as scheduled in any other class of person except the miner?—Never.

2787. Have you ever heard of it as causing incapacity?—No; I have no experience of that.

2788. And do you think that nystagmus alone is sufficient description of the disease?

(*Judge Ruegg.*) Nystagmus, with "miner" against it.

2789. (*Dr. Legge.*) In your opinion it is not essential that the word "miners" should go before it?—I think it should, because I have never seen it associated with any other trade. Then "miners' nystagmus" would prevent it being mixed up with nystagmus arising from other causes; I mean diseases of the nervous system.

2790. Do you know of any cases where it has led to difficulties?—No, I do not.

2791. There was a case in Scotland?—Yes; that was one of our cases.

2792. (*Judge Ruegg.*) The Lord President rather criticised the definition?—Yes.

2793. You do not agree with this evidence that was given before us with reference to this clonic spasm: "Do "you think if a patient who is suffering from clonic "spasm is carefully examined with an ophthalmoscope "in a darkened room, you would not detect some signs "of this rolling of the eyeballs." The answer is, "In some cases, yes; in other cases, no." You think always yes?—My answer to that is that in many cases where I found clonic spasm, but could not detect this rolling eye, I sent them to our specialists, of whom we have two, who examine for us, and as a rule we send our cases on to them continually, and I have evidence back from them that they do find it.

2794. I think one ought to read the next question and answer: "Have you ever discovered what I call "the primary symptom by tests when it is not ap-"parent"—that is the rolling, he says?—(*A.*) "Yes, I have many times." He admits it has been discovered many times on careful examination?—Yes.

(*Judge Ruegg.*) Thank you.

The witness withdrew.

Dr. T. Lister Llewellyn called, examined by Judge Ruegg.

2795. You are a Doctor of Medicine, and Bachelor of Surgery of London, a Member of the Royal College of Surgeons of England, and a Fellow of the Royal Society of Medicine?—Yes.

2796. I believe you also represent the Mining Association of Great Britain?—Yes.

2797. I think you have practised for eight years in a mining district, and many thousands of miners have passed through your hands?—Yes.

2798. You have for some time taken a special interest in this disease, miners' nystagmus?—Yes.

2799. And for the last four years you have devoted a large portion of your time to investigating it?—Yes.

2800. You were Tyndall Research Mining Student of the Royal Society in 1910, and you were re-elected in 1911 and 1912 as a result of your investigations on this very subject?—Yes.

2801. You have published articles on the subject in the transactions of the Royal Society and read a Paper before the Ophthalmological Congress in 1912?—Yes.

2802. You have also written a book on the subject which is now in the press. It is not published yet, is it?—Yes, it is published now; I have it here.*

2803. When did it come out?—On the 19th of December last.

2804. I see it is written with a preface by Professor Haldane and a legal appendix by Mr. Douglas Knocker?—Yes.

2805. During your investigations you have visited the greater part of South Wales; North Wales, the Forest of Dean, Somerset, Yorkshire, and several Midland districts?—Yes.

2806. Then you were Medical Officer to the Powell Duffryn Company, the Rhymney Iron Company; and lately you have been Medical Officer to the North Staffordshire Employers' Insurance Company?—Yes.

2807. How many miners have you examined in the past five or six years?—At least 15,000. I believe that is an under-estimate.

2808. When you say examined, you mean in reference to nystagmus alone?—No. I am in a somewhat similar position to the last witness. I have been examining for accidents.

2809. You have read the literature on the subject, and you say, with the exception of a Paper by Elworthy in the "British Medical Journal" of November 1910, no writer suggests that clonic spasm exists apart from the presence of nystagmus?—Yes. But since that date there was a Paper published which does hint about it.

2810. Whose Paper is that?—It is by Mr. Harrison Butler. It is published in the "Ophthalmoscope" of December 12th.

2811. Who is Mr. Elworthy?—Mr. Elworthy is Medical Officer to the Ebbw Vale Steel and Coal Company. But I have spoken to him once or twice since, and I do not think he holds this view.

2812. He has retracted it now?—He has not gone so far as that in print, but I do not think he holds the opinion so strongly; it was only a suggestion, he says. He does not say it definitely.

2813. What about the other article?—The other article was published in the "Ophthalmoscope" in December 1912, by Mr. Harrison Butler.

* Llewellyn: "Miners' Nystagmus," Colliery Guardian Co., Ltd., 1912 (contains a Bibliography as to Miners' Nystagmus at p. 151). Other references:—(*see* 2810 and 2813 above) Elworthy: "British Medical Journal," Nov. 19, 1910. Harrison Butler, "Ophthalmoscope," Dec. 12, 1912. Llewellyn: A lecture on Miners' Nystagmus, "British Medical Journal," 28 June 1913.

2814. Where is he practising?—I think he is the ophthalmic surgeon at Coventry. I am not quite sure about it; but it arose out of the discussion at the Oxford Ophthalmological Conference in 1912. He showed two cases there in which he said miners' nystagmus—I mean the disease—existed without the presence of nystagmus.

2815. It had never been present according to his view?—Yes, according to him.

2816-22. You agree with a number of other medical gentlemen that this is not a separate disease?—Yes.

2823. It is a symptom of nystagmus?—Of miners' nystagmus, yes.

2824. Of nystagmus?—I should prefer to use the term "miners' nystagmus."

2825. Do you draw a distinction between miners' nystagmus and nystagmus?—Yes. Nystagmus is present in a very large number of cases, quite apart from industrial occupation.

2826. I should assume so; but where nystagmus is present, is not this symptom present, whether in a miner or elsewhere?—Yes; nystagmus is oscillation.

2827. No; what we call this clonic spasm that we are dealing with now?—No. Clonic spasm does not occur necessarily with nystagmus.

2828. I do not say necessarily, but it might just as well occur if you get nystagmus in a man who is not a miner as nystagmus in a man who is a miner, if you have nystagmus. That is what I am asking you; is that not so?—No, I do not think it is.

2829. I say it is one of the symptoms of nystagmus. You rather corrected me, and you said I would say of miners' nystagmus?—Yes, I have never seen clonic spasm of the eyelids apart from miners' nystagmus—a nystagmus occurring in miners.

2830. Have you seen any other cases of nystagmus?—Yes; many other cases.

2831. Then do I understand you to say it is a symptom of that particular disease which is called miners' nystagmus?—Yes, it is.

2832. Which you differentiate from nystagmus in other persons, which is not miners' nystagmus?—Yes. I do not say that it does not occur, but I have not seen this clonic spasm apart from miners' nystagmus. I have seen it in other conditions entirely, in other conditions very often; but I mean not associated with movements of the eyeball.

2833. It is associated with other symptoms generally?—Yes.

2834. What are those symptoms roughly?—Headache, giddiness, partial loss of sight, photophobia, and other symptoms.

2835. Have you ever seen all those other symptoms present, leaving out what we call the principal, before the nystagmus symptom has appeared?—Yes; I have seen partial loss of sight. I would rather put it in another way. I think the first symptom of miners' nystagmus is loss of sight.

2836. One of the very first, if not the first, is it?—One of the very first, if not the first. Then I should put the second as loss of sight at night time—night blindness; and they very often get both those symptoms before they get the subjective symptom of nystagmus.

2837. Subjective symptom?—Subjective symptom.

2838. What do you call subjective?—Movement of lamps, and things like that. You can distinguish nystagmus. It may also be subjective to the man. I mean the man may know that his eyes are going, because he can see the lamps moving up and down.

2839. You mean he may know it or not. He may be conscious or unconscious?—A man may have quite marked nystagmus, and know nothing about it.

2840. Will you try to follow my question? Have you ever known a case where the preliminary symptoms including this clonic spasm are present without rolling of the eyeball?—No.

2841. You have found what I may call the other preliminary symptoms, such as loss of sight, and so on, before nystagmus proper. But you have never found clonic spasm before?—No, I do not think clonic spasm is a preliminary symptom at all.

2842. (*Sir Clifford Allbutt.*) Of the eyelid, you mean?—Yes, of the eyelid.

2843. (*Judge Ruegg.*) Then have you ever found it existing after the primary symptom has passed away?—Yes, I have. For instance, I have sometimes seen cases two years after the onset of the disease, and I have been told there had been marked nystagmus, but I have not been able to discover it then, and in one or two of those cases only the blinking has still remained.

2844. Accompanied by other symptoms?—Yes; other subjective symptoms, according to the men. Of course, I cannot say whether they existed or not.

2845. Would you say they might incapacitate? Have you found cases where they have incapacitated for work, although the primary symptoms pass away?—Yes, I have seen one or two of those cases where the man has said he has been quite unable to work, but I have seen no reason myself why he could not. You have to rely entirely on subjective symptoms.

2846. That all depends on what view you take of subjective symptoms. Do you look at them with a disbelieving eye or a believing eye, or do you judge each case on its own merits?—On its own merits.

2847. I find some doctors take such different views of subjective symptoms. Some proceed on the principle that they disbelieve them all, and others accept them all, and, according to whether you accept them or disbelieve them, so you form your opinion?—I take every case.

2848. If they never find it appearing as a symptom before, a primary symptom, and practically never find it afterwards, do you see any reason for altering the present definition of nystagmus or for altering the schedule at all?—No, I do not.

2849. You say nystagmus is already in?—Yes.

2850. You say this is nystagmus?—Yes, it is one of the symptoms of nystagmus.

2851. Do you think there is any risk of a man being refused a certificate because the certifying surgeon does not sufficiently recognise the symptoms of nystagmus?—I have seen two or three cases where the certifying surgeon has not given a certificate, where I have been able to detect nystagmus with great ease, readily.

2852. That is exactly what I wanted to ask about. In that case has there been clonic spasm?—Yes, in two cases there has been.

2853. But he could not detect any symptom of the rolling eyeballs?—He could not.

2854. Therefore did he refuse a certificate?—He refused a certificate in those two cases.

2855. That was the case of a mistake?—A mistake on the part of the certifying surgeon.

2856. You think it was a mistake?—Yes, undoubtedly, because the man went to the referee, and got a certificate at once without any trouble.

2857. You do not think that is likely to occur very often?—No, it ought never to occur.

2858. You are a specialist in this disease. You cannot expect every medical man who has to deal with a great number of diseases to go as carefully as you do into the cases?—No.

2859. But it may be suggested that a man may be refused a certificate who has all the movements except rolling of the eyeballs, and is refused on that very ground: that he has not got that, and therefore he cannot be suffering from it?—They cannot find it.

2860. You think it is that they cannot find it?—I am sure it is in the early cases.

2861. Are there some cases where it cannot be found by any ordinary examination?—I have never failed to find it in the early cases. I have never failed to find nystagmus, except in some very long outstanding cases. I have been to very many districts, and I have had cases collected for me at the collieries, and I have had cases where it has been said this man had nystagmus fully two or three years ago. In some of these cases I have not been able to detect nystagmus.

2862. And the man is back again?—No, he is not working, but is still being paid compensation. In a dozen cases in all I have not been able to detect nystagmus.

2863. There you think the disease has gone. Could you detect any other symptoms?—No. One or two of them had blinking, and several said they got very bad at night time, and they still had headache, and when they worked their eyes started again. But at the time of their examination I could not detect it.

2864. What conclusion did you arrive at?—I thought the men in most cases were quite genuine; that they had some trouble.

2865. Was it a sequence of the nystagmus?—Yes. I think sometimes a man is left in a condition—it is not often—when you cannot detect nystagmus and yet he is suffering from the disease.

2866. It is said that in those cases you generally find there does seem to be clonic spasm?—No, that is the part I do not agree with; you may get this without any blinking at all.

2867. This is what is said: "(*Q.*) You are not a "certifying surgeon?—(*A.*) No; but I have been "satisfied in my own mind that this was a genuine "case of incapacity for work"—he is speaking of the early stages—"in the first place; and it was a case of "a man suffering from disease, I will not use any "term we are referring to—this general disease. (*Q.*) "What we are calling nystagmus?—(*A.*) Exactly. "Another thing is this. I know that in some of "these cases when they are followed up, the oscilla- "tion of the eyeball appears at a later stage. (*Q.*) I "understood you to say there were cases where it did "not appear?—(*A.*) There are cases where it does not "appear"—at all he means. "But, on the other hand, "there are cases where it appears often. (*Q.*) You "expect it in the ordinary cases to appear?—(*A.*) "Yes. But suppose the oscillation of the eyeball, as "is a fact, does not appear for some weeks or months "afterwards"—he is speaking after the clonic spasm—"if this is not included in the schedule the "man is deprived of his compensation during that "period of time." Then: "(*Q.*) I understand the "difficulty?—(*A.*) I may say this: that in the last "week I have had two cases brought to my notice of "this disease when these preliminary symptoms were "accompanied by a great mental depression, to such "an extent that in two different cases the man "threatened to commit suicide. (*Q.*) Would it not "be difficult for a court to ascertain the extent to "which this symptom *per se*, clonic spasm, causes "incapacity for work?—(*A.*) I do not think that the "symptom *per se* does cause incapacity for work. I "think it must be associated with other conditions. "(*Q.*) You think the man has got nystagmus, although "the symptom of the rolling eyeball has not "appeared?" That means has not yet appeared. "(*A.*) In some cases I have seen, I am sure of it. I "have no doubt whatever, and it is a point I wish to "emphasise as much as I possibly can." You do not agree with that?—No, I do not agree with that. I think with sufficient care you can detect the oscillation of the eyeballs in the early cases.

2868. You think it would be dangerous to mention this symptom by name?—Yes, I think it would be very dangerous.

2869. Do you see any objection to the definition of the term "nystagmus," or "miner's nystagmus," whichever it is to be called, being amplified in this way: "Miner's nystagmus, the name of a group of "symptoms most frequent among miners, of which "oscillation of the eyeballs is a common but not "invariable feature." That would indicate a little more fully, perhaps, to the certifying surgeons the sort of disease which is meant to be included, because you remember it is intended to include miner's nystagmus?—May I make a suggestion?

2870. Yes, please do.—Supposing the disease were scheduled "miner's nystagmus," and "mining" put opposite, then I should think that would cover the ground. The decision could be left then to the discretion of the certifying surgeon. He could certify or not, as he thinks fit, whether the man has it.

2871. That would not meet the difficulty. It has been suggested to us that the certifying surgeon might say: "You have not miner's nystagmus at all. "For miner's nystagmus you must have the rolling of "the eyes, and you have not got it; therefore I "cannot give you a certificate." That is the whole difficulty that this Committee is dealing with on the question of this disease. Do you see any objection to an amplification of the definition?—With nothing else added, do you mean?

2872. We should have "mining"?—But we should have nothing about blinking—clonic spasm.

2873. No; not clonic spasm?—That might open the loophole for cases which are not miner's nystagmus to come in.

2874. There is a loophole now?—Yes. I do not think that would be so very objectionable.

2875. Do you think it would be any good as an indication to the certifying surgeon?—I think all the certifying surgeons will know now, after this Committee has sat, all about this symptom.

2876. They might now; but in a few years' time the personnel may be changed, and they may not. You must remember that. They generally look up very carefully and efficiently the diseases they have to deal with?—In 1911 there were 1,251 certificates granted, and only 29 refused; so that refusals are very small, even at present.

2877. If we could investigate those 29 and find out on what ground they were refused it would be very important; whether some of them were refused on the very ground suggested, namely, "you have not the "primary symptom, and therefore we cannot give it "to you"?—I have seen certificates handed in from certifying surgeons without any mention of the primary symptoms.

2878. (*Dr. Legge.*) How was it worded?—I really cannot remember exactly how it was worded, but there was no mention of nystagmus on the paper.

2879. (*Judge Ruegg.*) Then you speak of the cost of nystagmus to the coalowners, and you say it is a very serious item. But it is not suggested that we should put in a new disease; we should only make it clear. May I ask where you get these figures from with regard to the expense to the coalowners?—I had the exact figures for about 450 cases from an indemnity society of the amount of compensation paid to those men during that year.

2880. You took an average cost?—I took an average of those, and that is the result I got. In addition to that I found out from the Blue Books the cost of all the industrial diseases, and the figures that I have compare reasonably with those.

2881. I see the figures are going up. They were 13,000*l.* in 1908, 26,000*l.* in 1909, 42,000*l.* in 1910, and 60,000*l.* in 1911?—Yes. Here are cases of nystagmus receiving compensation. (*The witness here held up his book on Miners' Nystagmus and exhibited a graph.*) I had not the 1911 figures in time. There are the costs of all industrial diseases. It follows a straight line that really proves the cost of nystagmus accounts for the greater part of the cost of the industrial diseases.

2882. Some of them, at all events, affect such a very small class?—Yes. For instance, the total cost in 1910 for all industrial diseases was 42,507*l.* I estimated the cost of the nystagmus cases based on the average of the amount paid in 425 cases as 31,853*l.* So that there is a little over three-quarters of the total amount paid for nystagmus. That is what it comes to; 10,654*l.* and 31,853*l.*

2883. You say in your proof that "the inclusion of "this symptom would greatly increase the number of "cases of nystagmus, and entail hardship on the "employer." Do you mean if it is included as a separate disease?—Yes, if the words "clonic spasm" are put as a separate disease.

2884. That was never the intention. It was never suggested by anybody that it should be put as a separate disease; but supposing it is put in the definition, do you think it would have any effect?—Yes, I think it would.

2885. Why?—Because it is a symptom which it is so easy to simulate.

2886. It is one of the symptoms?—It is; but it can be simulated so easily by people, that if anybody wanted to go off work, all he would have to do would be to start blinking his eyelids.

2887. Do you find the disease is much simulated?—I have known several cases of attempted simulation of nystagmus.

2888. Which you were satisfied were simulated?—Yes, I was quite satisfied from the after-history of the case. There is one case I remember particularly, which I quote at the end of my proof. A collier had been paid compensation for a very doubtful injury to his back. When payment was stopped he immediately started to complain of his eyes. He never complained at all before. They blinked voluntarily while they were being examined. He was not paid, and nothing happened. I mean it went on.

2889. I suppose there are cases. Do you find a man who is suffering from nystagmus can be sent back to work in practice?—Yes, a lot of them can.

2890. Do many of them go back to mining?—Yes. I have a table on page 20 of my book.

2891. What is your experience then as to any recurrence of this disease?—I think if a man has once had nystagmus, he is more likely to get it than another man.

2892. Do you find that they do get recurring attacks?—They do get recurring attacks; but, on the other hand, men do go back to work and do not get recurrence.

2893. In some other cases where they do not get a recurrence?—They do not get a recurrence as far as I have been able to trace; for instance, one man in particular acknowledged to me that he had been drinking very heavily, and there is no doubt he had a bad attack of nystagmus. He changed his way of living, and he was able to continue his work.

2894. He got cured of the nystagmus?—He got cured of the nystagmus and was able to continue with his work. Perhaps it is apart from the question, but I was going to say that, in my opinion, idleness is the very worst thing for nystagmus.

2895. Yes, idleness would be bad; but abstention from work in the mine would be necessary?—Yes; but my experience of the work has been that if you can get a man to start surface work at once, or very soon after the onset of the disease, he is very much more likely to go underground again and have a complete recovery, so far as you can tell. But if a man is allowed to remain idle he gets so unused to work that he is unable to do anything, and he becomes quite useless from any point of work.

2896. For the purposes of your book you have not been able to get any statistics of the number of men in whom the disease recurs when they go back to work?—No. I have not brought that clearly out.

2897. You have not been able to ascertain it?—No, not altogether.

2898. It would be difficult to ascertain?—Yes.

2899. As you know, it sometimes arises on the question as to whether a man should be ordered by an order made by the county court judge under this Act to resume employment. It is said on one side there would be no harm in his going back into the mine, and on the other side it is said you ought not to subject him to the risk of this disease again. What do you say about that?—There are such a number of circumstances to be taken into account. For instance, if a man has brought on nystagmus by a drinking bout, he would go back to work quite well afterwards, and without much fear of recurrence.

2899*a*. Take an ordinary case?—In an ordinary case there is certainly more fear of recurrence than to a normal individual.

2900. But is it your experience when they go back they are attacked again? Is it sometimes a very long time?—Sometimes a very long time, and if they go back too soon they are attacked at once—within a fortnight or so, very often.

2901. That was rather one of the suggestions in reference to this clonic spasm; that if they were sent back again to work when the primary symptom had passed of clonic spasm, and perhaps some other symptoms remained, they would probably be attacked immediately, and therefore compensation ought to be sufficient to cover the full time involved in complete recovery?—In the cases I have seen where it occurred, there has been no doubt about the actual oscillation of the eyeballs at once. I mean the oscillation of the eyeballs has returned at once when they have gone down.

2902. You have never found a case where you cannot find the primary symptom?—Not in what I call an early case. I am not speaking now of cases who have been out of the pit for two years. I have seen quite a number of those cases. I have gone round the country and have been shown these cases at the different collieries where I have been.

2903. Would you say that those symptoms you see are the remains of nystagmus?—The headache, night blindness, and so on?

2904. No; speaking more particularly of this clonic spasm?—It does not follow, because I have not been able to find nystagmus, that clonic spasm was present.

2905. After all, we are only dealing with clonic spasm—two years afterwards?—Where there has been blinking of the eyelids there have been cases.

2906. In your view, is that one of the remaining symptoms of nystagmus or not?—Yes, it might be. Of course in some of these cases I am quite convinced they really deliberately started blinking.

2907. Simulated?—Yes; some but not all.

2908. (*Sir Clifford Allbutt.*) The eyelid spasm?—Yes; I am speaking of that.

2909. They cannot simulate the other?—No.

2910. (*Judge Ruegg.*) In some it may be one of the remaining symptoms of the disease?—Yes, in some.

2911. In such cases as that, would there be incapacity for work?—Yes; there would be incapacity for work, but not as a result of the blinking of the eyelids, and in those cases they would all be receiving compensation.

2912. I was going to say those were men actually receiving it?—Yes; and there was no question of their being good for work at the time I saw them.

The Committee adjourned for a short time.

2913. (*Judge Ruegg.*) We were talking about cases you have seen as much as two years after the primary symptom had passed away, or at all events after the nystagmus?—I did not mean that. What I meant was, that I have seen cases two years after they were certified. When I saw them two years after they were certified, I could find no nystagmus, but it may have been there up to 18 months for all I know.

2914. I follow?—There is a difference between them. This is what I have done as a rule. I have been to the different districts and I have asked them to provide cases for me. My object was to see whether there was any differences in the class of cases in one locality and another. It has been rather difficult sometimes for the employers to find the cases, and it so happens that the easiest ones they can get are the ones that are long standing, and I have seen quite a number of long-standing ones for that reason.

2915. In that case they were probably receiving compensation?—Yes; every case was receiving compensation.

2916. And properly, in your view?—In most of them anyhow.

2917. Then it does follow that there may be incapacity resulting at the same time, at all events after the primary symptom has disappeared, which may incapacitate and entitle to compensation?—Yes, it is possible. Of course, I must also make this reservation. In many of these cases my time was limited, and I was not able to examine them as fully as in my own district. I mean I had not every opportunity of doing so.

2918. But there was no appearance of the rolling of the eyeballs to ordinary examination?—No, not to ordinary examination.

2919. You think that that symptom, which would be an objective symptom in the cases where the nystagmus proper has disappeared—the blinking ——?—I do not say that it was blinking in these cases; I do not quite follow.

2920. There was in some of them?—There was in some of them.

2921. Let me take some of those cases. That would be probably the objective symptom, would it not?—No; there is another test on which I rely very

much more, and which, I think, is very much more important, and more accurate.

2922. What is that?—That is this head test I have described.

2923. Will you tell us that in popular language?—In several of these marked cases of nystagmus, in addition to movement of the eyeballs and eyelids you very often get movements of the eyebrows, and of the whole head.

2924. What is the movement of the head?—You might almost call it nystagmus of the head really; it is tremor of the head.

2925. How does it manifest itself, by nodding?—No, not by nodding; it is a very fine tremor. You sometimes see old men or old women with it. It is something similar, only finer; and you very often bring it out, as I show you in my book, by depressing the head and asking them to look up. In those cases you will find a tremor of the head.

2926. (*Dr. Legge.*) Can you feel it?—You can feel it quite distinctly; you can feel it better than you can see it. It is not absolutely conclusive, because it does occur in senile cases; but it is a test which I lay stress on. I do not know that my opinion has been corroborated by anyone, because I think I am the first. I should not like to say positively I am the first to describe it.

2927. (*Judge Ruegg.*) Would you describe that as one of the last symptoms to pass away or one of the early symptoms? Would you expect that to pass away at the time when the nystagmus proper passes away?—I have seen it after the nystagmus had passed away.

2928. But as a rule?—Yes, you would.

2929. You would expect it to pass away about the time of the nystagmus?—Yes.

2930. Therefore if you had cases where you found no primary sign of nystagmus you would hardly expect to find this?—No.

(*Sir Clifford Allbutt.*) It would not help us in these doubtful cases.

2931. (*Judge Ruegg.*) That is so?—I have seen it persist in some cases.

2932. Then it is said that you get this clonic spasm existing for a very considerable time after the primary symptoms have passed away, very often?—I should think in those cases the examination has not been as carefully made as it might have been. That is the way I should explain it.

2933. Still, you admit that it may in some?—It may in some.

2934. It is a question of degree?—Yes.

2935. But take those extreme cases which you think are extreme where it does exist. You think it is the objective symptom?—It might be the objective symptom.

2936. What are the others you would expect to find?—Personally I think night blindness is a more constant one.

2937. Is that an objective symptom?—No.

2938. I am speaking of the objective symptoms?—Personally I think head tremor.

2939. But I understand you to say that the head tremor will pass away?—So does the nictitation.

2940. That is the point. You think it does?—Yes.

2941. It is said, on the other side, it may exist for a considerable time afterwards. You admit it may exist in some extreme cases?—Yes.

2942. Will you take the extreme case for the purpose of testing it where it does exist. In such a case it would probably be the only objective symptom?—Yes, it might.

2943. Then you think, it being the only objective symptom, it can be easily simulated?—Yes.

2944. That is one of your objections to the inclusion of anything which speaks about clonic spasm?—Yes, in those words.

2945. We have heard it said, on the other hand, that it could not be at all easily simulated. It is a very different kind of blinking to that which could be simulated?—I cannot agree with that.

2946. There are ways by which it can be detected?—You mean the simulation.

2947. Yes, as to whether this blinking is simulated or not?—You could have a very good opinion, but I do not think you could be sure.

2948. Supposing you were suspicious of a man, how would you deal with him?—I should rely very strongly on the head test myself.

2949. Supposing you did not find that or the rolling of the eyes?—Yes, or the rolling of the eyes—I should examine his vision.

2950. For what purpose?——

2951. (*Sir Clifford Allbutt.*) Refraction?—Apart from refraction, his power of vision; because I hold that most cases of nystagmus suffer from a loss of sight which is due to the disease and is not due to the oscillation of the eyeballs.

2952. (*Judge Ruegg.*) Still, due to the disease?—Due to the disease. Of course I take rather a different view from that of most of the authorities.

2953. I do not follow how that would help. You would examine the eye to see not only errors of refraction but the power of vision, which may be impaired, you think, by the disease itself?—Yes. Supposing I found a man with blinking and he had normal vision, I should be suspicious of that man; but if he had impaired vision, then that would be a point in his favour.

2954. Do you say that impaired vision is a general result?—Yes, I do.

2955. Invariable?—Not invariably, but very often.

2956. Does the normal vision recover as the disease is cured?—Yes, that is my point. That is one of my tests in the prognosis—the improvement in the normal vision.

2957. It is said it is a different kind of blinking to that which can be done voluntarily?—Yes, but there are two kinds of blinking in the diagnosis. I describe the two. The first I say is a blinking movement, the result of photophobia. That is a dread of light.

2958. But photophobia is one of the results of nystagmus?—Yes.

2959. I do not see how it helps us?—I say there are two kinds. There is this blinking movement; then there is the second movement, which cannot be simulated, which in my opinion is more in the nature of a tremor.

2960. A tremor of the eyes?—The pure tremor of the eyes cannot be simulated, but there are really quite two distinct classes of movements in the eye-lids that you get in these cases.

2961. What is this tremor as opposed to blinking?—I think the blinking to a certain extent is voluntary. It is a reflex thing. It is partly voluntary and partly reflex.

2962. When you use the the word voluntary, one must understand what you mean by it. Do you mean that at any time the man is conscious and means to do it, or it is a bad habit contracted.

2963. (*Sir Clifford Allbutt.*) More or less controllable?—I do not mean he intends to do it.

2964. (*Judge Ruegg.*) You do not mean by voluntary, simulated at the time?—No, I do not mean that entirely. What I mean is, it is more or less under his control; but the fine tremor is entirely outside his control and he cannot simulate it at all.

2965. Would you mind telling us how it manifests itself?—The fine tremor?

2966. Is it very quick?—Yes, a very fine trembling of the eye-lids which is very much like the movement of the eye-balls.

2967. That is the clonic spasm we have been referring to, that you call tremor of the eye-lids; at least it has been suggested that that is the sort of thing and that that cannot be simulated?—I do not think that tremor can, but that is not the commonest in my opinion; the commonest is blinking.

968. A quick blink?—Yes, a quick blink and sometimes they get it not in a clonic spasm but a tonic spasm. They go something like this, keeping the eye practically closed with the eye-lids. (*The witness made a twittering movement with the eye-lids.*)

2969. With the eye-lids right down?—Yes, that is not a clonic spasm at all; it is a tonic spasm.

2970. It that what you mean could be simulated?—Yes, that could be simulated, and the blinking movement could be simulated.

2971. Would you call it a quiver as distinct from blinking?—I would rather use the words fine tremor. It is more rapid.

2972. That would be one way of detecting if it were simulated?—Yes. It would not be possible, for instance, for a voluntary tremor to exist, say, at the rate of 100 a minute. I do not think that would be possible.

2973. There you are using the word simulated?—I mean simulated. I do not think it would be at all possible to get that tremor.

2974. (*Sir Clifford Allbutt.*) You say this characteristic sign, that is the oscillation, is always present at one period of the attack or another. I think you have told us that you do not think there are any cases in which by skilled tests oscillation cannot be discovered at some period or another?—I think it can always be discovered at some period.

2975. Always at some stage or another it may be found?—Yes. That is my opinion.

2976. Our difficulty has been to get a criterion. If you take away the nystagmus for even a part of the period, seeing that we might have the data for the other part, where are we in respect of a constant by which to diagnose the case; for I need scarcely say blinking occurs in all sorts of nervous diseases. There is much blinking in neurasthenia, hysteria and even in mere nervousness?—Yes.

2977. At an earlier stage of the inquiry, I thought we ought to have made a distinction between the twittering of the eye-lid, a very quick vibration of the eye-lid, and blinking; but the other witnesses did not take it up?—Yes, that is what I have been trying to make.

2978. That is a point I rather thought you were dwelling on yourself?—Yes.

2979. It appears to me the two things are different?—Yes.

2980. Blinking is a very common thing with people who suffer from eye-strain?—Yes.

2981. As a previous witness said, corneal ulcer or hypermetropia, may call it forth and so on. But that twittering, the extremely fine vibration of the eye-lid, which I speak of as true blepharo-spasm—I did not think blinking was blepharo-spasm—as I was saying a little while ago, is often an initial symptom of nervous breakdown of an organic kind, and may go on for many months?—Yes.

2982. You see you have rather reduced your head movement test to a curiosity, have you not; if so it is not of any practical value. If there is not the oscillation, you would not have the head sign?—I think the head sign sometimes lasts longer.

2983. Yes, but you could not rely on its absence?—No, I should rather put it this way—that in an advanced case the head sign can very often be quite easily distinguished and nystagmus brought out with difficulty. Of course, you cannot say that the head sign clinches the matter, because you get it in senile tremor of the head.

2984. Of course, there is the head sign, but we will leave that out. If you have not the nystagmus, everything else is subjective, is it not?—Yes.

2985. Then, supposing you have to decide by an alleged test, where are your criteria?—That is very difficult, in fact almost impossible, to decide.

(*Sir Clifford Allbutt.*) So I thought.

(*Judge Ruegg.*) I gather Sir Clifford means by that if you have not nystagmus; that is, if in a given case the primary sign of nystagmus has never appeared.

(*Sir Clifford Allbutt.*) Yes. Dr. Llewellyn says there are not such cases.

2986. (*Judge Ruegg.*) Yes, I know. You say you do not think there are any such cases?—I do not think there are.

2987. (*Sir Clifford Allbutt.*) But Dr. Llewellyn says there some periods of the disease when you may happen to have the patient before you when there is not any?—Yes, but may I say this. You might get most marked nystagmus in a case one day and two or three days afterwards you might have great difficulty in finding it.

2988. (*Judge Ruegg.*) You mean rolling of the eye-balls?—Yes, rolling of the eye-balls.

2989. In two or three days you would have great difficulty in finding it?—You might have great difficulty. I have seen some cases of that kind.

2990. And then it reappears?—Another day you may get it as easily as possible.

2991. Then it comes to this: it all depends on when the doctor sees him?—To a certain extent, yes.

2992. (*Sir Clifford Allbutt.*) You will correct me if am wrong; but it appears to me, even admitting all that has been said about these quasi negative cases, that if they exist they are very rare?—Very rare.

2993. Then to legislate for a few very rare cases you might bring in volumes of inconsistencies, and incalculable things?—Yes.

2994. (*Judge Ruegg.*) But assuming you were the certifying surgeon, and you had to give these certificates, it may well be, according to what you have just told the Committee, that at the time when you examined the man for nystagmus he had not the nystagmus proper, although he is suffering from it?—Yes.

2995. At that particular time?—Yes.

2996. Would you give him or refuse a certificate?—If I were the certifying surgeon in that case I should ask him to come back in a couple of hours, and I should send him a sharp walk, making him exercise himself. Then I would take him into a dark room and you would be almost certain to get it out then.

2997. But you are a great authority on this particular disease. Do you think that would occur to other certifying surgeons in the kingdom?—I know they have done it. They have sent the man away and brought him back again.

2998. On the other hand, it is said that not finding this particular symptom they refuse a certificate?—Yes, I believe they do. I know two cases where they have refused it.

2999. Where you think the man had it?—Where the man had nystagmus—movement of the eye-balls—quite marked. I think the certifying surgeon in that particular case did not make a careful examination.

3000. I do not know whether you know; but does the certifying surgeon who sees these men generally see them at the mine?—No, he practically always sees them at his house.

3001. It is not like the factory inspections?—No, they are all seen at the house.

3002. Then he has probably opportunities for making the test?—Yes.

3003. (*Sir Clifford Allbutt.*) If you were about to give expert advice as to a case, you would have time enough to pursue these various tests about walkings and so on?—Yes. If in a special case I were asked to give expert evidence, I do not think I should like to give a negative opinion straight away. That is what I mean. You might give a positive opinion in a few seconds.

3004. (*Judge Ruegg.*) I see you say, speaking of your head test: "This is one of the best methods of "bringing out the movements of the eyes"?—Yes, as well.

3005. "And the tremor of the head so often present in nystagmus"?—Yes; it does the two things.

3006. That concludes all you wish to say to us with reference to this disease?—Yes. I have made some remarks at the end of my proof, but I think I have covered the ground in my answers.

3007. With regard to the other disease we are inquiring into—Dupuytren's Contraction—do you wish to say anything about it? We have heard a great deal about it. Have you Dupuytren's Contraction?—Yes, I have. The strange part about my case is this; that it developed quite suddenly before I was 17 years of age—I think it was before I was 16.

3008. Yours is only in the first stage?—Yes. The strange part is that it has not increased at all. I get no trouble with it. It is simply the first stage, and personally I am not rheumatic in any way as far as I know; I have no symptoms of it.

3009. Is it only in your left hand?—Yes.

3010. Are you left-handed?—No, I am right-handed.

3011. But it is not in your right hand?—No. My grandfather had it very badly in both hands, and one of his brothers had it as well.

3012. Is there any circumstance in your life that would lead you to the idea that it was due to any particular local pressure?—No. My grandfather was a large farmer, but his work was superintending; he did not do any manual work himself.

3013. I think you say with regard to this disease, you have not paid any special attention to it?—No, I have not.

3014. But you have had a considerable experience in the examination of miners?—Yes.

3015. 15,000 miners in the last six years have passed under your examination?—Yes.

3016. Have you found many cases amongst the miners?—No; I have found very few indeed.

3017. Can you give us anything more definite than that?—No; I am afraid I cannot say. It is so difficult speaking from general impressions; I have not seen many. All I can say is this: that when I was House Surgeon at the University College Hospital I think I saw more cases in six months than I have done in the last six years.

3018. How many do you think you saw in six months?—I cannot tell you.

3019. Can you give us an idea—a couple, or fifty?—I do not think I saw more than a dozen.

3020. And about the same number since?—I have not seen more than a dozen in the last six years until quite recently. After I had written this proof I was at a Board meeting, and there were eleven of us present, and four of us had Dupuytren's contraction.

3021. They were directors?—They were directors. One of them was an accountant, and two of them were colliery managers.

3022. In the same stage as you have it?—Practically the same stage.

3023. Not in an incapacitating stage?—No, not in an incapacitating stage at all.

3024. You say you have not seen more than a dozen cases since you were house surgeon? Were those all cases of miners?—No, they were not all cases of miners. I saw one in a mason.

3025. Are they most of them cases of miners?—My work has been practically all among miners.

3026. Probably they would be?—Yes; they would be.

3027. Had some of those cases advanced to a stage which would necessitate cessation of work?—Yes. A miners' agent in South Wales could work with difficulty. He had a very marked degree in one hand. The thing was completely flexed and he could not extend it.

3028. What is a miners' agent?—Similar to Mr. Enoch Edwards—looking after the miners' interests.

3029. Do you know whether he had been a working miner?—Yes; he had been a collier, and this condition had come on after he had given up his underground work. He himself did not attribute it to his occupation, but he did not know how it came about at all.

3030. Do you think it would have any great effect on the mining industry if it were included, if it is so rare?—As far as I can see, I do not think it would have very much effect on it; but of course once you schedule a disease you see a very great number of them—many more afterwards than before.

3031. That is what has been suggested on so many occasions; that you do not hear of these cases until they are scheduled, and then you find out that the disease has been existing to a considerable extent?—Yes.

3032. But that would be rather a reason for its inclusion than its exclusion?—Yes, it would.

3033. If there are a number of cases which have not yet been ascertained; but your view is that there are very few?—That is my view.

3034. And if your view is correct, it would be a matter of very small importance to the mining industry?—Yes.

3035. If your view is incorrect, then it ought to be scheduled. Perhaps you do not like it put that way; but it may be said against you?—Yes.

3036. This is a thing which cannot be simulated?—No, I think not. If I may amplify my evidence in one way. In miners' work the centre of the palm is not used much; the pressure comes on the ridge at the bases of the fingers outside. The centre of the palm is not pressed upon.

3037. You are speaking of working with what?—With a pick, which is the usual instrument a miner has to work with.

3038. Do you know whether in the various districts the tools are the same either with regard to the weight or formation?—They vary very much indeed. The holing instrument is a very light instrument, and the one which is used for tearing or lifting down rock is a very heavy instrument; but the shape of the handle remains practically the same, I think.

3039. In all districts?—I would not like to say. I have been in a large number of districts, but I have not taken particular notice, so I had better perhaps not definitely speak on it.

3040. I think I ought to put this to you in fairness. Whilst I was putting to you the alternative rather, that if it is small it did not matter, and if it is important it ought to be scheduled, there is this also to be considered: that it is a disease which you say may arise from other causes, not the industry?—Yes.

3041. Therefore you might have a number of claims made in undoubted cases of Dupuytren's contraction, but really not arising from the industry at all. It would be very difficult to decide whether they arose from constitutional causes or from employment, or from both, or even from local pressure; whether the pressure was pressure in the course of the employment, or from some relaxation, or from other work outside the employment. It has been suggested to us that gardeners are subject to it, men who work in their gardens. You think, although there may be very few cases of Dupuytren's contraction in the mining industry due to the employment, it might mean a number of claims?—Yes, it might. For instance, supposing it were scheduled, and supposing—taking an extreme case against mining—a man had Dupuytren's contraction owing to some other reason, he could go and get employment as a miner and then put forward a claim straight away.

3042. Scheduled against mining?—Yes, if it were scheduled against mining.

3043. I do not know that it would be scheduled against mining—I say I am taking an extreme case.

3044. When you say scheduled against mining, you mean scheduled, and the definition of the industry being "mining" in the second column?—Yes.

3045. The effect of that would be to throw the onus on the employer to prove that the man did not get it in the employment?—Yes.

3046. You say that would be very difficult for the employer to do?—Yes.

3047. I do not know that there is any idea of doing it, and it certainly would not be scheduled against mining, because we are told there are other industries in which it is much more common; but you think there would be a large number of claims on the employers?—I think there would be a certain number anyhow; I do not know how many.

3048. Then of course it is fair to say that with regard to these claims, in the majority of cases, although they might be successfully resisted by the employer, he always loses by them?—Yes.

3049. He has always to pay his own costs?—Yes.

3050. And that is a serious item?—Yes.

(*Judge Ruegg.*) Thank you.

The witness withdrew.

Adjourned till Monday morning at 11 o'clock.

SEVENTH DAY.

At the Home Office, Whitehall, S.W.

Monday, January 27th, 1913.

PRESENT:

MR. ELLIS J. GRIFFITH, K.C., M.P. (*Chairman*).

Sir THOMAS CLIFFORD ALLBUTT, K.C.B.
His Honour JUDGE RUEGG, K.C.
Dr. THOMAS MORISON LEGGE.
Mr. ARTHUR LOCKE (*Secretary*).

Dr. W. E. HUME called, examined by Sir CLIFFORD ALLBUTT.

3051. What are your qualifications?—Master of Arts, Bachelor of Surgery, and Bachelor of Medicine of the University of Cambridge, and a member of the Royal College of Physicians of London. I am also Honorary Physician to the Royal Victoria Infirmary, Newcastle-on-Tyne.

3052. Are you in any sense a Specialist on Ophthalmic Surgery?—No.

3053. But you have seen a great deal of nystagmus? Yes; for the last five years I have had all sorts of special cases referred to me as medical adviser to the Northumberland Coal Owners Mutual Protection Association.

3054. I merely ask you as a matter of form, but you are practising in a district where there are a large number of miners?—Yes.

3055. And they come to you in large numbers in the out-patient department?—Yes.

3056. So that at any rate as regards this class of affection you have a good deal of experience?—Yes.

3057. You are going to speak to us on clonic spasm of the eyelids, apart from nystagmus?—Yes.

3058. By nystagmus in this sense, do you mean the mere item of nystagmus, or do you mean the whole group of objective and subjective symptoms?—I took the reference to mean that the clonic spasm of the eyelids was to exist apart from the whole group of symptoms included under the word "nystagmus"; but of course, I very soon found out that clonic spasm of the eyelids, taking a large body of men, occurred most frequently in association with nystagmus, the symptom group nystagmus.

3059. You think it is a somewhat uncommon affection, you say?—Yes, very rare.

3060. And has not hitherto been recognised so distinctly as you think it should be?—Not as far as I am aware.

3061. And you do not find any medical literature in which it has had quite the notice you think it is entitled to?—No.

3062. Then you made some systematic inquiries on the subject?—Yes.

3063. Will you tell us what those inquiries were, and the answers that you received?—Yes. The only way I could get information was by writing to various collieries and asking mine managers to report to me all the people who seemed to be blinking. That I thought would cover everything. Then when I heard of such cases existing at particular pits, I went to visit those individuals and I made notes of their industry and of their condition, and then I tried to tabulate them in certain tables according to what I thought the clonic spasm was due to.

3064. What you asked your observers to do was simply to pick out the men who blinked?—Yes, the men who blinked.

3065. Apart from any subjective symptoms?—Yes.

3066. Then you asked a certain question, which perhaps you had better re-state?—I asked if they knew of cases at present with clonic spasm of the eyelids, and that if they knew of such cases could they give me an opportunity of seeing them, and also whether they had known of similar cases in the past.

3067. Perhaps you will formally tell us the replies you received?—I received replies from 18 companies.

3068. When you say you communicated with the coal companies, it might be well to know whether that was with the managers or the doctors, or what class of observers they were?—Primarily with the managers; but in every case the manager referred the question to the local colliery doctor, so that I received an answer really from the colliery doctor through the mine manager.

3069. Then your replies were what?—I received information from eight collieries that they had such cases. (*The witness put in tables. See* Appendices VI.–IX., p. xvii.)

3070. Taking the tables as put in, I think you had better proceed to tell us the inference which you have drawn from that collection of figures. Perhaps you had better state your question at the bottom of the page?—"Does clonic spasm of the eyelids exist as a "separate disease, or does habitual blinking of the "eyelids occur as a phenomenon secondary to some "affection of the eyes"—and one might add "or of the eyelids"—"or as a concomitant of some nervous disease." Now will you proceed to give us the inference you draw from your tables in respect of that question?—Then I set out a detailed history of each case.

3071–2. Will you proceed to state your opinions on that?—I came to the conclusion that whenever I found clonic spasm of the eyelids, there was always some underlying cause for it: that sometimes it was the presence of nystagmus, sometimes there was an inflammatory condition of the eyes or of the eyelids, and sometimes one could put it under the heading of a general nervous disease.

3073. Then putting aside six persons, in all the rest of, 36 in number, you found some obvious condition to account for the clonic spasm of the eyelids?—Yes.

3074. Of those the largest number is 25 out of 36, is it not?—Yes.

3075. They were discovered to have some degree of definite nystagmus, the presence of which had been in most instances unknown?—Yes.

3076. That is to say you applied expert tests to bring out nystagmus which was not obvious to the ordinary observer?—No. Some of the cases were very obvious, but they were not known to the individual who had it. They were working and they did not know there was anything the matter with their eyes.

3077. (*Judge Ruegg.*) They were in fact suffering from nystagmus?—Yes, they had it.

3078. I do not mean they were incapacitated, but they were suffering from nystagmus?—Yes.

3079. (*Sir Clifford Allbutt.*) That was 25 out of the 36?—Yes. Some of the cases of course were being

paid compensation for nystagmus and not working. Some were working and some were not working.

3080. (*Judge Ruegg.*) I understand that the examination at these 20 collieries was not for the persons who were at work blinking, but for all the cases that they had on their books of nystagmus—the men who were in the mine who had any affection of the eyes?—Yes, anyone who was known at the moment to be either on compensation or blinking working.

(*Chairman.*) The first two questions are: the number of men employed, and the number of cases suspected to be suffering from the complaint at the present time. It seems rather to indicate that they were working underground.

3081. (*Judge Ruegg.*) It did to me?—Yes; the second question did not depend on the first.

3082. (*Chairman.*) Did you receive four of them who had inflammation of the eyes and eyelids and three who had excessive errors of refraction? Is there any overlapping of those? Are they outside the 25, or are there any overlapping cases which might have both nystagmus and inflammation of the eyes, for instance?—No, they are separate cases.

3083. Therefore we may add those 7 to the 25?—Yes.

3084. That would make it 32, would it not?—Yes.

3085. Then you say: "In the case of four there was the presence of obvious nervous causes." Will you tell us what those were, or what kind of nervous causes they were?—In Table No. 4, I place Group No. 4, nervous diseases, and underneath that is a reference to the number of the case in Table 3, so that the first case is No. 21. He was a long, overgrown boy of 18 who had been a rapper, that is, he stood down one of the pit-ways and telephoned up when the tubs were coming up to the surface, and he had done that work practically all his life. Of course he had never done any coal hewing. He had blinking of the eyes and he was a big greasy-skinned nervous youth, and I put it down principally to there being lack of proper control. He had blinked practically all his life, and he said he was much steadier now than he used to be. It was a nervous trick.

3086. I will put the question a little more definitely in another way. In these four persons afflicted with the blinking movements of the eyelids in whom you said there was an obvious nervous cause, to the best of your knowledge there had not been nystagmus in the sense in which we are speaking of it?—No, I think it is pretty certain there had not been.

3087. That accounts for all your 36?—Yes.

3088. Then will you tell us in detail your opinion about persons suffering from nystagmus?—The first case that I came across seemed to bear mostly on this question, and that case I set out in detail on page 11 under the heading of Group 1: "In most instances the "rotatory movement of the eyes was very obvious and "the blinking movements were very slight." That was so.

3089. (*Chairman.*) So that in most instances there was blinking?—Where the two were associated; that only refers to the association of the two conditions. That is nystagmus with blinking.

3090. In most of the cases of persons suffering from nystagmus there was a blinking movement as well?—It does not mean that all cases suffering from nystagmus also blink.

3091. (*Sir Clifford Allbutt.*) That is what we want to know?—No. Everyone who appears in this Report was blinking.

(*Chairman.*) Is that so?

(*Sir Clifford Allbutt.*) Yes.

(*Chairman.*) Look at page 16. It says there "No blinking."

(*Sir Clifford Allbutt.*) All these cases were blinkers.

3092. (*Chairman.*) That really is not so?—That was at the time of my examination. They were seen to blink and were reported to the manager and the doctor as blinkers.

3093. They were past blinkers, not present blinkers?—Yes.

3094. Look at No. 19, "Nothing abnormal seen in his eyes"?—Yes; No. 19 appears in Table No. 4 as "Eyes normal at the time of examination."

3095. Of course you can have blinking and have the eyes steady. You distinguish the eye from the eyelids in this Report, do you? Would you describe a man who had blinked as "Eyes steady"?—No; when I say that the eyes were steady, I mean both eyes and eyelids.

3096. No. 3 is "Eyes steady." No. 14 is "Quite steady." No. 15 is "Quite steady." So that they seem to have got better in that respect before they saw you after the report was sent?—Yes, they were all steady. I could find nothing. To me they were neither blinking nor had they nystagmus.

3097. (*Sir Clifford Allbutt.*) Then in those cases people were sent to you as blinkers who did not blink?—Yes.

3098. (*Chairman.*) How long was it after you got the report that you examined them—a month?—No, not more than 10 days.

3099. (*Sir Clifford Allbutt.*) These were selected cases, selected from the blinking point of view?—Yes.

3100. Therefore you cannot tell us what the relation of blinking to nystagmus is?—No, I did not go into that.

3101. You wish to speak particularly of one man?—Yes, because I think he is the fairest case.

3102. Will you tell us about him?—He was aged 27, and was a coal hewer. He was sent to me by a doctor, quite apart from this question, on December 12, 1911, with marked blinking of the eyes. He was a tall man, and he had been coal hewing. He attributed his condition to the bad light in the place he was working in, and as this was a new feature to me personally, I took him into the hospital for observation. I must say that at first sight I thought it was a functional condition. I then examined him carefully for the presence of nystagmus. That seemed to be obviously the first thing to do. I put him into a dark room and into the position of his work, and I was able to bring out very slight nystagmus. It was very slight, but no doubt there was some rotatory movement. I still took the view that this was a condition that was largely in the man's control, and I told him we were going to take him into the hospital, that his eyes were quite steady, and it was unnecessary to go blinking about like that. I told the sister of the ward to keep him thoroughly occupied, to give him lots of things to do, and, rather to my own surprise, it did absolutely stop in a couple of days. We kept him in the hospital for about another week, and then he was discharged, and I heard nothing from him at all until I began to gather material for this Report. I went out to the district where he lived, and he was one of the cases that was presented to me as now blinking, and he was blinking much worse then than when I had had him in the hospital. They were very forcible, rapid movements of the eyes. I examined him then for nystagmus, and there was a very slight degree of rotatory movement to the left, when he looked upwards to the left. In the meantime he had conjunctivitis; that is, the whites of the eyes were inflamed.

3103. Speaking generally from your observation of colliers and your practice in hospital and otherwise, can you say whether any slight degree of nystagmus, apart from disease or discomforts of any sort or kind, is to be detected in any larger number of colliers than you would suppose to be the case in the general population? We understand that the position of getting coal is one which leads to nystagmus. Supposing that nystagmus is exceedingly slight, such as not to be accompanied by any subjective symptoms and so on, would you say such slight degrees are commoner among colliers than among the general population?—Yes, most emphatically.

3104. Then, that would a little interfere with the use of your fine test for nystagmus as a criterion of the subjective symptoms?—Yes.

3105. Supposing a person belonged not to the colliery but to the general population, it would be far more significant to find very slight nystagmus than it would if he were a collier?—Yes.

3106. You attribute the blinking in this man's case to the conjunctivitis?—Yes, I thought that was so.

3107. (*Judge Ruegg.*) Is it No. 13 you are speaking of?—No. 34.

3108. But he had nystagmus?—Yes, and he still has it.

3109. You attribute the blinking to something else?—My opinion is that this blinking is always due, put very broadly, to weak eyes, and that a person blinks in order to shut out the light.

3110. It is a special kind of blinking, is it not? There is blinking and blinking. It has been described as a tremor—very fine blinking—which it is said on one hand it is impossible to simulate. It is a very quick movement of the eyes which is more accurately described as a tremor than a blink?—I must say that I cannot agree with it. The sort of tremor that you meet with in hysterical people is the finest quiver that you can imagine, and if this is described as a quiver also I see no distinction. In this particular man, who seems to me to more nearly approach a condition of clonic spasm apart from anything else, the lids were contracting rapidly and extremely forcibly. It was a very marked coarse tremor.

3111. What was the rate?—That I cannot tell you.

3112. (*Chairman.*) Was it 50 times a minute?—About 70 or 80. I am just trying now to connect it with the feel of the pulse. It was up to 100 I should think.

3113. (*Judge Ruegg.*) Even quicker than that I suppose?—Yes, I do not see why it should not be.

3114. (*Chairman.*) Do you think it would be over 100?—Yes, it might be.

(*Chairman.*) You think voluntary movements would account for more than 100 to the minute. We are talking now about simulating.

(*Judge Ruegg.*) The man could blink as fast as that if he wanted.

3115. (*Chairman.*) Do you think the best blinker in the world could blink more than 100 a minute?—I think a man purposely setting out to do it might do it for a minute; but I do not think he could continue it.

3116. He could not last?—No.

3117. (*Sir Clifford Allbutt.*) As regards No. 13, you are of opinion that the granularity of the lids from which he suffered is a sufficient explanation of the constant blinking movements?—Yes.

3118. Then as regards Group 3, "Persons with gross "errors of refraction" who wore glasses, there is No. 4 with astigmatism, No. 1 who was markedly hypermetropic, and No. 7 who had hypermetropia and had worn glasses for some years and so on?—Yes.

3119. Then in your opinion the blinking was connected with errors of refraction?—Yes.

3120. Then you come to your Group 4, which contained four people?—Yes.

3121. Two of them were troubled with blinking movements of the eyes in their youth, before they entered the mines at all?—Yes.

3122. One was an overgrown fidgetty youth and the other was a stammerer?—Yes.

3123. Will you state from the foregoing analysis what is your opinion?—The clonic spasm of the eyelids does not occur as a separate disease, but is invariably associated with some disability in the ocular or nervous systems.

3124. Then blinking does not carry with it the subjective symptoms which are associated with nystagmus?—No.

3125. Unless of course it is with nystagmus?—Yes.

3126. But independent of the oscillation, it does not?—No.

3127. Do you consider that this mere blinking of the eyelids, apart from the refraction, astigmatism and so on, interferes in any way with a man's work or capacity?—In no case, except the case of No. 34. I think it is much the most important case in my report.

3128. (*Judge Ruegg.*) You do not think he suffered from nystagmus?—Not now.

3129. You would not give him a certificate under the Act if you had to consider it?—I should take him into the hospital again and see if I could cure him.

3130. That is not the question. Would you give him a certificate as a medical man?—No, not at the moment. I would not feel justified.

3131. I think you admit there was incapacity for work?—He is working, of course.

3132. He is working on the pit bank?—Yes.

3133. He is incapacitated for working as a miner?—Yes, as a hewer. I should not send him to his original work.

3134. You would not send him down the mine?—No.

3135. But you would not give him a certificate?—Not to say he was suffering from nystagmus.

3136. But he is suffering from clonic spasm now?—Yes.

3137. Very badly?—Yes.

3138. (*Sir Clifford Allbutt.*) What interfered with the work of the man who had conjunctivitis was not the blinking but the conjunctivitis?—Yes; of course, that I take to be the point of the blinking. If the conjunctivitis allowed him to keep his eyes open and receive the full light, then I think he could have worked.

3139. But when his conjunctivitis is cured, presumably he will be able to go to work?—Yes.

3140. Therefore the incapacity was the conjunctivitis?—Yes.

3141. Not the spasm?—No.

3142. (*Dr. Legge.*) You have no further information about that man as to whether the conjunctivitis has got better, have you?—No.

3143. (*Chairman.*) When did you see him last?—On December 6th last.

3144. (*Sir Clifford Allbutt.*) Then you are asked certain questions. The first one is: "Whether this "blinking is a disease or merely a symptom of some "ailment or disease." Will you give your answer to that?—Yes. "Clonic spasm of the eyelids is fre-"quently met with in individuals suffering from a "variety of diseases. It is most typically seen in "hysterical young women and in them sometimes "forms a very prominent feature associated with "photophobia."

3145. Then you give an illustrative case of that. Perhaps we need not trouble to go into it at length. But we might perhaps go on to the question as to whether it is easily simulated?—In hysterical individuals this condition is readily assumed.

3146. (*Dr. Ruegg.*) What condition? Are you speaking of what you call clonic spasm?—If I may amplify that for a moment, personally the condition that I met with in No. 34 was a very different condition to the tremor or spasm that one meets with in hysterical individuals. As I say, this man had a very forcible rapid opening and shutting of both upper and lower lids, and when I tried to steady them by putting my hands in that position (*with hands over eyes*), one could feel the force that there was, and there was no superadded tremulous state—there was no fibrillary movement, if you can so describe it. In all cases of children with sore eyes and in these nervous individuals, to me it is far more of a quiver. They shut their eyes and it is a fine tremor of the lid, and more especially of the upper lid. (*Illustrating by a twittering movement of the eyelids.*)

3147. Then what comparison would you make between this fine flickering and the clonic spasm? Is one significant of one set of conditions, and the other of another set of things?—Yes. If one comes across extreme instances, I think there is no similarity at all. In fact one has seen sort of half-and-half conditions where the individual is both blinking, and where there is a sort of superadded fine quiver as well. Those cases, it seemed to me, would be very difficult to differentiate.

3148. And you would sub-divide blepharo spasm into those two classes?—Yes.

3149. The blinking class and the quivering class?—Yes.

3150. (*Judge Ruegg.*) When you speak of clonic spasm *per se*, which do you call clonic spasm?—I took it that clonic spasm meant to include both.

(*Judge Ruegg.*) That is what we have been told up to the present time. Now you say that you think they should be sub-divided as I understand you?

3151. (*Chairman.*) Does it include both?—I am basing this observation purely on the one case, this case of No. 34.

3152. Would you call his case clonic spasm?—It was a clonic spasm.

3153. Was it a case of nystagmus?—I am simply describing the objective phenomenon I saw.

3154. But was it a case of nystagmus? You said it was a case of clonic spasm?—I am simply trying to describe what the eyes looked like. I am not saying what it was due to for the moment.

3155. Do you think 34 was suffering from nystagmus?—Yes, he was suffering from nystagmus when I first saw him.

3156. You are not certain he was suffering every time you saw him?—Yes, there was a slight degree the second time.

3157. You thought he was suffering from nystagmus?—Yes.

3158. (*Judge Ruegg.*) I do not understand. You said you would have refused him a doctor's certificate?—I am never in the way of giving these certificates. The amount of nystagmus he had would not have prevented him working.

3159. (*Chairman.*) You say you are not in the way of giving them?—Yes.

3160. Do you ever give evidence for giving. Have you ever given evidence in support of the workman's claim?—Yes.

3161. When last?—For nystagmus?

3162. For a particular workman?—I do not think I have ever done that.

3163. (*Sir Clifford Allbutt.*) Do you consider the disease attributable to any industrial occupation, and in particular to that of a coal miner?—Beyond the association of the condition with nystagmus, I am unacquainted with its occurrence in any other occupation or disease.

3164. Association with nystagmus in collieries or in any section of the community?—That meant in coal miners.

3165. I think you said that you are not prepared to give any figures as to the frequency of this condition in nystagmus?—No.

3166. It has been suggested it might be in 20 per cent. of the cases. Would that be your own impression, or would you rather not express an opinion. It might be that?—Yes, I think it might be that

3167. Then do you consider this spasm as hereditary or constitutional in its character?—The only instance of an hereditary tendency occurred in the case of No. 42 in the series. That was a man who had suffered from blinking movements of the eyelids since he was 10 or 11, and he volunteered the information that his little girl aged 9 had exactly the same condition. I did not see the little girl.

3168. (*Chairman.*) Nor did he say since what age she had had it?—No, but she had it recently; she was developing it.

3169. (*Sir Clifford Allbutt.*) In the presence of a weak, nervous constitution, it would be aggravated of course if there were any other affection of the eyes?—Yes.

3170. The 11th question is included in the others?—Yes.

3171. Then your general conclusion is?—I am inclined to regard clonic spasm of the eyelids as a nervous trick, and not as a separate disease.

3172. And so far as you are aware, not in itself interfering with a man's capacity for work?—No.

3173. Although it may be associated with other conditions which one way or another might render him incapable?—Yes.

3174. (*Judge Ruegg.*) Except in the one case?—Yes. I must make an exception of that. To be fair, I do not feel clear about that man.

3175. (*Chairman.*) But that was something more than a clonic spasm, was it not?—I am afraid I do not follow you.

3176. (*Sir Clifford Allbutt.*) We do not understand that you produce any case in which clonic spasm amounted to an incapacitating disease by itself?—Except in the case of No. 34.

3177. (*Chairman.*) I am putting to you that No. 34 was not only suffering from clonic spasm, but was suffering from nystagmus?—Yes.

(*Judge Ruegg.*) At one time.

3178. (*Chairman.*) I put it to you at all times?—Yes.

3179. Therefore, you would think that he was incapacitated because he had nystagmus?—Yes.

(*Chairman.*) I take it, a man who is suffering from nystagmus is incapacitated?

3180. (*Judge Ruegg.*) Not necessarily, is he?—Half the cases that I quote here who were suffering from nystagmus were people whose eyes you could see going when they came into the room, and they did not even know they had it.

3081. Some of the men you actually found working were suffering from nystagmus to a certain extent?—Yes, some of them very marked.

3182. So that they go on?—Yes, the man did not know he had it.

3183. (*Chairman.*) By "nervous trick," I suppose the emphasis is on "nervous"?—Yes, I am rather ashamed of that term.

(*Judge Ruegg.*) It is the old English sense of the word.

3184. (*Chairman.*) What is the old English sense—a mere habit?—An acquired habit. It is not meant to deceive.

3185. (*Sir Clifford Allbutt.*) In one case you temporarily removed it?—Yes, in that particular case of 34.

3186. (*Chairman.*) When all these blinkers came to you, the first thing you examined them for was nystagmus?—Yes, I went through a sort of routine examination.

3187. The first thing you examined them for was nystagmus; is that right?—I do not think so.

3188. You said so in your former evidence. Have you ever had a private patient suffering from nystagmus—a rich man?—I have had people suffering from nervous diseases who had nystagmus.

3189. You have had private persons suffering from nystagmus?—Yes, many.

3190. In the course of the disease have they developed clonic spasm?—No, I have never seen clonic spasm associated with any organic disease of the nervous system in which nystagmus occurred.

3191. Have you ever seen a case like that of a person suffering from nystagmus, one of the symptoms being the oscillation of the eyeballs which gradually got better and left, surviving it, clonic spasm?—In a private patient?

3192. Yes?—No, never.

3193. Then have you seen a case like that in workmen?—Simply in this case of 34.

3194. Have you never seen any other case?—No.

3195. Have you ever attended a working man patient for nystagmus from start to finish?—When I was resident medical officer a great many cases of nystagmus used to come back and back to the wards to the Senior Physician with whom I was associated. That gave me an opportunity of seeing all cases over a year or two.

3196. (*Judge Ruegg.*) They were miners?—Yes, I thought you meant miners.

3197. (*Chairman.*) No. First of all I asked you about private patients. As I understand, you had a great many patients suffering from nystagmus, but never one of them showing signs of clonic spasm?—No.

3198. Now non-private patients. I asked you whether you had ever seen a case from start to finish at the hospital or elsewhere?—No, I cannot say that I have—of miners' nystagmus?

3199. Yes.—No.

3200. Have you seen a case where a man other than a miner or a man working in a mine was suffering from miners' nystagmus, this disease that we are enquiring into?—Suffering from nystagmus?

3201. Yes.—Yes.

3202. Would you call it "miners' nystagmus" then?—No, certainly not. It is a disease occurring, at least a sign occurring, in connection with some organic disease of the nervous system.

3203. So that supposing there were two men, one a miner and the other not a miner, suffering from something very like one another, you would not say anyone except a miner could suffer from miners' nystagmus. Is there any difference between the symptoms of miners' nystagmus and any other nystagmus. Take your private patients for instance?—I have never seen in people with disseminated sclerosis or cerebellar tumors—who of course get nystagmus, such marked nystagmus—the movements either so forcible or so rapid.

3204. Is it a matter of degree?—Purely degree. That is a difficulty in the North of England, that we always have. A man comes with signs of disseminated sclerosis or cerebellar tumor—we suspect he has one or the other—and we find he is a miner and we have to disregard that sign.

3205. Is photophobia a symptom of miners' nystagmus?—Yes, I should say that was.

3206. You think clonic spasm is very easily simulated?—It is easily simulated.

3207. And would easily deceive an ordinary practitioner?—Easily; in fact I can quote a case. I was sent for a short time ago to see a girl who was said to have what the doctor, if he had known the term, would have called clonic spasm of the eyelids. He thought she had a cerebellar tumor. She was simply a hysterical young woman who had blinking of the eyes and had a tendency to fall back.

(*Judge Ruegg.*) Then she was not simulating.

3208. (*Chairman.*) She was suffering from a disease?—Such a disease as by taking her away from her home for a couple of days was cured.

3209. By simulating a disease we mean, do we not, a deliberate intentional deceit at the time?—No one could imitate this performance of the girl's.

3210. This blinking?—Yes.

3211. Have you yourself come across many cases of simulation?—No.

3212. But your view is it could very easily be done, given the necessary motive?—Quite: no motive has so far occurred to me.

3213. (*Judge Ruegg.*) First, would you mind telling me, in order to clear it up, what are your duties as Medical Adviser to the Northumberland Coalowners Mutual Protection Association?—All doubtful cases are referred to me after they have been paid compensation for six months, or may be referred to me.

3214. With reference to all kinds of accidents?—Yes, mostly medical.

3215. And that includes nystagmus?—Yes.

3216. There are a great number of cases?—Yes. The Ophthalmic Surgeon in the place sees most of the nystagmus. I just get infrequent cases.

3217. I suppose it is a fact that nystagmus in miners as compared with the rest of the working classes is immensely more prevalent, is it not?—Yes.

3218. Have you had any case of nystagmus which may be said to arise from industrial causes?—No, never.

3219. And yours have either arisen from the one industry of mining or have arisen from what you call organic disease of the nervous system?—Yes.

3220. Have you traced the history of these patients with regard to whom you attribute the nystagmus to organic disease of the nervous system as to work?—Yes, we always know their work.

3221. Have you considered the question as to whether any of the cases could possibly have been due to the conditions of work?—No, apart from a miner it has never occurred to me.

3222. I do not quite understand what you mean by clonic spasm. For the purposes of your evidence, does it include what we call the tremor and the slower movement which has been described as blinking?—Yes.

3223. For the purpose of your evidence you draw no distinction between those two?—No. In the Report it includes everything.

3224. It includes both?—Yes.

3225. Then in these cases that you saw at the collieries, did the blinking include both descriptions?—Yes.

3226. Can you tell me whether in the well-known authorities treating of this disease, nystagmus, clonic spasm is described as one of the symptoms? It is described in medical books of authority as one of the symptoms of miners' nystagmus?—No; in Nettleship and Swansea I could find nothing that corresponds to this at all.

3227. I think so far as we heard it is not generally described?—No, I say in the Report I can find nothing about it in the literature.

3228. And if in fact it turns out to be one of the well-defined symptoms of nystagmus, of course it would be better that it should be distinguished?—Yes.

3229. What do you think of this for a description of nystagmus. It is merely a suggestion: "Miners' "Nystagmus, the name of a group of symptoms most "prevalent among miners, of which oscillation of the "eyeballs is a common but not invariable feature"?—Just at the first glance it seems to me that it would leave open a door to establishing that a person has got a certain disease without having to point to any definite objective sign at all.

3230. Unless clonic spasm of the eyes may be said to be an objective sign?—Unless that is one of the symptoms.

3231. Then he has an objective symptom?—Yes, but the definition is much wider than that.

3232. It is, because I suppose you agree there are other symptoms, subjective?—Yes.

3233. And the objective symptom you look for is rolling of the eyeballs?—Yes.

3234. Then if it is true that clonic spasm is a symptom of nystagmus, that is another objective symptom?—Yes.

3235. If it is true, it is one?—Yes.

3236. Assuming that is true, then you have two objective symptoms. Substantially those exhaust the subjective symptoms, do they not?—Yes. That still leaves the definition as being able to label a certain group of things as nystagmus without necessarily having either the movement of the eyes or even the clonic spasm. A man says he has headache and is giddy and cannot bear the light very well. Would not that fall in the definition?

3237. It might; but I suppose it would be possible—I do not know—for a man to have nystagmus in an extreme case without showing either of these two objective signs. Do you think that is possible?—I do not think it is.

3238. Then he would not get a certificate unless he had one or the other or both perhaps. With reference to these cases that you examined, 42, I thought those were all men who were at work?—No, some of them were and some were not.

3239. Can you tell us the proportion of those 42 men who were incapacitated and receiving compensation?—I am afraid I cannot tell you now. I have not set it out.

3240. I do not want to criticise your table, but it does convey rather the idea that these are men who are working; because you first of all say eight collieries supplied you information containing 42 individuals, and several of those collieries also forwarded a number of underground workers. Then you say in the next paragraph: "It is estimated "therefore that there were 42 suspected cases"; but now you say those included the actual cases of men who were being paid compensation?—Yes, they were merely suspected of blinking.

3241. But admittedly some of them suffering from nystagmus?—Yes, but I did not ask them anything. In fact I merely asked to see people who were blinking. I wanted to find out what the blinking was due to.

3242. I think we need not trouble with reference to those who were receiving compensation; but directing your attention to the examination of the men below the ground—they were all below ground, I suppose?—This boy who was a rapper was below ground.

3243. He was not a hewer?—No, but he was not in a particularly light place.

3244. Most of them were miners in the ordinary acceptation of the term?—Yes, hewers.

3245. There you found men with nystagmus, although they themselves did not know it, you said?—Yes.

3246. With nystagmus in a fairly advanced stage in most cases?—Yes.

3247. In such a stage as would probably in a short time, I suppose, lead to incapacity?—I do not think so necessarily. They are men who are well on in life and had perhaps had nystagmus for a good many years.

3248. And worked with it?—Yes, and worked with it.

3249. At all events, in some of those cases the nystagmus was accompanied by the clonic spasm?—Yes.

3250. And in some of them it was not?—In some of them I could not detect any clonic spasm at the time.

3251. And in some of the cases you detected blinking without any trace of the rolling eyeball?—Only in this case of No. 34. He was the only man who approached that condition at all, and yet on each occasion I certainly could at first and on the last occasion I thought there was an independent rotatory movement of the eyeballs. I might mention this—that of course it is extremely difficult to establish rotatory movement of the eye itself while the lids are pressing on the eye and communicating a movement to it.

3252. That was quite an extreme case, was it not?—Yes, that was quite an extreme case.

3253. You found nystagmus amongst the men actually working accompanied by clonic spasm and without clonic spasm?—Yes.

3254. You cannot tell us the proportion of men that you found working with nystagmus clearly defined—at all events definite nystagmus—and clonic spasm as well?—No, I cannot.

3255. Can you give us an idea?—No. Sir Clifford Allbutt suggested to me that it was about 20 per cent. or 30 per cent.

3256. Was that your experience? I want your own independent opinion if you can?—I cannot say. At least I would not have admitted it without going into my notes.

3257. Can you let us know?—I could let you know the number of people I saw with nystagmus and the number of those who had blinking as well.

3258. Of those 42?—Yes. (The witness subsequently ascertained that out of 42 cases investigated 25 had nystagmus. Of these 25, 13 also blinked, but the blinking was very slight, except in two cases.)

3259. Have you ever recognized clonic spasm as the preliminary sign of approaching nystagmus?—No.

3260. In your opinion, would it be, or might it be, one of the preliminary symptoms of approaching nystagmus?—Of course I have nothing to go on.

3261. Do you think some of these cases where you found blinking and no nystagmus were in an incipient stage of the disease?—No, I do not.

3262. You do not think they were?—No

3263. Why do you say that?—Because first of all of the type of individual. The four of them were people who were obviously nervous individuals and there seemed to be such very obvious cause, one man only blinking when he stammered. It was obviously a temporary functional upset. Another was this long overgrown boy, and another was a man who said he had blinked from the age of 11, before he went down the pit.

3264. You have never found a case except those cases you speak of where the nystagmus has passed away and a clonic spasm remained?—No.

3265. With either of the objective symptoms of nystagmus?—No.

3266. Have you found nystagmus pass away and such symptoms as photophobia remain?—Yes.

3267. Would you call that an objective or subjective symptom?—Subjective.

3268. If you put the man in a light, you can see pretty well whether it is inconvenient for him, cannot you?—No, I am afraid you cannot.

3269. Then you would call that a subjective symptom and you have found that remain?—Yes.

3270. But not clonic spasm?—No.

3271. The mere fact of your having clonic spasm remaining, if you did, with a well-defined case of nystagmus, would you attribute that to the nystagmus or not at present?—I think I would.

3272. And, taken in connection with other symptoms, I suppose that might cause incapacity for work?—Yes.

3273. I do not understand, myself, why it is in your case that you give us full particulars of on page 11, No. 34, you do not attribute that clonic spasm to the nystagmus. It is an extraordinarily definite case of clonic spasm, is it not?—Yes.

3274. A very serious case in itself which you tell us incapacitated the man from underground work without any other symptoms?—Yes, a man who has very slight nystagmus and marked conjunctivitis.

3275. But he is incapacitated for work?—Yes.

3276. Yet, as I understand you, you attribute it to the conjunctivitis and not to the nystagmus?—Yes. Here I had the two things, both causing irritable or weak eyes—something to tempt the man to try and shut out the light or reflex—I do not mean purposely to do so.

3277. Do you think you gave sufficient regard to the occupation of the man; how long he had been engaged in mining?—I think eight or nine years.

3278. To the occupation of the man and the fact that he was slightly suffering from nystagmus. Do you think if you gave full regard to those things, you would attribute the spasm to anything else but the nystagmus?—I cured him in two days.

3279. Did you cure him? Will you tell us the history of the case? When he was in hospital was he in bed?—He would be in bed for 12 hours perhaps, but the rest he was up and busily occupied.

3280. His blinking stopped?—Absolutely.

3281. Directly he went home it commenced again? He said the day he got out to his home there was snow on the ground and it was the glare of the sun off the snow.

3282. Then you did not cure him and he is suffering now badly from it?—Yes.

3283. He did not manifest it at the time he was lying quiet in the hospital; it comes to that?—But he was not lying quietly. He was busily occupied going about as much as he probably had been the day he came in to see me, because that was the treatment.

3284. He did not manifest it then?—No.

3285. He manifested it again directly he got out, and he has it now?—Yes, that was his tale.

3286. Do not you believe him?—Yes, certainly.

3287. Then we must take it he has it now?—Yes.

3288. And yet you would refuse that man a certificate. You would be prepared to give evidence in a court of justice that that man's incapacity, which exists from working as a miner, is not due to nystagmus?—Yes. As I have said over and over again, this is a case about which I have had genuine doubt.

3289. It strikes me that it is a strong case. If you have genuine doubt about this case you may have very little doubt about refusing a certificate in any other case of clonic spasm, because, as you put it yourself, this is a most extreme case?—Yes.

3290. One question about No. 13. That was a man who had been injured and he had developed a spasm of the eyelids. "At present there is rapid clonic spasm "of the upper and lower lids of the eyes. In order to "prevent the movement of the lids being communi-"cated to the eyes, the right eye was cocainised and "the eyelids separated by an eye speculum. When "the globe was in this way isolated no movement "indicative of nystagmus could be detected. This "man, however, has a marked condition of granular "lids." What do you mean by granular lids?—It is an inflammatory condition of the lids which occurs just inside the lids.

3291. But does not affect the lids?—Usually, the individual loses all the eyelashes, and they get a marked thickening of the edge of the lid, and very often the lid becomes slightly turned in.

3292. Does the lid fall over the eyes? Does the person appear as though the eyes were closed?—No, but sometimes there is an exudiate which glues them together.

3293. In that case there was no symptom of nystagmus?—No.

3294. Do you think that man was suffering from nystagmus?—I do not.

3295. What do you think the clonic spasm was caused by?—I think it was caused by this irritating condition of his lids.

3296. He was a miner?—Yes, he was.

3297. Was that man working part of the time?—No. I think you ought to know the history of this man more fully. He was a man who had an injury to his back and he went to bed, and when he had been in bed for about six weeks the doctor got him up and then the man complained, or it was noticed that he was blinking, and he was sent to the eye surgeon. He claimed he was suffering from nystagmus. His own local doctor was so doubtful about the presence of the nystagmus—there was no doubt the man was blinking, but he could not establish the presence of nystagmus—but he was sent to the eye surgeon.

3298. Of the hospital?—The eye surgeon in Newcastle.

3299. Sent by whom—the employers?—By the doctor. I think he went to the infirmary; but the eye surgeon told me that he could not establish the fact that he had nystagmus, and then I think on a later occasion he was referred to the same oculist by the mine owners, because I think the original colliery doctor gave him a certificate to say he was suffering from nystagmus, and my impression, speaking from memory now, is that from the year 1906 he has been paid compensation for nystagmus.

3300. Not quite 1906, because it was not payable at that time?—At any rate since this accident—I ought not to say 1906—he has been paid.

3301. Do you think that is a case of malingering or at all the events the symptom being mistaken. Do you think the symptoms have been mistaken?—No, I think the condition was due to the granular lids.

3302. But that would not entitle him to compensation?—No, I think he has been wrongly paid since 1910.

3303. He got his certificate, I suppose, from the certifying surgeon?—Yes.

3304. Is he being paid now?—Yes, he is being paid now as far as I know.

3305. When you examined him you could find no symptom of nystagmus?—There certainly were none, because I separated the eyes and got a chance of seeing.

3306. If a man is suffering from nystagmus, what we call the primary symptom, the rolling of the eyeballs, is it intermittent?—Yes. Sometimes the eyes are perfectly steady, and, of course, you can only bring it out by getting him to look in some particular direction.

3307. Would there be times in the history of one patient when you might find it and other times not?—Yes.

3308. It might be that you could not find it at that particular time?—The eye surgeon could not and the local doctor could not.

3309. As far as you know nobody has found nystagmus?—As far as I know nobody has found nystagmus.

3310. But he got a certificate?—He got a certificate, but that, I am afraid, is not exceptional.

3311. You think that all these clonic spasms, speaking generally, can be easily simulated? It is said that a doctor acquainted with it can discover it promptly. You do not agree with that?—No, because in the cases I have seen in the Report there are degrees, from what you may call an hysterical quiver up to this very marked clonic spasm of 34. Extreme cases are perfectly distinct, but the cases that occur in between you could not say whether they more approach the quiver.

3312. Of course, you would look for other symptoms as well?—If it is to be associated with nystagmus.

3313. Yes, if the man is a miner; that is an important thing?—Yes.

3314. Consequently, if you think he has had nystagmus, assuming he has had a recent attack of nystagmus, then you find the blinking or whatever you say and you know he has had nystagmus?—Yes; if the man was still suffering from photophobia, I would say that is dependent, because I think the spasm is, first of all, in order to shut the light out. I believe it is all due to retinal hyperæsthesia.

3315. Do you think it is a habit contracted by the desire to shut out the light?—Yes, that is what I always feel in hysterical people; they have a retinal hyperæsthesia.

Adjourned for a short time.

Judge Ruegg took the Chair.

3316. (*Dr. Legge.*) When you spoke of the nystagmus that you found in your private patients as due to organic disease, will you explain to the Committee a little what is the change that is found in those cases that distinguishes them from miners' nystagmus?—The changes as regards the eyes?

3317. No, the changes in the nervous system. What causes the nystagmus in the cases that you see in private people, due you say to disseminated sclerosis? There is a definite pathological change in certain tissues, is there not?—As far as I know it is not known what the cause of nystagmus in disseminated sclerosis is. You cannot put your finger on a certain patch and say: "This is the cause of the nystagmus."

3318. When you speak of a patch, what do you mean?—A patch of neurogliai tissue.

3819. That, in other words, is degeneration of the nervous tissue?—Yes.

3820. And that you invariably find in cases of disseminated sclerosis, do you?—Yes, in some locality or other.

3821. (*Judge Ruegg.*) That can be located?—No; as far as I know, neuropathologists have never told us exactly where the lesion is in the central nervous system which causes nystagmus.

3822. (*Dr. Legge.*) No; but still when they examine microscopically the nervous tissue, they do find definite pathological changes in it?—Yes, in some part of the central nervous system.

3323. And no such change is found in the case of miners' nystagmus?—No, not as far as I am aware.

3324. And that distinguishes them absolutely one from the other?—Pathologically.

3325. (*Judge Ruegg.*) Not practically?—No, I do not think it does.

(*Judge Ruegg.*) If we were examining a miner we want to distinguish.

3326. (*Dr. Legge.*) But there are other signs you would get in disseminated sclerosis in addition to the nystagmus, are there not?—Yes.

3327. Will you just mention a few?—A tremor of the hands. If an individual wants to take hold of my finger, instead of going towards like *that* straight, he comes towards it, and when he gets near it his hand begins to shake—intention tremor—and usually there is a general increase of the reflexes of the body and certain changes of reflex which are pathonomonic. For instance, when you stimulate the outside of the foot the big toe rises up, which is a phenomenon known as Babinski's big-toe phenomenon.

3328. So that if you have a patient under observation for a certain length of time, you can definitely distinguish the one from the other?—Yes, I think you can always.

3329. (*Chairman.*) Even if you were dealing with a miner?—Yes, in time you could.

3330. (*Dr. Legge.*) In that particular case, No. 34, that you have referred to so much, had you much difficulty in finding the nystagmus that you say was present there?—Yes.

3331. Did you examine him in a dark room?—Yes.

3332. And yet you were satisfied that he had it?—On the first occasion I had no doubt. On the

second occasion I had great difficulty in satisfying myself on account of the communicated movements from the lids.

3333. I think you said that you are not quite satisfied with this suggested definition as being too wide, namely: "The name of a group of symptoms most "prevalent among miners, of which oscillation of the "eyeballs is a common but not invariable feature." You thought that would admit other conditions?—Yes, it would be purely subjective.

3334. Would it be preferable, in your opinion, if that were shortened? Would it make it more fitting, in your opinion, if it were said: "Nystagmus: the "name of a group of symptoms most frequent among "miners of which oscillation of the eyeballs is the "commonest objective sign?—That still leaves——

3335. You still think that is a little wide?—Yes; if I may express an opinion, I feel it is much too dangerous to base any scheduled disease on purely subjective sensations.

3336. But you still believe that nystagmus in a miner may vary in intensity: that on one day it may be prominent and on another day it may not be found?—Yes.

3337. And there is a risk of the miner who is examined on the day when it is not found being described as not suffering from nystagmus?—Yes. At any particular moment of course it might occur.

3338. Do you think it would make the position surer and clearer if the Committee were to say the decision should not be come to at one examination?—Yes.

(*Judge Ruegg.*) What decision?

(*Dr. Legge.*) The decision as to whether it is miner's nystagmus or not.

(*Judge Ruegg.*) So that the certificate could not be given on one examination and it could not be refused on one examination.

3339. (*Dr. Legge.*) It could be given on one examination if the nystagmus were there. That would cover the great majority of cases; but in the case of the presence of blepharospasm, the certificate should not be refused except after, say, three examinations?—Yes; I think that would certainly cover all unfairness to the men, and would prevent opening what I think is this very dangerous door.

3340. (*Judge Ruegg.*) But it is open to the certifying surgeon at present to say: "You must come to "see me again; I am not quite sure about this"?—Yes, quite.

(*Dr. Legge.*) It is open to him now, on the other hand, to absolutely refuse on his first examination.

(*Judge Ruegg.*) Yes. Then there is the appeal to the medical referee. You have to remember that. Who do you say should not refuse the certificate—the certifying surgeon?

(*Dr. Legge.*) I have not considered that.

3341. (*Judge Ruegg.*) However, it is a matter for the Committee. You say the disease is already scheduled. We must not forget that nystagmus is already an industrial scheduled disease, and this Committee is only desirous, if it comes to the conclusion that this blinking is only a symptom of the disease, that no miscarriage of justice should be done. If a man really has nystagmus he shall get his certificate, but if he has not he shall not. It has been suggested that too much stress has been laid upon this symptom of the rolling eyeballs; that that has been the criterion on which the disease has been said to exist. I suppose that *per se* you agree is not sufficient? You want a careful examination?—Yes, I think if a man is suffering from the subjective phenomena associated with nystagmus, some time or other he certainly has oscillatory movements very marked.

3342. You agree with what Dr. Llewellyn said about that. He said he had never failed in a case of nystagmus, to detect it?—That certainly would be my experience.

3343. That appears to be so in the great majority of cases. Whether it is so universally, appears to be the question we have to consider?—But as Dr. Legge suggested to me, I have to admit that at a particular moment, especially in slighter cases, you could not satisfactorily demonstrate that there was nystagmus present.

3344. You do not suggest there would be anything wrong in that definition that, "nystagmus is the name "of a number of symptoms more frequent among "miners of which oscillation of the eyeballs is a "common but not invariable feature." Do you suggest that is wrong?—No.

3345. You do not suggest that rolling of the eyeballs is an invariable feature?—At some time or other.

3346. This rather suggests that you may have nystagmus without rolling of the eyeballs. Do you think that would be a wrong definition of the disease?—Yes.

3347. (*Sir Clifford Allbutt.*) Now will you turn to Dupuytren's contraction. Your evidence with respect to Dupuytren's contraction, a disease of occupation, with especial reference to its occurrence among coal-miners, is based upon an examination of a certain number. Will you state that number?—Yes; 1,145 miners and 2,447 manual workers engaged in occupations other than mining.

3348. Then you have taken a special interest in this subject?—Yes, of course one has seen cases in the past.

3349. Was that in consequence of questions which were put to you by this Committee, or had you worked at it before?—No, I had not worked on it before. It was the suggestions of this Committee.

3350. Then you made up your total of 1,145 miners on a certain table which you put in?—Yes.

The total of 1,145 miners was made up as follows:—

Miners examined at A—— Colliery -	690
" " " W—— Colliery -	120
" " " Royal Victoria Infirmary - -	323
" " " a Workhouse - -	12
Total - -	1,145

3351. Taken at your official place at Newcastle-on-Tyne, the Royal Victoria Hospital?—Yes.

3362. I suppose these were consecutive cases?—I went to Ashington Colliery and examined the men at the pit head as they went down to work.

3353. (*Chairman.*) All of them?—All mentioned at A——.

3354. Just as they came?—Just as they came. The 120 hewers at W—— were examined similarly.

3355. (*Sir Clifford Allbutt.*) In making a personal examination of this kind there was no selection whatever?—No, none at all.

3356. They produced so many at A——, so many at W—— and so on?—Yes. I just saw the men as they passed through to work. Then knowing that this was a disease which very rarely occurred among young people, I went to A—— Colliery twice and examined about 500 at each shift, and of course some of them were boys. I ignored them altogether, because I knew it would upset my comparative statistics with other workers where I was only examining the adults.

3357. Do you think it possible that any of the miners may have refrained from showing their hands to you; that there was a sort of unconscious selection and they did not wish to be examined?—I saw the hands of every single individual who went down, because they had to go through a little wicket.

3358. You took them just as they came?—Yes.

3359. Perhaps you would tell us just superficially the method you took of examining them?—I got them to put down or hand to a mate whatever they had in their hands, and got them to put their hands out like that (*both hands extended with the palms up*). They were going down to work, so that their hands were clean. I passed my thumbs over their palms to see if I could feel any thickening that I could not see.

3360. As regards the known characteristics of Dupuytren's contraction and its relation to this Inquiry, I think we might take them as generally known. In your opinion there is no difference of teaching about that?—I do not think so.

3361. Everybody agrees on that?—Yes, as to what the pathology is.

3362. About the palmar fascia and so on?—Yes.

3363. Now will you tell us the result of your inquiries as to frequency?—In this inquiry I came across 118 cases of Dupuytren's contraction amongst the 2,447 non-miners, which gave an incidence of its occurrence amongst 4·8 per cent. of people.

3364. Speaking very very broadly, what class of people were they?—Working class.

3365. Labourers?—They were all sorts. They are tabulated at the end.

3366. You put in a table as to who they were?—Yes. (*See* Appendix VI., p. xvii).

3367. You have not put the ages of those people?—No, I have not made a table of the age.

3368. You would not like to give any limits of age between such and such ages. They were not all middle-aged people, were they?—They were all people of over 30 roughly. I did not ask each individual his age.

3369. Whatever the age was, do you think it applied equally to the miners and non-miners?—Yes, very equally, because I had to make an estimate. I only took two-thirds of the actual number of men I examined at A——, because some of them were younger and there were fewer older people than in the 2,447 I examined amongst non-miners.

3370. Supposing we turn for a moment to your workhouse cases, those workhouse cases would be some miners and some not?—There were 12 miners.

3371. They would be an older lot altogether?—Yes.

3372. Considerably older?—Yes.

3373. Have you separated those workhouse people on your table?—Only as regards age.

3374. Then taking those separately as regards age, can you tell us whether the incidence was higher in those?—Yes, it was very strikingly so.

3375. Have you any figures?—Yes, it appears also under the head of age. Amongst these 400 inmates of the workhouse infirmary there was an incidence of 10·8 per cent, which is almost double the incidence that I found amongst the 2,447 non-miners.

3376. And you noted on the whole, that is including the miners, the workhouse and everybody, that labourers were affected with the disease at an earlier age than other manual workers. That was the broad outcome of the whole lot?—Yes.

3377. Then when you confined yourself to the miners, 1,145 were examined and you found only 17 cases?—Yes.

3378. And the incidence of that was what?—1·4 per cent.

3379. Have you anything to say about sex? Of course all these were males?—I did not examine women at all. My object in making the investigation was to compare miners with non-miners.

3380. Then on the whole what was the outcome of your inquiry in respect of miners as compared with other general classes of workers?—As regards the frequency?

3381. Yes?—I found I got a smaller incidence amongst miners than amongst non-miners; but, if I might be allowed to make a modifying remark, the non-miners were people who came to the Newcastle Infirmary suffering from various diseases and many of them were oldish people. They were workers who were beginning to get the ordinary complaints of later life, and I think probably their average age was much greater than the average age of the miners. I do not mean to imply from this report that it is a disease that is less common in miners than in the general body of workers. I should think the truth is that it is really very much the same. That is the explanation I would offer; that the old men amongst the miners are living in retirement and that we are getting older men at the hospital because they are more likely to have diseases; therefore the average age of the men under the class of non-miners was greater than amongst the miners, and that would account for the larger incidence of the disease in the non-miners.

3382. Do you think that the incidence of the disease in your workhouse was affected by the consequent incapacity of the worker due to Dupuytren's contraction?—No, they were not there for that reason.

3383. Dupuytren had not brought them to the workhouse?—No; inquiries were made into that.

3384. Then other authorities are mentioned, but we have had those before. You found that the causation came under the four heads of heredity, rheumatism and gout, bacterial origin and trauma?—Yes.

3385. Without going into the whole of that, you have considered causation under those heads?—Yes.

3386. Is there any one of those heads to which you wish to draw special attention?—No.

3387. We have information about heredity. You agree it is often due to heredity?—Yes, I have discovered so in certain cases.

3388. And we might dismiss the bacterial origin, I think?—Yes.

3389. I daresay you would wish to say more about rheumatism and gout. What is your opinion about that?—First of all I should like to remark on the statement in the text books on what are called the minor manifestations of the gout, which seems to have been copied from book to book as an etiological cause. The so-called minor manifestations are symptoms such as dyspepsia, which I do not think are necessarily always gout, and possibly an undue predisposing factor is ascribed to gout and rheumatism, because I got a much lower incidence than some other people who got out statistics. I could only find in really gouty and rheumatic individuals an incidence of 8·1; whereas in the recent inquiry into the minders of lace machines I see it is 21 per cent. Dr. Keen obtained a gouty history, personal or family, in 64 cases out of 95.

3390. The tendency to gout and rheumatism varies in different districts, does it not?—Yes.

3391. How would you say it stands in your district? Take rheumatism first and gout second. Is the incidence of rheumatism in your district high?—No. We get nothing like the acute rheumatism in Newcastle.

3392. We will leave out rheumatic fever?—Yes, apart from rheumatic fever. I can only judge from hospital experience in London and my hospital experience in Newcastle, really; and I would say that the chronic forms were very much the same.

3393. Then as regards gout?—I think there is less gout.

3394. You are rather like Scotland in that way?—Yes, there is certainly less gout in Newcastle than London.

3395. Speaking generally, supposing a connection between chronic rheumatism and Dupuytren's contraction, it might be a matter of the district?—Yes.

3396. It is supposed that rheumatism is more prevalent in certain districts and less prevalent in upland limestone districts and so on?—Yes.

3397. So that on the whole it might be anticipated that Dupuytren would run a little higher or quite as high with you as regards rheumatic causes as in any other district?—Yes.

3398. Then you very properly say that the mere vague pains—dyspepsia, and so on—cannot be regarded as evidence of any great value?—No.

3399. I think I need not ask you about the other authorities. Now we will go on to trauma. Never mind the other observers at the moment; but you suggest from your own observation that perforated wounds or suppurations may produce a contraction of the palmar fascia and a condition similar to Dupuytren's contraction. Do not those cases generally involve the tendon as well?—Yes.

3400. And in that case they are to be differentiated, are they not?—Yes.

3401. It is a very superficial resemblance?—Yes, merely that the fingers are contracted.

3402. So that in case of any claim being made, a medical man of ordinary competence would see the difference between the result of a wound and Dupuytren of a spontaneous kind?—Yes.

3403. Then we find on your table you have a striking prevalence under the class designated as labourers; so that you set the labourer over against the miner as being far more liable to Dupuytren than the miner is?—Yes. I am afraid the reason, or suggested reason, for that did not occur to me until my report was drawn up. Of course the immediate question that had to be answered was: Are there not far more people under the head of labourer presenting themselves at the hospital than under any other head? May it not be there are more labourers? Supposing in a particular afternoon 100 people came to the Royal Infirmary and 40 of them are simply labourers—you cannot describe them as any other sort of skilled worker—you would expect if 60 per cent. are labourers of all the people coming to the Infirmary, the incidence of Dupuytren would be much greater amongst labourers; so that I immediately set inquiries on foot to find out what the percentage of men stated they were labourers and could not give of themselves any more specific description, and I found that it was 42 per cent. 42 per cent. of men coming to the Infirmary have to be called labourers.*

3404. Do you wish that to be taken in connection with this?—Yes, I think it is most important.

3405. I quite agree with you. Then I think I might ask you in general terms, what is your opinion about the causation of Dupuytren?—I think we simply do not know the cause. I cannot honestly say that I have satisfied myself as to what the cause is.

3406. You say the local pressure on the palm of the hand cannot be the sole cause. Perhaps very few or no events have a single cause, but a combination of causes?—Yes.

3407. Would you say that such pressure was eminent among the causes?—No, I would not even say eminent.

3408. Would you think it took a second place to heredity or gout?—Whatever it is, I should say it is by no means necessary, and I tabulate the reasons why I think trauma should not be considered as a very necessary cause.

3409. Then supposing for the moment that the continual pressure on the palm of the hand with implements of various shapes and kinds would conduce to the occurence of Dupuytren's contraction, do you think the work of a miner would be such as particularly to bring about this condition?—That is a question I went into to find out which part of the hand received the most strain or stress in the case of a miner, and I have stated that, taking the various classes of colliery workers such as hewers, shifters, putters, coke drawers, furnace men, &c. I examined their hands and found that in the case of hewers they nearly all, when they have worked for any length of time, get warty excrescences along the surface of the metacarpal bones, a thickening of the thenar eminence and another thickening on the hypothenar eminence, and very often the only soft part of a miner's hand is just in the hollow or where Dupuytren's contraction begins. The only soft part you could feel was just in the palm, and that is accounted for by considering the shape of the handle of the pick. It is an oval handle and it swings up and down in the hand, the anterior end of the handle coming *here* and the posterior part coming *here* and *here* (*indicating*). The body of the shaft runs up and down across the palm, so that there is no friction even in the actual palm itself.

3410. Then you made some distinction as the men passed before you, as to whether they were hewers or something else?—This was a special inquiry. I went to various pits to see the hands.

3411. You took another method for that?—Yes, because I thought it was necessary.

3412. That is your opinion about the hewers?—Yes.

3413. Now we go to shifters and putters who have to use the hands with more clinging?—Yes, pushing or clinging.

3414. The pressure on the hands in hanging on the handles?—Yes.

3415. Delivered on the roots of the fingers?—Yes, in *here*.

3416. That is the inside of the first?—The bases of the fingers.

3417. (*Judge Ruegg.*) Clasping that round. What is it that they pull?—There are two handles at the back of the tub and they hold on to them to prevent the tub going too fast; they are just thin rails.

3418. Do you mean to say in that operation they do not get pressure on the palmar fascia?—No, at least I did not, and I tried it. You do not grip the thing in the palm of your hand.

3419. They push them and pull them?—They do not do much pushing up hill, because it is so arranged that there is a slope down. It is the method of keeping the tub going. They could not push the full tub up.

3420. There is going back. How do they do that?—If the seam is sufficiently high they can stand and push it along like a perambulator. If the seam is very low they again get hold of the rail.

3421. Do you still think they do not put any pressure on the palmar fascia?—Very little. I know what you have to do when you pull behind, but I am afraid I did not try pushing forward.

3422. (*Sir Clifford Allbutt.*) There are two ways in which the hand may be affected. There is pressure and there is also tensile strain, which might affect the fibres of the fascia?—Yes.

3423. So that you could not exclude tensile strain?—No, you could not—stretching.

3424. Then as regards coke drawers and furnace men, you have nothing to say about them?—No, they get burns along here (*the bases of the fingers*).

3425. Then the important question is, is the disease more or less common in miners than in other classes of manual workers?

(*Judge Ruegg.*) He quotes his table in answer to that.

3426. (*Sir Clifford Allbutt.*) Yes. Then you are asked certain specific questions: "Is this disease attri-" butable to any industrial occupations, and, if so, is " the occupation of a coalminer one of them"? What is your answer to that?—"In my report the suggestion " is made that the class of labourer, the palms of whose " hands are subjected to constant and localised " pressure, is rather more liable to the disease than " other classes of manual workers." That, of course, has to be modified by what I have since brought up.

3427. (*Judge Ruegg.*) Still, you do not wish to withdraw it as an assertion. It is modified in degree. Do you wish to withdraw it?—I think it is such a complete answer to the greater incidence amongst labourers.

3428. (*Sir Clifford Allbutt.*) You have a corollary to that?—"Considerable proof has been brought forward " to prove that the occupation of a coalminer does not " conduce to the disease."

3429. Would not you put in the word "especially"?—Yes.

3429*a*. Does it especially conduce to the disease?—No.

3430. Then what weight do you attach to the hereditary or constitutional elements?—Very little to heredity.

3431. Then as regards constitution?—I cannot tell what the exact constitution is that determines it.

3432. Do you think it is rheumatic or gouty?—I do not know. I do not think it sufficiently accounts for it.

3433. You think, broadly speaking, it is due to pressure?—If I might draw an analogy, I would suggest that it is rather allied to such changes as take place in the nerves in later life. This is essentially a disease that seems to come on in later life, just as vascular changes do.

3434. That carries us on to No 4. You think it is more common among men accustomed to manual labour than amongst others?—No. Of course, one cannot be certain because you cannot get statistics amongst the upper classes.

3435. Then you qualify that by saying you have not any statistics about the upper and middle classes?—Yes.

3436. But really on the whole you do not think the disease is more common?—No, I think it is equally common to the two classes.

* Dr. Hume subsequently forwarded a Table. *See* Appendix IX., page xvii.

3437. Then you think we are entirely ignorant of the causation?—Yes, I do.

3438. As regards the incidence on which you have founded your opinions, you have given those in Tables 1, 2, and 3?—Yes.

3439. Will you give us your conclusion?—From the report it will be apparent that it impossible in the majority of cases to assign any definite cause.

3440. (*Judge Ruegg.*) I am not sure that I follow. Do I understand you to say that you are not in a position to assign any cause for this disease?—No; thinking it over I would like to insist on this comparison to the changes that take place in later life.

3441. When you give on page 3, under the head of "Causation," four causes, are you giving those as your opinion or as causes which have been suggested?—Yes, that have been suggested.

3442. You do not attach any more importance to one than to the other?—I think heredity and bacterial origin can be definitely ruled out. The others may be predisposing factors.

3443. If you are not speaking of your own views, but only of what have been suggested as causes by other people, I notice you leave out altogether chronic pressure as a cause?—No; I put down the fourth, traumatism.

3444. By traumatism we mean something quite different to chronic pressure; we mean a wound by traumatism?—I mean any sort.

3445. Do you mean by traumatism chronic pressure?—Yes, anything of that sort.

3446. We have used it in a different sense?—I mean traumatism to cover any sort of injury or damage to the hand.

3447. But would a disease which manifested itself through chronic pressure extending over a great many years be properly described as traumatism?—I mean it to include constant pressure, and I refer to the words constant pressure.

3448. (*Sir Clifford Allbutt.*) Might I suggest this difference. By trauma you mean some definite injury at a particular date, contrasted with an indefinite number of minute and unnoticed lesions lasting over a number of years?—Yes. I appreciate the distinction, but I am afraid I have used a wrong term.

3449. (*Judge Ruegg.*) So long as we understand that by trauma you did mean to include chronic pressure?—Yes, everything of that nature.

3450. Those are the generally assigned causes, but you have no particular preference for one over the other?—No.

3451. Neither are you satisfied what the causes are?—No.

3452. Have you considered it in this light? You admit it is much more common among males than females?—Yes.

3453. I think everybody admits it is much more common. Can you account for that?—We always find in post-mortems that the signs of wear and tear in all the tissues are much more marked; we have much more fibrosis in men's bodies than in women's.

3454. Does that mean the superior exertion of men. This is a local affection of the hand, and if one of the causes is rightly stated to be chronic pressure on account of the fact that it appears much oftener in men than in women, it would seem to point to the fact that chronic pressure may be the cause of a number of cases?—I would not deny that granted there is some susceptibility, whatever it is, that constant irritation or pressure might in a given case set the thing going which otherwise would have remained dormant. That is a general principle.

3455. If you say it would remain dormant, you assume it was there?—Yes, there was some sort of change in tissue which possibly later on gave rise to it, or which, if it had not had this later additional irritation, would never have given rise to it.

3456. Is that what you call a predisposing cause?—Yes.

3457. We shall have to look at these figures rather carefully; but amongst 1,145 miners that you examined there were 323 at the infirmary and 12 at the workhouse. Does that mean they were inmates?—Yes, some may have been inmates and others are simply coming for advice.

3458. You went to the infirmary?—I am on the staff there; I am always there.

3459. And you took them as they came for this purpose?—Yes.

3460. Taking the colliers in each quantity, you took them as they came?—Yes.

3461. What would be the average age of collier going down. You excluded the boys?—I excluded the boys.

3462. They are under 18, are they not?—Yes.

3463. What would be the average age of the collier that you took, do you think?—I should think 40 odd years.

3464. Do you think the average would be as high as 40?—I should think so. There were many old hewers.

3465–6. Did you make any inquiries as to whether they were coal getters or whether they were employed in all kinds of occupations in the colliery?—They were all going underground, of course.

3467. Yes, but a great many men going underground do not get coal?—Yes; some were putters and shifters.

3468. It is the operation of coal getting which has an effect upon the hand, and if that is suggested, then figures for that purpose are not of much value?—The 120 men at Willington colliery were all hewers and I did not find a single case. I only examined hewers because I was examining them for callosities, and there was not a single case among those 120.

3469. But I suppose the people you examined in that infirmary and the workhouse collectively were older, were they?—Yes, I think so.

3470. The average would be a substantial number of years?—I should think possibly the average age might vary, from 7 to 10 years.

3471. You know it was stated that this disease does not manifest itself generally until well on in life?—Yes.

3472. You would not expect to find it amongst young colliers if it is due to local pressure extending over a great number of years?—If it is due to any occupation, you would certainly expect to find it earlier in those occupations in which it is liable to occur than in others.

3473. Yes; but if it is a disease which requires a great many years to develop, you would not expect to find it in any young working men?—The cases vary enormously in the rapidity in which they develop. Some I believe only get a localised affection which remains in that condition all their life, and others very quickly get contracted fingers.

3474. Did you notice with regard to these various persons you examined at what stages of the disease they had arrived?—Yes. In my notes I put down "very little" or "slight"; but in the large majority of the cases the individual could still use the hand. I met very few cases where the fingers were bound down into the palm.

3475. What we call the last stage?—Yes.

3476. Did you find any cases of men who alleged that their incapacity for work had been caused through this?—Yes, many, and then when one began to inquire exactly how it was they said, "Oh, just hard work." I never could get them to state specifically—or in very few cases—how it was their work had done it. The usual reply was just a laugh, as much as to say: 'Fancy asking any man who works with his hands why his hands go wrong," and other people said, "Oh, just hard work."

3477. I do not think you follow my question. Did you find any case in which the man attributed his incapacity for work to the disease. In other words, "It stopped me working; I got it so badly"?—Yes; I think there was one, but I am not certain. That was a man I came across in the out-patients of the infirmary. He said it stopped his work.

3478. Only the one case?—Yes, only one case, I think.

3479. Was he a miner?—No, I forget what he was.

3480. Do you mind looking at Table 2. Those are all miners, 17?—Yes.

3481. Did you examine all those yourself?—Yes.

3482. The ages are very high indeed, some of them extraordinarily high?—Yes.

3483. Where did you examine these men?—Four or five I got at Ashington.

3484. At the colliery?—At the colliery. I think there were two in the workhouse and the rest of them I got in the Royal Infirmary.

3485. I see some of their ages are 75, 61, 75, 70, 70, 68. They were not working men at that age, were they?—Some of them were.

3486. You have some of younger age; but none of those were over 70, for example, were they?—I cannot tell you off-hand whether they were, but I know there are men in the pits who are working at 75.

3487. Seventy-five?—Yes, when I was down at Willington we came across two men doing stone work, one of whom was just on 80 and the other was very nearly the same. There are quite a lot of very old men.

3488. Have you read Dr. Collis' Report on this disease?—In connection with lace minders?

3489. Yes?—Yes.

3490. You know the opinion that he has formed that it is due entirely to local pressure. However, you would rather not express any opinion as to local pressure?—I certainly think there are certain occupations which would be liable to cause it. I think men who are continually pressing their hands down on to a very heavy lever, such as these lace minders do, have proved their case, and I would expect to find as big an incidence in such an occupation as a sailor; but I do not think that in any way the work of a miner contributed to it.

3491. You are speaking from your statistics?—Yes.

3492. But I see you draw particular attention to the frequency with which it appears in labourers. Then you attempt to account for it by saying: "Most of the "labourers use the spade and shovel which use necessi-"tates pressure on the palm of the hand." You are accounting in that case for the high incidence by local pressure?—Yes, I do not see how I can get away from that.

3493. I quite follow. Then it occurred to you there were many more labourers went to the infirmary than other people?—Yes.

3494. But even taking it in connection with that, that is the only explanation you can give, is it not: that it is due to local pressure in the case of labourers?—No, I do not think probably it occurs more frequently in labourers. Of course when I made this Report first of all, I thought that all these men labelled "labourers" were men using spade and shovel, and when I found rather to my surprise I had such a very large incidence amongst the labourers, I could not help putting two and two together.

3495. That for a time rather convinced you it was due to local pressure? Then you receded from that position?—No, I began to see if this really was so; but unfortunately my report had gone in, and I began to ascertain whether all these people who called themselves labourers used spade and shovel, and I found they did not; but that all sorts of odd workers, cartmen and all sorts of people were called labourers. Then I set out on a definite inquiry as to the percentage of men who came to the infirmary calling themselves labourers, and I found there were 42 per cent. That brings the incidence amongst this particular class down immediately.

3496. It still leaves it very much higher than any other?—It brings it nearly to half.

3497. That brings it much higher than any other?—You have 34.

3498. Thirty-four in one hundred and eighteen?—Which is considerably less than a third, and far more than a third of the people are labourers.

3499. Thirty per cent.?—Yes, and 40 per cent. are labourers, so that really it brings it to a smaller incidence. There is another occupation in which I think, if it were gone into, we should find there is a large percentage of the people who pull on ropes, sailors, who get it.

3500. (*Dr. Legge.*) Then you say that you found the centre of the palm where Dupuytren's contraction commences is soft?—Yes. If Dupuytren were due to continued pressure, you would have expected to have found it hard.

3501. Do you think finding softness where Dupuytren's contraction commences is any evidence that it is not due to localised pressure?—My point is this: that you simply get no pressure at all in that particular part of the hand. When you have an oval pick running up and down your hand, it is cut, and the pressure simply does not touch that part.

3502. That relates to miners, and would not hold good in the case of these labourers you are speaking of?—No.

3503. Did you examine these labourers' hands carefully?—No, not with that object in view.

3504. You cannot say whether you found the centre soft or not?—No, I cannot.

(*Judge Ruegg.*) The Committee are much obliged to you.

The witness withdrew.

Mr. Robert McGhie, called, examined by Sir Clifford Allbutt.

3505. You graduated Bachelor of Medicine and Master of Surgery of the University of Glasgow in 1891, and took the full degree of M.D. in 1895?—Yes.

3506. Since 1892, with a break of 14 months, you have been in practice in colliery work in South Wales?—Yes.

3507. And you have gone from post to post, taking more and more responsibility, but nearly or practically always in connection with collieries?—Practically, all my professional time has been spent with collieries.

3508. And you are now medical adviser in compensation cases for a company employing over 10,000 workmen at collieries at Merthyr Vale and Mountain Ash?—That is so.

3509. You have been appointed surgeon to the colliers employed at Messrs. Hill's?—Yes. I have been on both sides. I attended the service of families first. I served my apprenticeship, so to speak, before I got this post as Compensation Adviser.

3510. So that you saw both sides of the question—the employers' and the men's side?—Yes.

3511. With regard to Dupuytren's contraction, I will merely ask you generally whether you agree, as to its pathology, with what is generally stated by other authorities?—Yes.

3512. With regard to the lace-making, you have no personal knowledge of that?—I have no personal knowledge whatever.

3513. But you state that the disease, among the mining population of South Wales, is almost non-existent?—I do.

3514. You have made certain inquiries from other medical men that you know?—Yes.

3515. Attending an aggregate of 17,000 workmen; that is colliers?—Yes.

3516. In certain mines in South Wales?—Yes.

3517. They were quite unanimous in joining with you in the opinion that it is practically non-existent in South Wales?—Yes, I have their replies. I have the important extracts from each letter.

3518. You can give us the effect of these letters?—Yes.*

3519. Can you state generally the kind of practice in which those doctors were concerned?—Purely all colliery work.

3520. Were they official medical men?—No, they were working for the men.

3521. Either on the men's or the employers' side?—Entirely on the men's side.

3522. (*Judge Ruegg.*) Do you mean that they were private practitioners with a large number of patients among colliers?—No; in South Wales the method we have of payment for the colliery surgeon by workmen is that there is always a certain poundage stopped from

* *See* Question 3528.

their wages. All these gentlemen are men who, at all events up to this month, have been in receipt of poundage from the workmen.

3523. Then it is a selection of men who happen to know?—They are personal acquaintances of my own.

3524. Whom you thought you could rely upon?—Yes, and I have the questions which I asked them.

3525. Have you a copy of the letter you sent to them?—Yes.

3526. Will you please read that?—"I should be "glad if you could assist me by giving to me the "results of your experience in the following matter. "A Committee of the Home Office is considering the "question of adding two more to the list of Industrial "Diseases in the Schedule to the Workmen's Com-"pensation Act, namely, (*a*) Dupuytren's Contraction "of the palmar fascia, and (*b*) Clonic Spasm of the "Eyelids apart from Miners' Nystagmus. Can I "therefore venture to ask you to give me your answer "to the following questions:—(1) What is your "experience of Dupuytren's Contraction as affecting "underground workmen, apart from acute conditions "such as beat hand and definite accidents; (2) What "is your experience of cases of Clonic Spasms of the "Eyelids as apart from Miners' Nystagmus? I should "be pleased if in your answers you stated approxi-"mately the number of underground workmen your "practice includes."

3527. The answers were so consistent that you put them together?—I have tabulated them all.

(*Judge Ruegg.*) Do they all come to the same thing: that they were consistent?

3528. (*Sir Clifford Allbutt.*) Would you like to call our attention to one or two of the answers which may be at all qualified?—I have five who say that they know nothing at all about it; that they have never seen a case. That is five out of ten. Another one after 46 years in practice in Merthyr says he has seen "very few cases of Dupuytren's contraction amongst "miners. I can recall a large number of cases, the "bulk of them among middle-aged and elderly men "of the better class in life who have done no manual "labour, evidently due to a constitutional cause." Then another man says he has seen exceedingly few cases, and those mostly in iron-workers. No case in underground workers. Another correspondent at Mountain Ash says he has seen very few cases of Dupuytren's contraction in nine years of colliery work, and quotes the only two appearing like it he knows of at present. One of these is a case secondary to dislocation of the ulnar nerve, and the other a case of syphilis. Before this he was in private practice, and saw several cases of Dupuytren's contraction, of which he gives no particulars. But you can take it that they are practically unanimous.

3529. Is beat-hand well known to you?—One sees these cases of suppuration of the palm of the hand.

3530. That is as common in collieries in Wales as it is elsewhere?—Yes.

3531. You yourself examined 536 men employed about Messrs. Nixon's collieries?—Yes.

3532. Taken at haphazard. Those are all men who had reported accidents?—Yes.

3533. Is that accidents to their hands?—No, any sort of accident.

3534. Then from this point of view, the point of view of Dupuytren's contraction, it was haphazard?—They were men I had to examine. I had to see them for something else, and I made the inquiry.

3535. Besides those men who showed no sign of Dupuytren, you have for some time paid particular attention to this subject?—Ever since the 27th June, when I was called to the Coalowners' meeting.

3536. You cannot recall a single case of Dupuytren among colliery workmen. Then you say: "The only cases I can recall"—that is among all persons?—Yes, the only persons I have ever seen.

3537. "Are three in number." Then you give us those three, one of whom was a driver of an omnibus, where you think the case was rheumatism?—Yes.

3538. Then a clerk, the same thing. Then the third man is a gamekeeper, who carried a knobbed stick on his rounds?—He thought that might have started it. The gamekeeper was under 60. The other two were men of 65 and 70.

3539. What do you think is one of the chief causes of the disease, or if not one of the chief causes, your views about the causation of the disease generally?—I do not know that I really have sufficient experience of the disease to form an opinion; but from my reading, of course, one gather that it is connected in some way with gout and rheumatism.

3540. Then shortly, you put it in this way: that the disease, so far from being prevalent, is almost unknown among the miners?—Yes, I can only speak for South Wales.

3541. Therefore, your experience of this affection has been very limited?—Yes.

3542. And your opinion of the causation is derived entirely or almost entirely from what you have read?—Yes.

3453. (*Judge Ruegg.*) With regard to the 536 which you examined from Nixon's Navigation Co., you took them just as they came. They were most of them young, were they not?—No.

3544. You say there were some boys?—There were some boys, but they just came as they met with accidents. I did not use any selection whatever.

3545. What age do your miners work at in South Wales?—I should say the average working miner is 25 to 45. There are many older than that.

3546. Many?—Some.

3547. It is suggested that they do not manifest this disease until somewhere about that maximum time, 45. You would not expect to find it among boys, would you?—Of course, there were some quite old men amongst those 500—a good many.

3548. Personally, I do not attach as much importance to that examination of yours as I do to this statement, that you have been in practice in colliery work in South Wales for 20 years, and cannot recall a single case that has come under your notice?—Not a collier.

3549. You have never noticed a man with twisted fingers in any of these cases?—Yes; I have seen scores of contracted fingers, but it has been due not to Dupuytren.

3550. Have you had to consider the question of what it is due to?—Yes, we pay compensation for those cases. They are due to suppuration in the palm.

3551. They have been due to beat-hand?—Yes, suppuration in the palm.

3552. I thought you meant you had seen men with some of their fingers twisted, in the course of passing up and down the mine. I am not speaking of compensation cases or clearly defined injuries. Have you never seen a man in that way who was not applying for compensation?—No.

3553. You have never heard it complained of?—No, I have not.

3554. At all events, in the course of your twenty years, you have never heard of a man who has been knocked off work, or who has had to knock off work, in consequence of a gradual contraction of the fingers?—No, I have not. I do not remember a single case.

3555. (*Sir Clifford Allbutt.*) Are colliers at all subject to rheumatism in your district?—Not especially so, I think.

3556. Have they immunity from it on account of the equable temperature of the pits?—The steam coal pits in South Wales are generally rather warm. I do not think we, perhaps, get quite as much rheumatism as they do in other parts of the country.

3557. Work in the pits, as a whole, is a healthy occupation, is it not?—Yes.

3558. Does that higher standard of healthiness apply to those affections which are generally known as chronic rheumatism, do you think?—Yes, I think so.

3559. (*Judge Ruegg.*) Do you think, having regard to the circumstances which may be said to exist, or which may be proved to exist, in the case of other industries, if it were thought right to schedule this disease—Dupuytren's contraction—the mine-owners would raise any objection to that being done, assuming, of course, that no specified disease is put in

the Schedule opposite to it—that it was left open in every case for a man, if he said he was suffering from Dupuytren, to prove that he got it in the course of his employment? You say that would not affect the mine-owners?—Speaking as far as my experience goes, I do not think it would affect us at all; only I think we might probably have attempts on the part of the men to claim for conditions which are not Dupuytren.

3560. Not Dupuytren at all?—Not Dupuytren at all.

3561. We are told that would not be difficult to detect?—No, I think it would be easily detected.

3562. You mean from accidents?—Yes, I think we are quite likely to get a lot of claims.

3563. What sort of claims do you suggest can be made for the contractions?—Those contractions?

3564. Beat-hand contractions?—Yes, contractions of the tendons chiefly, I think—the skin on the tendons.

3565. Then ex hypothesi, in all probability someone would be liable for that, whether your particular firm or someone else?—Yes.

3566. It would be already under compensation?—That would already be on the list.

(*Judge Ruegg.*) Then they would not be likely to say it was Dupuytren, when there is no question of it, if it is what you suggest. It is paid now. They are entitled to compensation?

3567. (*Sir Clifford Allbutt.*) There is no difficulty about the diagnosis?—No, I do not think so.

3568. (*Judge Ruegg.*) Then I do not quite follow when you say, although this disease does not exist, there would be a number of claims, you think, for something which they would say was Dupuytren?—Yes.

3569. Can you suggest anything else except the result of beat-hand?—You sometimes get contraction of the fingers as a result of injury to the nerves. Then those again are provided for as cases of accident.

3570. They are easy to diagnose, are they not?—Yes, you always get a history of an accident.

3571. (*Sir Clifford Allbutt.*) It is a comprehensive damage to all the tissues of the hand?—Yes.

3572. Not merely fibrositis?—No.

3573. I do not want to lead you. That is your opinion?—Yes.

3574. (*Judge Ruegg.*) I do not want to press you too much; but still I do not see what these claims are that you are frightened of; that you suggest might be made although they are not Dupuytren?—I think we should get claims from men who are suffering from contraction of the fingers which is not Dupuytren.

3575. Then in the two cases which have been put, you say they are easily distinguishable?—Yes, I think they are after a careful examination.

3576. Still, you do not even want to have a claim?—No.

3577. It all means trouble and some expense sometimes?—Yes.

3578. (*Dr. Legge.*) Do you believe in your opinion so strongly as to its absence in South Wales that if it were scheduled in the way Judge Ruegg suggests, simply put down, that numerous cases of actual Dupuytren would not become known?—I do not think so.

(*Judge Ruegg.*) It is wonderful how, when these diseases are scheduled, they do become known. They are supposed to be non-existent before, and when they are scheduled claims in respect of them arise and are maintained.

3579. (*Sir Clifford Allbutt.*) As regards the clonic spasm of the eyelids or clonic blepharospasm or nictitation, your opinion about that is what?—It is merely a symptom. It is not a disease *per se*.

3580. You group them in three divisions?—Yes.

3581. Will you give us the three divisions shortly?—The first division I have given is a symptom in cases of irritation of the eye from direct injury to the eye—a blow on the eye, conjunctivitis, and so on. The second division is cases of neurasthenia, cases of habit spasm.

3582. Those patients are of a commonly nervous disposition?—Yes.

3583. Would you put them amongst the habit spasms?—Yes.

3584. Then the third?—Cases of hysteria. In my proof I have made a mistake. I have down in the middle of that paragraph the third nerve. It ought to be the fifth and seventh nerves. That is a misprint.

3585. Which you contrast with the clonic spasm; you mean spasmodic closure of the eyes?—Yes.

3586. Not the nictitation?—No.

3587. You find clonic spasm of the eyelids most common in cases of miners' nystagmus?—Yes, it is very common.

3588. In bad cases you think it is an almost invariable symptom?—I do.

3589. Associated with it clonic spasm of other muscles of the face?—Yes, in bad cases.

3590. Then you single out the third nerve, but you think it might extend beyond that?—Yes, to the fifth and seventh.

3591. Then even after the miners' nystagmus is quite cured, as far as the effect of oscillation is concerned, the clonic spasm of the eyelids may remain as a habit spasm?—Yes.

3592. But apart from nystagmus, it does not exist as a separate malady?—No.

3593. But supposing it did, or to take cases where it lingers after nystagmus has been cured, it is negligible as regards capability?—I would like to qualify that. I say here: "I do not think, apart from miners' "nystagmus, that clonic spasm of the eyelids ever "caused a man who was willing to work to lose a day's "work." I ought to explain if it follows on miners' nystagmus it is always recognised and paid for under the schedule of "miners' nystagmus."

3594. (*Judge Ruegg.*) Is not that because you find it associated with other symptoms, although probably not objective symptoms?—I think if you carefully examine any case which is subsequent to miners' nystagmus and you get this nictitation to any marked degree, you are almost certain to find miners' nystagmus still lingering; you are almost certain to find oscillation lingering, I should say.

3595. But at the end of an attack of miners' nystagmus, by which I include the subjective and objective symptoms, whether the blepharo spasm may remain or not, would you still advise that the man should not return to that particular occupation again for some considerable time?—I have a large number of men who have had miners' nystagmus and who have returned to work and remained at work, and in my experience it is very common to get a relapse, especially if you do not keep the man out in the open air and in the light of day for a considerable time.

3596. As regards this particular symptom, it is very easily simulated?—It is very easily simulated.

3597. Without supposing bad faith. As you say, a man is a little excited or a little upset?—Yes. A further thing I have noticed is, that you may get it to-day very marked, but to-morrow, if you see the same man, there is not a sign of it; and even, I believe, at different times of the same day you may get it.

3598. (*Dr. Legge.*) Is that nystagmus?—No, not nystagmus. I think you can always elicit nystagmus when it is present—the mere oscillation.

3599. (*Sir Clifford Allbutt.*) Its incidence is upon persons in whom there is some original defect, somewhere or other, of the nervous system?—I think so. That is the conclusion I have come to.

3599*a*. And apart from the miners' nystagmus, by which, as I say again, we signify the whole range of symptoms of this disease, the clonic spasm of the eyelids taken alone never caused a man who was willing to work to lose a day's work?

3600. (*Judge Ruegg.*) That you have qualified in the way you said?—That I have qualified. I would not ask him to work except on the surface. I would not send him underground as long as he had this symptom.

3601. (*Dr. Clifford Allbutt.*) Then you emphasize the neurasthenia or psychasthenia habit in the indi-

vidual, and so on. Then you give us a few examples from farmers and clergymen and the wife of an hotel keeper?—Yes.

3602. The hotel keeper had glaucoma?—Yes.

3603. But the other two had no obvious source of irritation about the eyes?—No.

3604. Then there is a case of an inspector of police who had been suffering from it, in varying degrees, attributed to great mental distress?—Yes.

3605. There is no evidence of any syphilitic eye disease. What age was that man? Have you a notion of what limit of age? Was he a middle-aged man?—I should think he was a man about 47 or 48.

3606. He had been suffering for 15 years?—Yes.

3607. Of course, a collier's occupation and a police inspector's are very different; but did it interfere in any way with the police inspector's performance of his duties—this particular symptom?—No.

3608. Or in the case of the two farmers or hotel-keeper, as far as that was concerned?—No.

3609. (*Judge Ruegg.*) With regard to the recurrence of this disease, within what time do you generally find the disease recurs if the men go back to work underground?—It varies considerably.

3610. What is the longest time you have had? What is the longest time he has worked underground before there has been a recurrence?—We have men working now who have been back at work for two or three years.

3611. And no recurrence?—No recurrence.

3612. Were they bad cases of nystagmus when they existed?—They were all marked cases of nystagmus. There was no doubt about them having nystagmus.

3613. Have you many cases of that kind back as long as that?—I did not know that this question of miner's nystagmus would be discussed.

3614. If you cannot answer it does not matter?—I have these figures at home, but I cannot recall them. I have exactly the number of men we have had.

(*Judge Ruegg.*) It is really not quite relevant to this inquiry.

3615. (*Sir Clifford Allbutt.*) You say you have cases of men who have been back for a long number of years who have had no recurrence?—Yes.

3616. On the other hand, I suppose you have had cases where it recurred quickly?—If it recurs quickly I think it is generally because every man before he goes back to work has to come and see me and get a certificate from me to work underground, otherwise he is not allowed to go underground by the management. I do not know that this is universal over South Wales, but that is our particular custom. I tell the man when I give him this certificate: "If you have the "slightest trace of that movement of the eyes coming "on again, come up at once and report yourself to "me." I am glad to say that the number who do come again is not very many.

3617. You are quite sure that you are very careful in giving certificates?—Yes.

3618. You do not give them, I understand, until what you call the "last traces" have disappeared?—Yes

3619. Still, it is giving them every opportunity of coming if they find the disease recurring. Yet you say you have cases when they do not come for years: they go on satisfactorily for years?—There are more going on satisfactorily than come back by a good many, but I cannot give you the exact figures at the moment. I have not them with me.

3620. You examined 18 men suffering from nystagmus in November 1912?—Yes.

3621. There you found marked symptoms of clonic spasm in 10 out of the 18?—Yes.

3622. And in other cases you say it is the custom, at all events where nystagmus has existed, and you find the clonic spasm, to pay?—Yes.

3623. Because, I suppose, you say that on a much more careful investigation you can find some trace of nystagmus?—Yes.

3624. But I suppose in a case where you find clonic spasm, and you are not able to discover traces of nystagmus, you would still pay?—I should examine the man again in a day or two.

3625. Suppose after three examinations you were satisfied that clonic spasm had not passed away, but you could not detect the nystagmus?—I should then send him on to the eye specialist to be examined.

3626. You have no doubt that clonic spasm is one of the remaining symptoms of nystagmus?—I think it is closely connected with nystagmus—one of the commonest symptoms.

3627. And is an objective sign of nystagmus?—Yes.

3628. And is sometimes the most objective sign in the cases you put?—Yes; I look upon it really as the remains of nystagmus.

3629. (*Dr. Legge.*) You heard Dr. Llewellyn's evidence?—Yes.

3630. He differentiated between these movements of the eyes. You will remember he said there were two kinds: first the blinking movement, and secondly the tremor?—I did not quite follow him.

3631. In these particular cases that you speak of that you so frequently see, are they a tremor or a quiver?—I do not think the word "tremor" defines it. It is a very gross tremor at all events.

3632. Do you find it difficult to differentiate between blinking, what you call habit spasm, and this clonic spasm?—I think the rapidity is greater in cases of clonic spasm. I think the rate is quicker than it is in the other category which I have mentioned.

3633. Have you tried this head symptom that Dr. Llewellyn speaks of?—I have. Dr. Llewellyn pointed it out to me about a year ago, I suppose.

3634. Does that help you at all in these different cases of clonic spasm?—I cannot say that it does.

3635. Have you ever seen clonic spasm as a first symptom?—No.

3636. You said a symptom, but you said it was the remnant. Does not that mean that it is a sequela?—Yes, one could say it was a sequela; but I think if you get it to any extent you can always elicit a certain amount of movement of the eyeballs as it were.

3637. In difficult cases when you cannot satisfy yourself about the nystagmatic movements, how often do you examine a man before you are satisfied it is there or that it is absent?—I should examine him twice or three times. Then, if I were not satisfied, I would send him down to the specialist.

3638. But you have very great experience in this disease?—Yes.

3639. In what way will the Medical Referee or the specialist help you more than you are able to help yourself?—Sometimes this condition may be kept up by errors of refraction, and you send a man down to the specialist and he gets a prescription for glasses to correct any error and this passes away, once the error of refraction is corrected. I know of two cases where the men are working underground now with glasses who have had nystagmus and also had this clonic spasm. They have been ordered glasses and continued to work on the surface about six months and then they have returned underground.

3640. Are they comparatively recent?—I am speaking entirely from memory, but I should say that one has been underground about a year, and the other about eighteen months.

3641. Did they get compensation?—Yes, the whole time till they returned underground.

3642. Do you think the clonic spasm had anything to do with the nystagmus?—I think the errors of refraction had something to do with the nystagmus.

3643. Then you think it had something to do with the nystagmus too?—Yes.

3644. (*Judge Ruegg.*) Are these cases of men who have returned to work underground in your mind now?—Yes.

3645. Would it be possible for you to let us have a note of how many there are?—I should be very pleased indeed.

3646. I suppose there are only two or three of them?—No; there are about fifty, I should think.

3647. Who are now working underground?—Yes. I could not be absolutely certain of the figures, because I got the figures out about two years ago.

3648. Quite a number?—I will get the figures taken afresh.

3649. Please understand what I should like to have. It is the number of men who have nystagmus, and have received compensation, and are now working underground, and the time which each has worked.

(*Dr. Legge.*) Do not you also want the number that have had recurrences?

3650. (*Judge Ruegg.*) Yes; that will be a little more difficult, but, if you can, it would be most valuable—the number of cases within a reasonable time since the Act has been in force.—Yes, certainly.*

(*Judge Ruegg.*) Thank you.

* The particulars furnished later by Dr. McGhie showed that in a period of between four and five years, out of 68 miners incapacitated by miners' nystagmus, 7 recovered and left the employment, 29 resumed work underground after varying periods of compensation and are still at work underground, 2 who resumed work underground twice failed to continue and now work on the surface, 1 failed to continue underground and still receives compensation, and 29 (of whom 1 has recovered) are at work at the surface.

The witness withdrew.

The Committee adjourned *sine die.*

EIGHTH DAY.

Friday, 30th May 1913.

Present:

Mr. ELLIS J. GRIFFITH, K.C., M.P. (*Chairman*).

Sir Thomas Clifford Allbutt, K.C.B.
His Honour Judge Ruegg.

Dr. Thomas Morrison Legge.
Mr. Arthur Locke (*Secretary*).

Dr. S. Monckton Copeman called, examined by Judge Ruegg.

3651. You are a Doctor of Medicine, Fellow of the Royal College of Physicians, Member of the Royal College of Surgeons, and Fellow of the Royal Society?—Yes.

3652. You are also Medical Inspector to the Local Government Board?—Yes.

3653. You are prepared to give this Committee some evidence with reference to the disease of cow-pox?—Yes.

3654. You say it is a disorder affecting milch cattle marked by an eruption on the udder and teats?—Yes, it is a contagious disorder; that is rather important.

3655. Yes. Then you say: "The disease is communicable from the cow to man, generally in the process of milking"?—Yes.

3656. "In connection with which infected material is apt to be brought in contact with abrasions on the hands of the milkers"?—Yes.

3657. Generally the hands?—More often the hands.

3658. And occasionally the face and other parts of the body?—That is so.

3659. Caused by the hands being brought into contact with that part of the body?—Yes; probably the result of rubbing or scratching, no doubt, with the patient's infected fingers.

3660. Do you say there must be some abrasion or defect in the skin before this disease can be communicated?—It was stated, I believe, by either Jenner or Ceely, that occasionally when an enormous amount of infective material is rubbed on the hands, it is supposed to be possible to be communicated without a lesion of the skin, but I have not seen any case in which that is so.

3661. Practically a person with healthy skin is immune?—I would not say immune, but would be likely to escape.

3662. When it is got in this way, I believe it is spoken of as casual cow-pox?—Yes, that is the term usually given to it.

3663. To distinguish it from inoculated cow-pox, which is vaccination?—Yes.

3664. This disease has been recognised for a considerable time in this country, has it not?—Certainly for more than a century past, and, undoubtedly, prior to Jenner.

3665. As a disease communicable from the animal to man?—Yes.

3666. Then you speak of some of the writers of the earlier part of the nineteenth century, and I think you say that at that time the disease was more rife than at present?—Yes, apparently, from what we gather from the writers at the time.

3667. Could you give us any reason for that?—I think a suggestion to make is that it was due to the large amount of inoculation that was going on in Jenner's time; and that might in turn have caused, as I have shown experimentally in a paper to the Royal Society is the case, cow-pox in the cow, and so have been transferred to other milkers.

3668. In other words, the disease was communicated from the man to the cow first, and afterwards back to the man?—Yes, it is possible that that was the case.

3669. Of course there are far more cows in this country now than there were a hundred years ago?—Yes, but there is less small-pox, supposing that has anything to do with it.

3670. Do you wish to say anything about the observations of these writers, Bryce and Ceely? Perhaps you will read the part that you wish to be taken down?—"According to observers such as Bryce and Ceely, this affection, when once set going in a herd, tends to spread with considerable rapidity, the 'matter' of the vesicles which appear on the teats and udders being carried by the hands of the milkers from one cow to another."

3671. Would you mind telling us whether Bryce and Ceely were great authorities?—Yes, Bryce was a great authority. He was a Fellow of the Royal Society of Edinburgh, and wrote practical observations on "Inoculation of cow-pox" in 1809.

3672. Then what about Ceely?—Ceely's observations are published in the Transactions of the Provincial Medical and Surgical Association in 1840 and 1842. They are illustrated with a beautiful series of chromo-lithographs.

3673. You say something as to the season when it is more generally rife?—That is a statement by Bryce or Ceely. I do not lay any stress on that because, although it may be, as they say it is, more common in the spring season, with the outbreaks of which we have had experience recently, I find they may occur at other periods of the year as well.

3674. You do not think there is anything particular in that point as to the season?—No. For instance,

one recent outbreak occurred in June, another in September, another in March, and another in October.

3675. Then will you go on with a description of the disease?—"The eruption, when observed on the "udders and teats of the cows in an early stage, is "found to occur in the form of small papules which "develop into vesicles containing a limpid fluid. "These vesicles are of a bluish or livid colour, and "may be surrounded with considerable erysipelatoid "swelling and inflammation. If ruptured, the vesicles "tend to become irregular about the edges; and "unless care be then taken, are very apt to degenerate "into foul and troublesome sores. During the course "of the affection the cow is not unfrequently observed "to be in bad health; the appetite is impaired, the "temperature is above normal, and the secretion of "milk may be considerably diminished. If the "milkers' hands happen to be 'chapped' or scratched, "contact with material from the vesicles on the udder "or teats of the cows may give rise to local infection "with the disease."

3676. You mean catching the disease?—May I express it in this way? The disease is contagious rather than infectious. Therefore, you get it on the hands, because they are actually applied to the affected teats.

3677. Then you go on comparing it to vaccination? Is this yourself or Ceely?—This is an abstract from Ceely. You will see I say afterwards that I mainly agree with it. "Probably the specially severe form in "which such casual cow-pox is apt to appear, as "contrasted with the effects of ordinary vaccination, "is, to some extent, due to the situation of the "resulting vesicles; to the purulent nature of the "secretion from the sores on the cows' teats or udder, "whereby septic material may be inoculated together "with the specific virus of the disease; and to the "want of precautionary measures on the part of the "milkers." Then there is a description of cow-pox in the human subject, according to Jenner. According to Ceely, cow-pox had long been known in the Vale of Aylesbury and neighbourhood. Outbreaks occurred at irregular intervals, and the disease was occasionally epizootic, sometimes being seen at several contiguous farms, but more commonly sporadic or nearly solitary. He refers to its occurrence twice in five years in a particular locality at one or two neighbouring farms, while at the third, in all respects similar in local and other circumstances, it had not been known to exist for 40 years. It was sometimes introduced into a dairy farm by recently purchased cows. I emphasize that, because that is rather a frequent occurrence. Ceely states that the disease was "considered to be peculiar to the milch "cow;" and adds that he had "frequently observed "that sturks, dry heifers, dry cows, and even milch "cows, when these latter were milked by other hands "than those attending the rest of the herd, remained "exempt from the disease, even though grazing in "the same pastures, and feeding in the same sheds, "and even in contiguous stalls." As the result of my own observations, I am able in almost every detail to confirm the accuracy of these accounts of the disease, as witnessed both in milch cattle and in the human subject.

3678. Does that last statement mean that the cows do not give it to one another, but it is conveyed to the various cows by the milkers?—Yes. You see Ceely says that even though grazing in the same pastures and feeding in the same sheds, and even in contiguous stalls, they do not necessarily catch it.

3679. Then you go on with reference to the outbreaks?—"The number of outbreaks of the "disease which have been carefully and scientifically "investigated since Ceely's day, are singularly few, "and indeed I have been unable to find any such "record during a period of about 50 years subsequent "to 1840." I have just found reference to a Committee of the Epidemiological Society on cow-pox in 1851, but unfortunately at that period their transactions had not commenced to be published. But after long search at the Local Government Board this morning, we have not been able to find the report which I believe was presented to both Houses of Parliament, and which therefore I take it was thought to be important.

3680. We shall be able to get that perhaps?—Then I go on: But in the light of recent experiences this cannot be regarded as affording evidence that the disease was non-existent in this country during that period. For at the present time when a particular outbreak comes under observation, careful local enquiry not infrequently elicits information as to other outbreaks of a similar nature in the neighbourhood. As a case in point may be cited an epidemic in Somersetshire (June 1909) investigated under the instructions of the Local Government Board by my colleague, Dr. Reece, who in the course of his enquiries found that no less than eleven farms in the vicinity of Frome had suffered invasion by the disease more or less simultaneously. I append a list of outbreaks of cow-pox which have been officially reported to the Local Government Board since 1887. The following is the list:—

Date.	Locality.	Reporter.
1887	Cricklade (Wilts), several forms.	Prof. E. Crookshank, British Medical Journal, 1888.
1888	Alderley (Glos.) -	Prof. Klein, F.R.S., Annual Report of Medical Officer to Local Government Board, 1888.
1902	Buckland (Surrey)	Dr. Copeman, F.R.S., Annual Report of Medical Officer to Local Government Board, 1902–3.
1908	Worthing (Sussex)	Letter from Town Clerk; no details.
1909	Frome (Somerset)	Drs. Reece and Blaxall, Report to Local Govern- Board; not published.
1909	Sudbury (Middlesex).	Dr. Goddard, Report to Local Government Board; not published.
1909	Eynsham (Oxon)-	Dr. Cruikshank, Report to Oxford Medical Society, British Medical Journal, 1909.
1911	Oundle (Northants)	Dr. Jolly, Report to Local Government Board; not published.
1911	Ashton - -	Dr. Fuller, Report to Local Government Board; not published.
1913	Castle Bromwich (Warwick).	Report to Local Government Board, anonymously. Investigated by Dr. Robertson, Medical Officer of Health, Birmingham.

But again, perhaps I may say others have been reported, but not officially. For instance, I have had private letters from medical officers or farmers who knew I was interested, but we have had neither time nor opportunity to investigate them. The scheduled list is of only those which have been actually officially reported to us. Since September 1887, an epidemic affecting three neighbouring farms was investigated by Professor Edgar Crookshank. I have a copy of this report, which is in the British Medical Journal. I produce photographs of cow-pox in the cow, and of casual cow-pox in man, illustrative of appearances met with in outbreaks investigated by myself at Buckland, near Reigate, in 1902, and by Dr. Cruikshank—not the same man as before—at Eynsham, near Oxford, in 1909.

3681. What time does the disease generally run?—From first to last, about three weeks.

3682. That is the normal time?—Yes. Of course I do not mean that the man is seriously ill all the time.

3683. You say, as the result of the neglect of treatment, septic infection may take place?—You get superadded septic infection, as I suggested before, possibly from the cow as well.

3684. Then the duration may be anything up to months on occasion. It never proves fatal, does it?—I have never been able to find any record; and Jenner also stated he had never known a fatal case.

3685. What do you say about the time for which it incapacitates a man in a normal case?—Not usually for more than a week, occasionally for less, unless it is severe. He may then be unable to work for several weeks.

3686. Within what time would it be quite wise that he should go back again, if he had suffered from it in his hands, to the work of milking?—That would depend so entirely on the local conditions that I am afraid it is almost impossible to make a definite statement.

3687. You think that the disease was more serious in Jenner's time than at the present time?—There seems to be reason for thinking so from the records; but you may still get these sequelæ I refer to, intractable ulceration, cellulitis, lymphangitis or axillary abscess at the present day. I have seen them.

3688. But one of the reasons for saying that, is the large amount of vaccination?—Milkers at the present day, in country districts where there would not be much anti-vaccination would probably have been vaccinated in their youth.

3689. What do you say about the conditions under which cows are kept?—Where cow-sheds are dark and dirty, occurrence of cases of disease among cattle is apt to be overlooked, unless and until one or more of the cows becomes restive when milked, or the milk supply becomes markedly diminished in quantity. When accustomed to working in semi-darkness the milkers will be apt to be careless as to personal cleanliness, with the result that they will not only be more likely to spread the disease among the remainder of the herd, but also render themselves more liable to attack. In one instance, coming under my own observation, the only man on a farm who escaped attack during an outbreak of cow-pox informed me that he invariably washed his hands in a solution of Condy's Fluid after milking. In one of my reports to the Board, I refer to the fact that I had to borrow a box of matches in order to see the teats. Experimental evidence also is available as to the probability of lessened virulence of cow-pox among cattle, under conditions of full exposure to light. I can give the reference to that. A former colleague of mine, Dr. Green, has carried out definite experiments under conditions of complete darkness, red light and ordinary daylight.

3690. Then what do you say as to a preventive measure?—As a preventive measure, the efficient re-vaccination of farm hands, prior to their engaging in the work of milking, is perhaps worthy of consideration, in relation to possible claims for compensation.

3691. You understand that this Committee is considering the possibility of including it under the Workmen's Compensation Act?—So I understand.

3692. First, do you think it is a definite disease peculiar to this industry?—Yes.

3693. And not easily to be confused with any other disease of a similar character?—May I ask whether you refer to the milkers?

3694. I refer to the man who is to get compensation, the man, for example, who has it upon his hands. Is it likely to be mistaken for any other disease?—I hardly think so; but if you see the cases in an early condition, you could always get definite proof by inoculating a calf or a rabbit.

3695. In an early case?—Yes. I mean if the vesicles still contain clear fluid—they have not become purulent in other words—you will find it is transferable to the calf.

3696. And in a later condition?—When you get a septic condition you must depend on the investigation of the local circumstances and the history of the case in other milkers and in the cows.

3697. But, of course, there are many other things which may cause a septic condition of the hands—small wounds which have been allowed to get into a septic condition?—Quite so.

3698. Do you think they could be mistaken for having originated in cow-pox when they did not?—I imagine not; but if there were a question of compensation, I take it they would be seen by a medical man on the spot, and probably the cows would be seen by a veterinary surgeon.

3699. But not always directly we find?—May I say the situation of the primary sore will be something that one can go on even in a late stage when you have ulceration or cellulitis or something of that kind. You will see on the arms possibly a healed scar of the original vesicle, the form of which is roughly circular, and probably also on the fingers or some other part of the body.

3700. Is it accompanied by pain?—Frightful pain sometimes.

3701. Is it of an irritating nature or a burning nature, or what?—Intense pain. You will find frequently in accounts that the persons are so ill that they are confined to bed; they may have fearful pain locally; they may have headache, going on in severe cases to delirium.

3702. Do you find that these farm labourers generally know what is the matter with them?—I think they probably have an idea, but they do not always like to say.

3703. They are rather an ignorant class of men?—Of course, they may be; but it would be realised that naturally they do not want to lose their position, and the farmer very often does not want it to be known that there is anything which may affect his milk supply.

3704. Do you think, having regard to the prevalency of it, it would be a serious burden to put on the farmer; that he would have to insure against it?—It is not, as far as we know, a frequent disease now-a-days; but I imagine from what one has learnt about it while investigating outbreaks, probably we should hear of more if there were compensation.

3705. That is always the case when the disease or the accident becomes compensatable?—Yes; there is a note at the bottom of my list of cases, in which there is an extract of what a veterinary surgeon stated, "lots of disease about, but the farmers do not send for him."

3706. If the incapacity, as you suggest, generally in a normal case only lasts a week, the Act does not give compensation at present for small accidents of that description unless the incapacity lasts longer?—A week is the period, is it not?

3707. Yes, it is the minimum period?—I have records of quite a number of cases lasting very much longer than a week, and anything up to months in a few cases.

3708. Do you think that the tribunal which had to decide whether a man was really suffering from incapacity caused by cow-pox would be able to do it?—Certainly, with medical advice.

3709. And although it causes incapacity to a man who has cow-pox, you would remove him from the cows and would not let him touch the cows?—Yes, lest he spreads it.

3710. But does it cause incapacity from other farm work? We are speaking of the normal case first?—He probably gets it on his right hand more likely than on his left, and if his hand is very painful he would not be able to dig, or anything of that sort.

3711. Do you not find cases of men who have got cow-pox going on working on the farm?—Yes; occasionally they have stated to me they have been in great pain, but they have not liked to throw up work, either because they are plucky or because they are afraid to lose their work.

3712. Do they get it on the palm or the back of the hand?—I have never seen one primarily on the palm of the hand, and I do not find any record of it; it is generally on the fingers first of all or at the back of the hand occasionally. If they get a crack under the nail inoculated then it is likely to be horribly painful. I

think you will realise if you get a condition like that with swollen hands and fearful inflammation extending up to the lymphatics, there must be a fair amount of pain. (*Producing drawing.*) I myself have seen a case from which that photograph might almost have been taken. That (*producing another drawing*) is the preliminary stage.

3713. Quite generally, what is the treatment?—I really do not know that.

3714. I am asking more out of curiosity than anything else?—I have found the usual thing seems to be to foment these bad cases with poultices, but I am not at all sure that it is a good idea. I think probably the use of a lead solution, if there were not a big abrasion of the surface, would be better for the purpose—the application of ointment is useless.

3715. Do they, so to speak, cure themselves by lapse of time?—If it is a mild case it lasts definitely a period of about three weeks, by which time you may say it will be over and you will have nothing left but a scar. The scab comes off. But unfortunately in certain cases you get these superadded septic infections.

3716. (*Dr. Legge.*) I take it that cow-pox is really small-pox in the cow?—Yes, I certainly believe that. I have experimentally proved that point. Sir Michael Foster at the Royal Society stated that my work was a scientific demonstration of that fact.

3717. (*Dr. Legge.*) What difference is there between cow-pox and vaccination?—The main difference now-a-days is that by selection through a series of calves we have arrived at a comparatively mild form of infection which is further prevented from having any of these septic conditions by the treatment of the lymph.

3718. Which I think you were largely instrumental in bringing about?—I invented the process of glycerination, which I believe is now used all over the world.

3719. (*Judge Ruegg.*) What am I to understand by a treatment of the lymph?—With glycerine. Everywhere, including the Army and Navy, we use for purposes of vaccination what I termed glycerinated lymph. The method is one of purifying and preserving the lymph, purifying it from any other organisms originally present, and preserving it also for an unlimited period, as you can in cold storage. I introduced this method about 20 years ago.

3720. (*Dr. Legge.*) So that a vaccinated person could claim to be suffering from cow-pox?—I suppose he could, but he would not come under your claim.

(*Judge Ruegg.*) He could not claim compensation.

(*Dr. Legge.*) Take for instance a case at a small-pox hospital, where the whole of the nurses had been vaccinated; supposing one got an extremely bad arm, surely that would be classed as a case of cow-pox due to and arising out of the employment.

(*Judge Ruegg.*) I think that would be met by our legal doctrine *volenti non fit injuria*, "You submitted to this voluntarily."

3721. (*Dr. Legge.*) Yes, but I was wondering whether with the addition of a few words, "cow-pox from the cow"——?—I have defined it as "casual cow-pox," as opposed to vaccination pox.

3722. So that if we are going to schedule this, it is desirable to introduce the words "casual cow-pox" and then explain in the report, whatever it may be, that that word is introduced so as to exclude an illness following on vaccination?—Yes, I quite agree.

3723. (*Judge Ruegg.*) Is casual cow-pox your expression, or is it understood in the profession?—No, you will find it in all the old books. I think Jenner introduced it; but it is a good distinction.

3724. (*Dr. Legge.*) You referred to the finger as being specially liable. Anthrax, from the illustrations you have shown us, is exceedingly like this in many ways, but I have never known a case of anthrax in the fingers. Can you give any explanation why one should occur on the fingers and not the other?—The only reason I can suggest for the frequent occurrence of casual cow-pox on the fingers is the fact that the hand is brought into immediate and prolonged connection with the teats and udders on which are erupted sores.

3725. And it is in a liquid form?—Yes.

3726. (*Chairman.*) You were going to refer to some notes of yours. If they assist in any way, will you let us have them?—It is conceivable you might have evidence to show that in somebody's experience it is generally quite a mild thing. I think, therefore, if you will allow me, I should like to refer you to one or two definite cases which we have investigated. I am going to refer to a report by Dr. Reece, which has not been officially published, but it refers to no less than 11 out of 14 farms visited in the Frome rural district which were affected. 214 out of 410 cows were affected, that is about 52 per cent., and 23 out of 44 milkers were affected, that is about 52 per cent. also.

3727. (*Judge Ruegg.*) When was this?—In 1910. It was an extensive outbreak. It extended over 100 square miles of country or more.

3728. Fifty per cent. of the milkers would at once come on compensation?—But there were only 23 men.

3729. Do you know if any of those men were off work altogether—really incapacitated for work on the farm, or did they all go on working?—May I read you a case in point. Here is one of Mr. "Y," that is the farmer. "He himself had on the 16th June a sore "almost healed on the right index finger. The appear-"ance of this sore was consistent with inoculation by "cow-pox of an abraded surface. He had been re-"vaccinated in 1901 or 1902. About the 9th or 10th of "June his left eye had become inflamed, and he con-"sulted a doctor, who told him that his eye was "inoculated with cow-pox. When seen on the 16th "of June he had ophthalmia with a purulent discharge, "intense photophobia, and both the upper and lower "eyelids were swollen—œdematous. On the 17th June "under the influence of cocaine the eyelids were "separated and the fronts of the eye examined. The "cornea appeared to be somewhat cloudy, and there "was severe congestion of the circum-corneal zone. "No iritis was observed. A month later, on July 17th, "Mr. Y was admitted an in-patient to St. Bartholo-"mew's Hospital, London, for treatment. At that "time he had intense photophobia but not much dis-"charge from between the eyelids." So that he was six weeks ill at the very least, and I do not know how long he was at the hospital subsequently.

3730. You think there is no doubt that was a case of cow-pox?—Yes, in this particular instance it was definitely decided. Dr. Blaxall, the bacteriologist of our Government Vaccine Station, did testing experiments on calves. Then there is another case of a boy with an inflamed eyelid. He seems to have been very ill. His eyes were bad for some time, and he had the glands at the angle of his jaw enlarged, and difficulty in swallowing, of which he complained. The seat of inoculation was, in this case also, the outer canthus of the upper eyelid.

3731. Do you not think in those cases of the eyes there would be considerable difficulty, or considerable difference of opinion as to whether it was cow-pox or not?—No, because he probably had the original sore on his hands. If the illness is continuous, the one from the other, in two or three days from the condition of his fingers being at the acme, the other condition commences. Often, as for instance in that case, the thing commences in such a form that there is no possible doubt about it. You can take the lymph and inoculate that on a calf if you wish. Then there is another case of a cattle-dealer living at Frome, who bought his cattle at various markets in the West of England. He consulted a medical practitioner on May 25th. On that date he had a sore on the palmar surface of the right thumb, over the terminal phalangeal joint. This sore had first been noticed some eight days previously. There were secondary papules on the palmar surface of the little finger, and two or three on the hand, one on the buttock, another on the back, and one on the face. Four to five days later these papules passed into an umbilicated vesicular stage, looking like mature vaccination vesicles. A day or two later a crop of papules appeared practically all over the body. The patient suffered from severe lymphangitis of the arm. Pus could be squeezed out of the primary sore, and enlarged glands appeared in the axilla. His temperature

for several days exceeded 100 degrees Fahrenheit. Dr. H, who attended him, considered that his case was one of mixed infection of cow-pox and streptococci. Another boy on that same farm had severe lymphangitis of the arm.

3732. That would raise a very great difficulty, would it not? Take that particular case. Would you say that was a pure case of a man suffering from cow-pox? —Casual cow-pox?

3733. Yes?—Casual cow-pox must include, I take it, all the effects of inoculation from the sore on the cow's teat or udder, and from the way in which they are neglected you are liable to get double infection in almost every case.

3734. It was a case of neglected cow-pox?—It was a case of infection from, if you like, the neglect of a case of cow-pox in a cow.

3735. (*Dr. Legge.*) Do you think "and its sequelæ" might clear that up?—Yes.

3736. (*Judge Ruegg.*) Are there any other cases you wish to call attention to?—There is one case in which it is stated that the son of the farmer out of bed for the first time for a week on the date of the visit to the firm, and then appeared still very weak and ill.

3737. Have you ever investigated these cases yourself? Have you gone round to see them?—Yes.

3738. Have you ever found any case where the man has been dismissed from the farm? A farm labourer occupies a much nearer connection with the household than the ordinary workman. He lives in in many cases. Have you ever found a case where he has been dismissed or his wages have been stopped? —I am unable to say that. I can only reply I have been unable to find certain men whom the other men told me had been infected. They were gone. Whether they had been dismissed I am unable to say. If I had asked the definite question, probably I might not have got a reliable answer.

3739. I think it is possible it would be found in the majority of cases, short of taking an illness of that kind, they keep them at the farm?—Yes. Probably the farmer would do it for his own sake, because he would not wish it to be known that anything had happened, so he would treat the man kindly. I told you the son in this case was found out of bed for the first time a week later, and was weak and ill. He first noticed a sore place over the first phalangeal joint on the dorsal aspect of the ring finger of his left hand, which gradually developed until, according to his mother, it assumed the appearance of a vaccination vesicle. The lymphatics of his arm became inflamed, and the glands in his axilla became enlarged and painful. Some four days after the sore on the finger was first noticed on or about the 18th of June, another spot began to form in the inner canthus of his right eyes, and the glands at the angle of his jaw became enlarged. In addition, three sore places appeared on the dorsum of his tongue. I take it he had sucked his painful finger. On the 18th of June he consulted Dr. "Y," who stated that the lad had three vesicles on his tongue which he regarded as typical of vaccinia, and that there was a similar vesicle on the inner canthus of the eye. When seen on the 28th of June the eyelids of the right eye were swollen and œdematous, and there was a purulent discharge from between the lids. There was a healing circular sore on the ring finger of the left hand, and the tongue showed scarring in the centre of the dorsum. That case had gone on for nearly six weeks also.

3740. In that case, I suppose, the boy lived on the farm?—Yes. He was the son of the farmer. I may say at that farm there was 30 milch cows, the greater number of which were suffering from an eruptive disease of the udder and teats, and the farmer and the son milked the cows.

3741. But in the whole of your experience, you have never found a case of a man who has lost his work and been unable to earn wages owing to this disease?—I cannot tell you of a case in which he has lost his work.

(*Chairman.*) Thank you.

The witness withdrew.

Adjourned for a short time.

References to authorities, handed in by Dr. Copeman:—

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Transactions of the Provincial Medical and Surgical Association. Vol. VIII., 1840; and Vol. X., 1842. J. Churchill, London.

Crookshank, E.
History and Pathology of Vaccination. Vol. I. H. K. Lewis, London. 1889.

Copeman, S. M.
Vaccination; its Natural History and Pathology. (Milroy Lectures, 1898.) Macmillan & Co., London. 1899.

Mr. Harry Cuff Smart called, examined by Judge Ruegg.

3742. You are the Secretary of the Railway Clearing House?—I am.

3743. You are good enough to come here and give us some evidence with regard to the prevalence of writers' cramp amongst your employés. Could you tell us first roughly how many there are employed in the Railway Clearing House?—Slightly over 3,000. Of course I am not giving evidence only on behalf of the Clearing House.

3744. I quite follow that. Are all those engaged in clerical work?—Yes, they all do a certain portion of clerical work.

3745. You have compiled some records from your own Clearing House, and also you have certain particulars supplied to you by Railway Companies associated with your House?—Yes.

3746. That includes all the big railway companies, I suppose?—All. I have written to all the railway companies parties to the Clearing House, and they represent 58 companies.

3747. They would represent a very large number of clerks, the number of which it is impossible to say, I suppose?—I have got together the number of staff employed on clerical labour in those companies that have had cases of writers' cramp, and they represent about 70,000; but they represent only 12 companies, including the Clearing House, out of the 58. The others have had no cases whatever. Those 12 companies, including the Clearing House, have had 78 cases.

3748. Those companies that have had cases, including the Clearing House, employ about 70,000? —Yes.

3749. I think your inquiries have extended as far back as 25 years?—Yes.

3750. It is interesting to note that you have only found one case of typewriters' cramp?—Yes, only one.

3751. Are typewriters general in the railway offices now?—They are coming much more largely into use than they have been.

3752. I suppose the typewriter has only come in of recent years?—Yes, comparatively recently.

3753. You have particulars of 73 cases of writers' cramp?—I have rather increased that number from

further information I have had. I make it 78 cases altogether.

3754. All occurring in males?—Yes, all in males.

3755. Of ages varying from 18 to 58, you say?—Yes.

3756. Do the railway companies and the Clearing House employ women or girls?—I have just started it within the last year, and I employ about 100 girls now. Many of the companies also now employ female labour.

3757. I suppose the railway companies do not to any extent?—Yes, in the Goods Offices. I believe the North Western have some hundreds.

3758. But I suppose that is a comparatively recent introduction?—All comparatively recently.

3759. I suppose that, in your opinion, accounts largely for these cases all arising in the case of men?—Yes. We have had but a short experience with female labour.

3760. I think you have found that they are not confined to any particular class of railway servants?—No; it runs from station masters to in fact every class of men employed on the railway.

3761. Employed in clerical work?—That is the peculiar part of it. It is not only in clerical work.

3762. But you have only considered the cases of those who are employed in clerical work, not porters and such like?—No, those do not enter into it.

3763. Their duties are wholly or partially clerical?—Yes.

3764. I see you instance general clerks, and also station masters?—Yes.

3765. Would you mind telling us whether a station master would be a man who was generally employed in clerical work, or not?—He would do a certain portion every day.

3766. At small stations, I suppose, he would do a great deal?—Yes, a great deal.

3767. Do you know whether it is in the small stations that the masters have manifested this?—I am afraid I cannot give you that. I believe it was only one case of a station master.

3768. You say that the cases that you have been able to find are confined to 13 or 15 companies?—A dozen railway companies, including ourselves. There are 11 companies and the Clearing House.

3769. Do you find that in any one or more companies they are more frequent than in others?—No, I think that you can take it this way, that the largest number of cases in any particular company is 16.

3770. You have not worked out the percentage, have you? Of course, it is a very very small percentage?—No, it is so impossible to get at the actual figures to arrive at a percentage; but you can take it roughly, it is 78, taking all the cases together spread over 25 years.

3771. Then you say the proportion of clerks suffering is so small, although the trouble is associated with writing, and is aggravated by it, that the seat of the disease must be looked for in the sufferer himself. What do you mean by that?—We find men have had it who only do a very small portion of writing, that is, only two or three hours a day, and also a big powerful man will have writers' cramp. Of course, that is more of a medical opinion

3772. Do you suggest it is owing to some mental or brain weakness that a particular individual is attacked?—Yes

3773. It may be increased, you think, by the manner of using the pen or pencil, or by pressure of work?—Yes.

3774. You find that the other factors are very various. Weather, you suggest, seems to affect one, one suffers in writing figures, and another in ordinary writing?—Yes.

3775. Do you find in any of those cases they suffer from rheumatism?—That appears to be the difficulty. It also seems so difficult to distinguish this writers' cramp from neuritis in many cases.

3776. Do you think it could very easily be confused with neuritis?—That is the opinion of our medical officer.

3777. Or to some form of paralysis, you say?—Yes.

3778. With regard to your own employés, you think this matter is of little importance to you, because you generally manage to deal with them satisfactorily?—Yes. In fact, we have not superannuated a single man. We have had nine cases in the Clearing House altogether, covering a long period, and we have managed to deal with these. Those all occurred in my time. We gave them a rest. One got over it by writing with a larger pen; two men wrote with their left hand, and we had not had to superannuate any of them.

3779. And still less to discharge any of them?—No, certainly not.

3780. Do you know whether a similar system is pursued by the large railway companies?—They are all very good. I say in my evidence that the companies have dealt with them in every case. In the case of any of their staff who develop the disease they have usually a change of duties, never involving a reduction of salary, although sometimes an increase.

3781. Representing these railway companies and the Clearing House, you are of opinion that writers' cramp should not be scheduled as a disease under the Workmen's Compensation Act?—Certainly. Should a man contract it so badly as to entirely incapacitate him from work, we should superannuate him.

3782. Would he be superannuated on anything approaching half the allowance or more or less?—The amount is based on a percentage of his average salary, so it depends on the age at which he leaves. I will give you an instance. A man earning 140*l.* with us, leaving, say, after 35 years, would be superannuated on about 70*l.* a year. Should you put this disease under the Workmen's Compensation Act he would be entitled to 50 per cent. of his average earnings during the previous twelve months with a maximum of 1*l.* a week.

3783. Fifty per cent.?—You have a maximum of 1*l.* a week. That gives him 52*l.*

3784. That would not affect him at all?—What I mean to say is this. It would give him a salary of 122*l.* a year to do nothing, which is in measurable distance of his 140*l.* which he was earning in full work.

3785. Are you suggesting that he would be entitled to his compensation and to his superannuation?—We do not want you to schedule it.

3786. No, but he would if it were scheduled?—I think so.

3787. The superannuation he has earned is one of the conditions of his service?—Yes, and he has contributed towards it. I do not think you could stop that at all.

3788. It is always open to any large association such as yours to promote a scheme and get it certified by the Registrar of Friendly Societies, which will be substituted for the Act?—Precisely, and we have exemption, as you know.

3789. You have exemption?—From the Insurance Act.

3790. I am speaking of the Workmen's Compensation Act?—No, we have not from that. I can give you an instance where this very thing works. Some little time ago one of our men was knocked down by a waggon and had his leg taken off, and we decided to superannuate him. He gets his superannuation money, plus his 50 per cent., which is 17*s.* 6*d.* a week, and I think in the case of that man it comes within 2*s.* of his full pay.

3791. I should have thought at first glance the proper way would have been to formulate a scheme and get your scheme substituted for the Workmen's Compensation Act entirely, as many of the large companies do. Some of the railway companies do it already. I believe the North Western Railway does.

(*Dr. Legge.*) But would that cover industrial disease?

(*Judge Ruegg.*) I think it would.

(*Dr. Legge.*) There is no reason why it should not.

3792. (*Judge Ruegg.*) No, there is no reason at all?—I did not know that.

3793. Your reasons for saying it should not be included—and you give several reasons—are, first, that the disease is so rare amongst the staff of the railway companies. But we have to deal with it generally, not only with regard to these large societies which are well able to look after their servants and do ——?—Yes; but that brings to my mind that if you do schedule this as an industrial disease you should exempt us.

3794. I do not know that we should have any power to grant any exemption. However, that is one of the reasons, that it is rare amongst the companies. Then you speak of simulation and malingering. Why do you say it is a disease which could be simulated?—Our doctor informed me that it is a very difficult disease to diagnose. In fact I had a conversation with him the other day. He tells me that with a little practice a man can simulate almost every symptom of it, and it would be very difficult to tell.

3795. Do you apprehend that there would be much simulation, speaking with regard to your own employés?—It always seems to me that if a man can find himself within measurable distance of full pay and leave work and do nothing at an early age, you would always run a risk. You have black sheep in any body.

3796. Do you mean he could simulate it entirely?—That appears to be our medical officer's opinion.

3797. One quite appreciates your other reason, and that is that you already do a great deal for them, and you do not in fact get rid of them?—Yes.

3798. You speak of five clerks in the last 25 years having been totally incapacitated. Is that in the Clearing House or the railway companies?—The railway companies. We have had none in the Clearing House.

3799. And in every case they have been pensioned with an allowance from the superannuation fund?—Yes.

3800. Which the companies contribute to?—Yes.

3801. In these cases you think it would be unfair for the railway companies to have to pay any additional pension. I should have thought the way to get over that was to frame a scheme, as is done in the case of many of the railway companies, certainly in the case of the North Western, and I think also the Great Western?—I am not sure that the North Western gives them anything beyond what they are entitled to for superannuation.

3802. They have a scheme which is substituted for the Workmen's Compensation Act, and the masters must contribute to the scheme, it having once been provided.

(*Dr. Legge.*) Provided the benefit is equivalent.

3803. (*Judge Ruegg.*) Provided the benefit is equivalent. I think the present Act says provided the benefits are as good leaving out of sight the contributions which come from the men. In other words, as long as the masters' contributions make it as good as the benefits under the Act, then the Registrar of Friendly Societies may approve, and you are outside the Act altogether?—It would be hardly worth our while, speaking of the Clearing House, because our cases are so few that could possibly come under the Act.

3804. (*Dr. Legge.*) Have you many telegraphists included in this number that you have given?—I should say not, because they would not do clerical work, or the ordinary telegraphist would do very little.

3805. Do you know that telegraphists' cramp is scheduled?—Yes, it is already registered, is it not?

3806. It is included. Have any cases of telegraphists' cramp come to your knowledge?—No, they have not. I did not ask for it at all, because I knew you had already got that scheduled under the Act.

3807. Supposing we wanted to ascertain, you could easily let us know whether any cases had arisen claiming compensation under that section?—Yes.

3808. Because, of course, it is limited mostly to Post Office employees. One only realises from evidence such as yours that there are other telegraphists besides.

(*Judge Ruegg.*) You mean all the railway telegraphists?

3809. (*Dr. Legge.*) Yes. They are your own employés, are they not?—They would be the company's.

3810. They would not be the Post Office employés?—No, they would not. The companies provide their own telegraphists at the small stations; in fact at all the stations.

3811. I take it that your objection, apart from the question of malingering, is largely that this compensation would go on for life possibly?—Yes.

3812. Have you the ages of those who suffered from writers' cramp in your list?—No, they vary. I think practically the oldest man was 58, and it ranged from 18 to 58.

3813. Supposing the contingency of a young person of 20 contracting the disease badly and being on your books for a number of years?—He would not be on the superannuation fund, because he would not have been long enough to obtain the benefits.

3814. Still, he might be getting compensation for a number of years?—Yes.

3815. Supposing that contingency were reduced, as it can be under the Act, and the compensation were limited for a certain number of months only, so that he would have a chance of recovering in that time in the same way as you say here, that now you put them on to other work, would that remove some of your objection to scheduling it?—No, because we deal with them ourselves. Supposing a young fellow of 20 were laid up, we should give him full pay for three months at least, probably more.

3816. Putting yourself in the position, not of a large company, but of a clerk working somewhere else in quite a small way, do you think the same measure should be meted out to him; that opportunity for recovery in his case, should be given as you give it?—Yes, I should think so; but of course a small private employer has not the funds to do it in many cases.

3817. (*Judge Ruegg.*) We have been told, whether rightly or wrongly, that the majority of these cases arises in the case of the employer who has only one clerk, a regular quill-driver?—We cannot over-drive our men.

3818. (*Dr. Legge.*) I take it your objection to this disease being scheduled would be largely removed if there were a definite limit put, say six months, beyond which compensation should not be paid?—That would help us, but I still stick to what I said, that we object to it altogether.

3819. (*Judge Ruegg.*) I understand your main objection, which was not put by Dr. Legge, is that you think all these benefits would be cumulative and that you would have to pay all your fund benefits and the Workmen's Compensation on the top?—Precisely.

3820. I am not quite sure that you could not easily avoid that, but I quite appreciate that objection?—If you forced us to pay them anything as compensation, we should promptly knock off the voluntary allowance which we give them now. We could not have it both ways.

3821. Except that your scheme probably covers much more than writers' cramp?—I am not talking of the superannuation. This is a purely voluntary allowance apart from that. Supposing I have a long service man laid up with sickness, I give him six months' pay, and in some exceptional cases probably more.

3822. That is voluntary; you are not obliged to pay that. I suppose yours is the usual superannuation scheme contributed to by workmen and employers?—Two and a half per cent. on each side.

3823. In equal quantities?—Yes.

3824. You are not a medical man, and you do not deal with it from the medical point of view at all?—No. The schedule sent to me contained a lot of questions which were purely medical, and I consulted our medical officer.

3825–6. I rather thing Dr. Legge wanted some particulars as to telegraphists, but it is not before us except very indirectly?—(*Dr. Legge.*) No; but you have, I take it, some thousands of telegraphists in the employment of the companies?—A very considerable number.

3827. Have you not already legislation for that?—Yes, that is not necessary. I will obtain any information you like for you.

(*Judge Ruegg.*) It bears no relation to writers' cramp.

3828. (*Dr. Legge.*) Do your telegraphists undergo a training?—I cannot tell you that. We ourselves have none in the Clearing House.

3829. (*Judge Ruegg.*) Do your clerks belong to a Clerks Association?—Not all, but a great many of them.

3830. Have you your own railway Association, or is it a general Association of railway clerks?—It is the Railway Clerks Association.

3831. I suppose the scheme applies to all alike, does it?—The superannuation.

3832. Have you not a sick and benefit fund?—We have what is called a contingent fund and a provident fund; but they are instituted by the clerks themselves, and they are not officially recognised, although the companies contribute.

3833. If a clerk who is not entitled to a pension gets ill, what you do is merely voluntary?—Yes, and when this voluntary grant ceases he gets from the contingent fund referred to something like half salary for two years.

3834. I suppose they have to be some years before they are entitled as of right to come on the superannuation fund?—Ten years is the minimum.

(*Judge Ruegg.*) We are very much obliged to you.

The witness withdrew.

The Committee adjourned to June 12th.

Home Office, Whitehall, S.W.

NINTH DAY.

Thursday, 12th June 1913.

Present:

Mr. ELLIS J. GRIFFITH, K.C., M.P. (*Chairman*).

Sir Thomas Clifford Allbutt, K.C.B.
His Honour Judge Ruegg.
Dr. Thomas Morrison Legge.
Mr. Arthur Locke (*Secretary*).

Professor Penberthy, called and examined by the Chairman.

3835. You are late Professor of Medicine to the Royal Veterinary College, London, and are a member of the Council of the Central Chamber of Agriculture?—Yes.

3836. And I think the Council have asked you to give evidence before this Committee?—That is so.

3837. The Council has expressed an opinion itself on this matter, has it not?—Yes.

3838. And what was the conclusion they arrived at?—Their idea was that the disease of cowpox should not be included in the list of industrial diseases; that there was no reason for it, and after a good deal of inquiry, I cannot find any evidence of a workman having been incapacitated from the disease for so long a period as to bring him under the operation of the Act.

3839. That, then, is the point, incapacity?—That really is the point.

3840. You say the Council have come to that conclusion; how did they arrive at that?—I think the request of this Committee was put before them. I was nominated by them to represent them here, and I asked for an expression of opinion of as many members as was possible. I was then definitely instructed to attend on their behalf to represent their view.

3841. I wanted to know this—before they definitely arrived at their view which you have explained—did they discuss it?—Yes, it was rather more closely discussed than such matters usually are, and by men who are practically engaged in dairy farming.

3842. Was the expression of opinion unanimous in favour of the views you are putting before us, or was there any difference of opinion?—I think it was unanimous.

3843. Perhaps you will just tell us what you have to say?—I am still not aware, although I have had the advantage of reading some recent reports, that it is a commonly recognised disease of the human subject. As to its incidence, I am unable to say the word "recognised" there has the same importance I intended it to have. As a private individual, I have no means, and I have never had any means, of ascertaining from personal observation whether the disease is common or not in the human subject, but my impression is that it is not commonly recognised. I merely mean to say that cowpox as affecting the human subject is regarded so lightly that it does not often come under the observation of medical men, and I am confirmed in that by many inquiries I have made since.

3844–5. Perhaps you would give us the result of those?—There are certain districts which are historically associated with the occurrence of this disease in cattle, and I took upon myself to make personal inquiry from owners and others residing in these localities. In the County of Gloucester the occurrence of the disease has been supposed to have existed for a long time, it has perhaps existed there more generally then elsewhere, and therefore more attention has been called to it, yet I was rather surprised to hear from a Medical Officer of Health there that not a single case had been brought under his observation.

3846. (*Dr. Legge.*) That is Dr. Martin; has he not been recently appointed?—Dr. Martin has been there some years.

3847. (*Chairman.*) Did you make inquiries of any other Medical Officer of Health?—Every Medical Officer of Health I could come across, and I find the disease is very rarely recognised; or very rarely comes under their notice.

3848. It has, in fact, occurred. What do you say about that? Do you tell us the Medical Officers of Health told you they had never met a case?—No, I would not say that that is commonly so. The Medical Officer of Health for Gloucestershire is in close touch with medical men in the County, and I should have

thought that if the disease were prevalent I might be able in that way to get information about its existence in Gloucestershire. I may say I told him the purpose for which I wanted the information.

3849. Have you anything to tell us about the contraction of the disease?—That is a matter of inoculation.

3850. During its course, does it incapacitate a man or woman from work?—Very rarely. They think they have chapped fingers before they become inoculated, and they put up with that as they do with trivial ills, and they say little about it.

3851. Is there any danger, supposing a man or woman has contracted the disease, in milking cows that have not got it?—Yes, either might convey the virus from one cow to another. It is suggested that it means spreading the disease by means of the milkers' hands. That probably would depend upon whether the cow's teats were injured or not previously.

3852. And it is mainly on the fact that the disease is quite trivial that your council thinks it should not be included in the schedule?—That really is so.

3853. Does that in effect embody what you have to say?—Yes, I think so.

3854. (*Judge Ruegg.*) We had cases given to us where the effects of the disease did not pass away so quickly as they do generally, and they continued. Have you known cases where the effects have continued for some weeks?—I have only met one such case.

3855. Might it not be, assuming the possibility of the disease being scheduled, that it would become more widely known, and the risks of its being carried from farm to farm be mitigated by that?—I do not think it would have such a material effect as the legislation which has just come into operation. I think there can be very little doubt that under the Tuberculosis Order and very much sooner through the operation of the Milk Bill, if it becomes an Act, every teat will be examined, and it will not be necessary to put this disease in the schedule for the purpose of illuminating the matter generally.

3856. That is very important. The Milk and Dairies Bill that you speak of has not yet passed, I think?—I call it still a Bill.

3857. And therefore it is in the future; it may or may not pass.

(*Chairman.*) It is on the Order paper, but not on the Statute Book?—It has not passed the Second Reading.

3858. (*Judge Ruegg.*) That provides for the periodical inspection of every cow?—It does not specifically provide for it, but that would be the result of its operation. At the present time there are large powers given to local authorities, under the Dairies, Cow-Sheds and Milkshops Special Acts.

3859. Would that only be in the case of an outbreak of disease?—The County Councils now examine the udders for tuberculosis, and all notified diseases of the udders will be reported to the Board of Agriculture.

3860. You mean in every case, and in every County?—The Tuberculosis Order is compulsory, and should have been adopted by every County on the 1st of this month.

3861. That seems important. I gather that there is to be compulsory examination of every cow, not for this purpose particularly, but for the purpose of tuberculosis, which involves examination of the teats?—The word "compulsory" hardly meets the case, but in effect I expect it will be so. The Treasury has granted 300,000*l.* for compensation, for five years, and the local authorities should for the preservation of their own position have all the cows examined.

3862. By whom is that examination to be undertaken; officers of what authority?—Officers appointed by the local authority.

3863. When do you say that will probably come on?—They are appointed. The Order is in operation, and the first returns were out last Saturday.

3864. You think the result of that will be to detect this disease immediately in the cow before probably there is any chance of its being communicated to the human being?—Now you are referring to cowpox. As a matter of fact, the teats of almost every cow in the country will be exposed to inspection, and there will be a report. And I have an impression that statistical information is highly desired by the Board, and if so, that will be published to the public, and we shall know to what extent this disease is existing, and inferentially under this Order the Milk Bill, and the Medical Officer of Health will have cognizance of what is going on, and the medical profession will be in a position to speak on the matter.

3865. (*Chairman.*) All this is under the regulations of the Local Government Board, is it—I mean the exposure to inspection?—No, that is now under the Board of Agriculture. It is an Order of the 1st of May, and not the 1st of June, as I said just now.

3866. When did it come into operation?—On the 1st of May. We have already had a month's returns.

3867. Then how will this Order have a bearing upon the subject which we are now discussing and investigating?—It will attract public attention to the teats of practically every cow in the country, and that as soon as the Milk Bill has passed the information that is directly given to the Board of Agriculture will come in statistical form to the Local Government Board.

3868. (*Dr. Legge.*) Cowpox is a very acute disease, is it not, when it occurs, and thus differs from tuberculosis?—That is so. I do not suggest any connection between the one and the other, there is no similarity.

3869. But even under the Bill that you refer to, if it should be passed, and the constant inspection carried out in accordance with its terms, there would be considerable likelihood of outbreaks occurring in between the times for inspection?—Possibly.

3870. And you recognise that the comparative rarity of the disease does not affect the decision of this Committee as to scheduling the disease?—Well, I do not know what will have the most influence on the minds of the Committee.

3871. You regard it as an industrial disease when it occurs?—Largely.

3872. And that it may last more than a week?—Being guided by what is said by all the authorities, I think it does.

3373. You have seen some cases of it, have you not?—I have. I saw a boy suffering from it, but he was not engaged in milking.

3874. And when you see it would you say it is likely to be confused with any other disease; is it characteristic in its clinical signs?—It is supposed to be extremely so.

3875. (*Judge Ruegg.*) Do you say it is so?—I say it is.

3876. What may it be confused with?—It is characteristically distinctive. There is always the risk of damage by milking obscuring the specific appearance of the lesion done to the teat.

3877. (*Dr. Legge.*) I am thinking of it now in connection with the human subject. Can it be confused there, or is it a definite lesion like a vaccination mark?—It has been confused by high authorities or that is my opinion.

3878. Do you think that a scratch for instance on the back of the hand of a milker could get so infected from a cow's teat not affected by the disease we are considering now that it could simulate cowpox?—Simulate what is seen on a milker's hand in cowpox—you say on the back of the hand, but it does not always occur on the back of the hand?

3879. Does it usually occur in the fingers?—Yes. The lesion on the fingers resulting from other forms of infecting material, I think myself, might easily be confounded with the damaged lesion of cowpox.

3880. We want, if we thought of scheduling the disease, to be able to distinguish cowpox as it occurs in the milker from the vaccination mark in an ordinary person. How could that be done? The ordinary vaccination might be designated cowpox might it not?—Occurring on the finger.

3881. No, on the arm or anywhere?—All things are possible.

3882. But it has been suggested to us that the introduction of the word "casual" before cowpox would limit it exclusively to milkers and farm labourers?—

Yes, but then there is a difficulty in differentiating between casual cowpox and vaccination, for if there is a chance of mistaking them the *onus probandi* is removed from the employer to the employés, if I understand the effect of the operation.

3883. (*Judge Ruegg.*) I do not think you must assume that. That is so in some cases but not in all?—That is merely my construction of the Act.

3884. (*Chairman.*) Might I ask, if it were not so, would that affect your judgment on the decision that you have arrived at?—It would relieve the agriculturists whom I represent of some little difficulty, which I do not think would arise very often.

3885–6. (*Judge Ruegg.*) That the *onus* would be upon the workman or workwoman to prove that it is cowpox and that it arose out of their employment?—Yes. As I understand it now, that is provided for in the body of the Act, independent of the list in the schedule.

3887. (*Judge Ruegg.*) Supposing the *onus* was on the workman to prove that it was this disease and that the disease was contracted in the course of the employment, do you think there would be the same objection to its inclusion?—I do not think there can be any objection.

3888. (*Dr. Legge.*) But is the word "casual" as applied to cowpox known to you; have you heard the expression?—I have heard it repeatedly.

3889. It is a recognised term, and it would limit it to cowpox?—Yes.

3890. And then, even after that, supposing in the first column of the schedule the disease were described as casual cowpox, it might be left still blank in the second column?—The trouble would be of saying what was the case.

3891. That must be left to the Certifying Factory Surgeon to say, and the agriculturist could, if he liked to, make an appeal to the Medical Referee from his decision?—Yes, if the Committee decides that it is worth while to give all that trouble, it is so.

3892. (*Judge Ruegg.*) I think you say in your evidence you have never known a case of loss of wages to occur?—I have not. Because I recognised that I had extremely little evidence to give to the Committee on the matter, and I regarded that as important, within the last fortnight I have asked 43 people.

3893. Would you say that if men do contract this disease they are kept on on the farm but put to other work?—Except the man probably nobody knows anything about it. If one examines their hands, especially through the winter, and also the hands of women who do field work, wounds and the results of slight inoculation are often found.

3894. Then you mean in that case it is not noticed, and they continue their ordinary work, even the milking work?—Yes, and I include cowpox amongst those.

3895. You say in this case the disease is not recognised; they think it is anything on their hands, and they continue the ordinary work in which they were formerly engaged. Is not that to be avoided if possible?—Yes certainly, but the Act hardly provides for the checking of a contagious disease.

3896. You say in your proof that a case came under your observation where the disease was communicated by one farm employé to another—to a girl. Is it the suggestion that it was by kissing her?—I have not made the suggestion.

3897. But you suggest it might be communicated from one human being to another by contact?—Yes, but I do not mention the process.

3898. Do you think that would create any serious difficulty?—It might create some difficulty.

3899. That was the only case you have ever heard where the disease has been communicated by one human being to another?—I cannot say it is.

3900. (*Dr. Legge.*) But if we call this casual cowpox would not the possibility of compensation being paid to a girl in that case be almost nil?—She could not prove it: it could only be a supposition, and that was my reason for saying that the suggestion that it was caused by kissing her sweetheart was not mine.

3901. (*Chairman.*) How many actual cases have you seen?—In the human subject?

3902. Yes, in the human subject?—I have only seen three, including this one, which have been recognised medically, and it would be presumption for me to say that I have seen cowpox in the human subject. I saw something in connection with a Hendon cow, but I cannot state that it was cowpox.

3903. Does it exist in cows to a considerable extent?—I have gathered from reports that a good many outbreaks have been observed lately, but it has not been commonly brought to notice. I have been asking dairy farmers and veterinary surgeons whether they could show me any cases of cowpox now, but have failed to discover any, possibly as it is said to occur principally in the spring by reason of the fact that the heifers are not made immune from it.

3904. (*Judge Ruegg.*) Farmers would keep it quiet as far as they could, would they not?—I am afraid you must not ask me to place farmers in a different position to the rest of the community.

(*Chairman.*) Thank you very much.

The witness withdrew.

Sir JOHN MCFADYEAN called, examined by the Chairman.

3905. I believe you are the Principal of the Royal Veterinary College, and Professor of Pathology and Bacteriology there?—Yes, and I am a qualified veterinary surgeon and a qualified medical man.

3906. In your experience, do you regard this disease as a rare disease?—No, it is not rare.

3907. And have several outbreaks come under your observation during the last 25 years?—A considerable number.

3908. Is there anything you want to tell us about the symptoms or origin of the disease, or is it common knowledge?—I think it is common knowledge. It is a specific disease. It is a definite disease, and no doubt caused by a particular species of micro-organism which has not been identified, and which, in all probability, will never be seen, because it is so small that it passes through a filter that would keep back the smallest visible bacteria.

3909. There is nothing spontaneous about it?—No, there is no reason to suppose that there can be any spontaneity about it, because the very fact that the organism has resisted all the attempts to coax it to grow outside the body proves that it does not grow except in the body. Every case of cow-pox must have been originated from an antecedent case.

3910. There is no difficulty in diagnosing a case?—I should not like to say there is no difficulty. The truth is, there are very few diseases about which there is not some difficulty, especially when there is only one case on which to form a diagnosis, and that case is only seen on a particular day; but in general there is no difficulty in diagnosing an outbreak of cowpox, in my opinion.

3911. (*Judge Ruegg.*) In the animal?—In the animal. As I heard Professor Penberthy mention, there have been cases in which high authorities have disagreed as to whether the disease was cowpox or not.

3912. (*Chairman.*) They diagnosed something else in error?—One or other of them must have been in error.

3913. You have seen, I think, several cases of the human cowpox in one outbreak?—It is a long time ago; I think 20 years, and I have not kept any notes of it. But the case rather impressed itself upon me because at the time I believe the Local Government Board was under the impression that cowpox was a rare disease; and I think I am right in saying that the strain of virus that was used for obtaining matter for vaccinating human beings was always a foreign one and had been running for a long time, and I went a

considerable distance to see this outbreak, partly in order to get a new strain of virus. I satisfied myself that it was cowpox, and I wrote to the Local Government Board pointing out that here was a new virus if they wished it, but they did not take advantage of it. That was on a large farm with at least 100 cows.

3914. Were they all affected?—I do not remember the number, but it was considerable. My recollection is that in that instance there were about 9 milkers affected, which must have been nearly the whole lot because they milk about 10 cows each—I recollect that it was all the milkers except two, and the two were the dairyman and his daughter, and all the others were field workers. That simply shows the predisposition to infection which is created by having chaps and fissures about the hands. Dairymen and ordinary persons are not so liable to have cracks on their hands as field-workers.

3915. You think there is a clear connection between this disease and the employment?—Yes undoubtedly. It is conceivable, I suppose, that a human being might be accidentally or casually infected from another, but I never heard of such a thing.

3916. Now with regard to the results of the disease in the cases that you have seen, how long do you think they would be disabled?—Usually not disabled at all, or perhaps for only a few days. I think as a rule people do not give up work.

3917. They go on milking?—I am not sure about that. I think that probably for a few days they would be disabled for milking when it is a finger that is attacked. They must have the use of their fingers.

3918. I suppose you would strongly recommend that a man with this disease should not go on milking?—It would be folly to continue. Even if it would not spread the disease to men, it would spread it among the cows. But as to actual incapacity to do any sort of work or serious illness provoked by it, that is comparatively rare. There is no necessity for the person being laid up. The results are not more severe than in an adult after re-vaccination.

3919. From that point of view, what opinion have you formed as to scheduling from the duration of the incapacity?—I should have thought that it really was hardly worth while scheduling it, having regard to the fact that cowpox, though not rare, is not very common, and also having regard to the small proportion of milkers who become infected, and the very small proportion of those who suffer from a disabling illness of a temporary nature.

3920. It is a sort of *de minimis* point?—Yes, it is not worth while.

3921. But where a man was incapacitated for two or three weeks or a month, if that were common it should be scheduled?—Yes, and if it were the custom for the employer to dismiss the man or cause him to be idle and not pay him, that would be a hardship.

3922. (*Judge Ruegg.*) Have you ever known a case of a farm labourer being dismissed because he was suffering from cowpox?—Never.

3923. You have not known of wages being lost in consequence of this?—No.

3924. They are kept on on the farm?—Yes, it is not a casual employment. They are people engaged for six months or a year.

3925. There is a more intimate connection between employer and workmen than there is in many other industries?—Yes.

3926. It is on that ground that you do not think it worth while scheduling the disease?—It is partly on that account.

3927. (*Sir Clifford Allbutt.*) It might be a little vexatious if there was a loss of wages?—Yes, I think the benefit would not be worth the vexation.

3928. (*Judge Ruegg.*) In what way do you think it would be vexatious? Of course, in a sense, every obligation that is put on an employer is vexatious in a certain sense, but this would not be peculiarly vexatious?—No.

3929. Assuming that this was scheduled, would it not be less vexatious than other things put upon him where he is very liable to false claims? There are such cases?—That is possible, but that is not my reason for suggesting that it should not be scheduled.

3930. Can that arise here, the possibility of a farmer being subjected to false claims if the *onus* was on the workman to show that the disease arose out of his employment?—There would always be the possibility that a man really only had a trifling sore on his finger, a sore which had got into the healing stage, and he might insist that he was not in a position to work.

3931. He would have to prove disablement for a week under the Act before compensation would be payable. I am only asking for my own information, but is there any possibility in violent cases of the milk from cows becoming infected?—There is certainly a possibility. There would be a strong possibility that some of the virus got into the milk. Thousands of people in this country must consume milk which is partly contaminated with the virus of cowpox, but I think there is very little evidence to show that the disease can be contracted in that way.

3932. Do you think the effects of vaccination have any bearing upon it?—On *a priori* grounds one must believe that vaccination is more protective against cowpox than against smallpox.

3933. I mean a person becoming affected by milk. Do you think that vaccination would probably render him immune?—Unquestionably it would; at least more resistant.

3934. Is it possible that this could occur on a milker's hands through a healthy skin?—That is a question very difficult to answer. It is not one that one could be dogmatic about. But in order to get a successful vaccination you must scratch the skin, and, I think, with a perfectly intact skin a human being could not be infected, but practically all farm hands have got all the abrasions that are necessary.

3935. They have their hands more or less scratched?—Yes.

3936. (*Dr. Legge.*) Does the normal course of the disease last about a fortnight in the human subject?—Yes, I should say that there is no great difference with regard to the duration. The operation of infection is practically the same throughout, except that it is accidental in one case and intentional in the other. Of course, there is the further difference that owing to the way in which the accidental infection takes place there is more likely to be secondary infection.

3937. When it is secondary it becomes a mixed infection and may last for a month, or even, as we have had it in one case brought to our notice, four months. Would the definition of cowpox alone be sufficient for that?—Well, it would in my opinion be just as sufficient as the definition of cowpox which is not casual, because I think I am right in saying that you never have a vaccination lesion in which numbers of organisms do not concur, and it is even quite possible that in great part the inflammatory appearances that one sees in vaccination lesions are not attributable to the true virus.

3938. You do not think it is necessary for us to add "and its sequelæ"?—No. I think if the workman has any claim for what might be called a bad case of cowpox he would have just as good a claim for the sequelæ.

3939. You think that the word "casual" should be prefixed to it to distinguish it from ordinary illness from vaccination which would incapacitate?—It is clear that you must have some definition of what is meant by this, as accidental cowpox and casual cowpox might be taken to have the same meaning.

3940. Yes, but "casual cowpox" is used for cowpox as it occurs in the hands of the milker?—By very few people. It is not very commonly understood.

3941. I am thinking of the case of smallpox occurring in a laundry and its being necessary or desirable for the workers there to get vaccinated. They might very well say that they were laid up from the effects of vaccination for three weeks or a month?—Is it not possible to get over a difficulty of that kind by a definition?

3942. I am suggesting "Casual Cowpox"?—You would have to define "casual" then. You mean to

bring in only cases that arise from milking infected cows.

3943. Yes.—I should have thought that the only way of being sure that there is no fear of other cases being brought in would be to give a definition, not to rely upon one word.

3944. "Cowpox in milking"?—I do not know how many words you would use.

(*Chairman.*) You see it is always controlled by the words of the Act itself, that it must arise from the employment. Those are the words of the Act.

3945. (*Judge Ruegg.*) We are told that this cowpox in the human being in this way had the general name of casual cowpox; it was known to the profession as such when conveyed from the animal to the human being by milking?—I am not prepared to say that. The truth is there are very few medical men who pay any attention to cowpox, and they never have to think of any term that distinguishes between the accidental and the casual.

3946. Is there any special treatment for it?—In cows?

3947. I rather meant in the human being?—There is no treatment except that which is applicable to a vaccination mark—to protect it as far as possible from accidental infection and prevent it from being excoriated when in the healing stage.

3948. (*Dr. Legge.*) Is there anything similar to cowpox arising from milking goats?—I have never heard of that.

3949. (*Sir Clifford Allbutt.*) There is one small point I am not quite clear about. We are told that cowpox may be very rare in certain districts and more common in others. Are we speaking of the prevalence of the disease amongst cattle, or are we speaking of its passage into men? Is it very common among cattle in comparison with its frequency in men?—In comparison with smallpox in men?

3950. I was thinking of this. There is a little difference between you and your predecessor as to the frequency of it. He said it was very rare, but were you speaking of its frequency in cattle or in mankind?—I was speaking of cowpox in cattle.

3951. Even among cattle themselves it is rare?—Perhaps I might give the Committee some explanation as to what my opinion as to its frequency is founded on. I believe that it is commoner in some districts than in others, but then you find that the districts in which it is common are the districts in which a large number of cows are kept, the dairy districts. I have not kept any record of the number of outbreaks that have been brought under my observation during the last 20 years, but a large number have, I know. For instance, there is one large dairy company in London whom I advise with regard to any cases in which serious disease occurs among the cows of the people who are supplying them with milk. The company contracts with a very large number of farmers in the country to supply them with milk, and in the contract there is a provision that when any serious disease occurs among the cows the fact must immediately be notified to the company, and the company then takes all responsibility. If they decide that the milk must not be used, the farmer is compensated, so he has no motive for concealment, and in that way quite a number of cases have come under my notice.

3952. (*Judge Ruegg.*) Do you find they report cowpox?—Certainly they do. In some cases I have known a farmer to make money out of the disease. The company pays him for all the milk as if they had actually received it.

3953. Would the company, acting on your advice, reject the milk from cows suffering from cowpox?—Certainly, they refuse to take the milk from cows actually suffering from cowpox while they are at the acute stage, and the arrangement always made is that no milk must be sent in such circumstances. I have known cases in which the company rather than be bothered with having the cows inspected have simply allowed the man to dispose of the milk, while on the other hand they pay him for it as if he had sent it.

3954. (*Sir Clifford Allbutt.*) There is this point of some importance, that if the quantity of milk does not fall during cowpox it becomes necessary to relieve the cows—to draw it in some way?—In an ordinary case of cowpox the cow is milked just as if there was nothing the matter with it.

3955. One is ordinary routine, the other is to direct the man to draw the milk from the cow because of her distress?—There is nothing in that. It is merely a question of the pain to the cow owing to the sore on her teat.

3956. I was going on to the next question, whether the frequency in mankind of cowpox, which, according to one observer, may be very rare and according to others may be more frequent, might depend upon the sufficiency of vaccination in the district?—Yes, probably that has some effect. I think the fact that people are vaccinated must rather tend to diminish the liability to contracting cowpox in this way, but the fact remains that a good many do contract it in spite of that; and my impression is that in large outbreaks of cowpox, as a rule, it can almost be diagnosed by the fact that one or more milkers have contracted the disease.

3957. You do not happen to know of a particular instance of a person who was known to be inefficiently vaccinated who had got cowpox?—No, I have never inquired into that. Probably very few are re-vaccinated.

3958. (*Judge Ruegg.*) These farm labourers are, I think, an uneducated class of people?—No, they are just as well educated as the people engaged in other industries, in my opinion.

3959. You think so?—Yes, in some parts of the country. They differ in different places.

3960. You say they have not recognised the disease?—No, I do not think I said that.

3961. Then they are aware of the disease as cowpox? Would they have an idea that they had got it?—I think farmers and milkers who have been milking for a long time could make a good diagnosis of cowpox and they are not likely to overlook the fact that it is cowpox.

3962. I understood you to say that there is no difficulty in diagnosing the disease in the animal?—There is no difficulty in diagnosing an outbreak of cowpox, but there might be a difficulty in diagnosing it in a single case; it is a contagious disease.

3963. There is no difficulty in diagnosing it in the human being?—No, I do not think I have said that. There again, if one had only a single case presented at a hospital at a particular stage it would be impossible to diagnose it, and it would not be even suspected, but in general there will not be any trouble in making a correct diagnosis in the case of an outbreak because you have the fact that cowpox is coexisting among the cows.

3964. But in an individual case that might go to a hospital what would it be mistaken for?—It might be called a poisoned finger. If a man went earlier it could be diagnosed from the primary character of the lesion. The effects are distinctive in their appearance only at an early stage, and afterwards when the thing gets abraded and affected with accidental organisms it tends to alter its character.

3965. Is it a permanent scar?—I could not say that. I should think there frequently is.

3966. Does not the scar itself carry characteristics of the disease?—If you get a severe suppurating lesion from anything it leaves a scar.

(*Judge Ruegg.*) We are very much obliged to you.

The witness withdrew.

Mr. HUGH ROXBURGH YOUNG called, examined by Judge Ruegg.

3967. You are a solicitor practising at Newmilns, in Ayrshire, and you are secretary to the Newmilns and District Lace Manufacturers Association?—Yes.

3968. The Lace Manufacturers Association in Newmilns was formed, I understand, in 1897. This Association for temporary purposes was dissolved in the

next year. Then the second Association was formed of Scottish Lace Curtain Manufacturers which represented the whole of Scotland in 1905?—That is so.

3969. That was dissolved in 1911, and in that year the Newmilns and District Lace Manufacturers Association, as it now exists, was formed?—Yes.

3970. Does that present Association represent all the employers engaged in the lace and curtain manufacturers in Scotland?—No, it only includes the lace manufacturers in Newmilns and one firm in Galston.

3971. Are there any other districts in which this lace manufacture is carried on to any extent?—It is all in one district, but there are other towns, for instance it exists in Darvel.

3972. What proportion of the industry does your Association represent in Scotland?—Roughly, a third of those engaged. Perhaps I should put it at a third of the machines, but considerably more than a third of the firms.

3973. I think the reports of Dr. Collis and Mr. Etock were placed before your Association in October last, and in consequence did you make inquiries of the medical practitioners in your district?—Yes, in my own district only.

3974. With regard to the prevalence or otherwise of this disease called Dupuytren's Contraction?—Yes.

3975. How many doctors did you inquire of?—Of the two members of the medical profession in Newmilns.

3976. Would they come in contact with most of the persons engaged in this industry?—They would come in contact with them all.

3977. How many would that be, of the workers, I mean, in that district?—By the workers do you mean lace minders as they call them in Nottingham?

3978. Yes.—300.

3979. One of these medical men has been in practice 20 years in that district?—Yes, in that district.

3980. And the other?—Five years.

3981. And the result of your inquiries from these gentlemen is what?—Each of them told me that he had one case in his clientele, and in neither case was the patient a lace worker of any description. He was not connected with the lace trade in any shape or form.

3982. That was with regard to their own patients?—Yes.

3983. And with regard to their general knowledge, did they know of cases existing in your district?—They were not aware of any other cases.

3984. They represent the Friendly Societies of your district?—Yes.

3985. And as such would be brought into contact with the workers?—Yes.

3986. Do you happen to know from what they told you what occupation these private patients followed?—They told me that in the one case the patient was an auctioneer, and in the other case he was a commission agent, both of them engaged in writing.

3987. To some extent, I suppose?—Yes, to some extent, but in no way engaged in manual labour of any kind.

3988. Both males?—Yes.

3989. Do you know the Nottingham machines?—I have been in some of the Nottingham factories.

3990. Your machines are of the same description?—Yes.

3991. (*Sir Clifford Allbutt.*) You are speaking of Nottingham as well as your own district?—Yes.

3992. (*Judge Ruegg.*) You say the machines are the same?—Yes, but we have no Lever's machines. In Scotland they are lace curtain machines.

3993. Is the handle the same?—As far as I have seen.

3994. (*Sir Clifford Allbutt.*) They are made in Nottingham?—Yes.

3995. (*Judge Ruegg.*) They come from Nottingham?—Yes.

3996. You have seen the men in your district working these machines; do you know how they grasp the handle, what the position of the hand is? Have they knobs at the top?—They grasp them round.

3997. Do they hold them with the hand over the top (*illustrating*)?—No.

3998. You would not have your attention specially directed to that?—No.

3999. You have seen them only casually?—Yes.

4000. (*Judge Ruegg.*) After some communication from the Home Office and after Dr. Collis's visit to Scotland I think your Association met on the 9th of June and considered Dr. Collis's report and instructed you then to attend on their behalf before this Committee?—Yes.

4001. Would you tell us what was the view expressed by your Committee as to the advisablity or otherwise of including this disease in the Workmen's Compensation Act?—They feel as far as they are concerned that it should not be scheduled as a disease of occupation at all, their feeling is that it must be governed by some other circumstances than occupation.

4002. That the disease may arise from other causes than the occupation?—Yes. They feel that so far as Scotland is concerned the proportion is so small.

4003. Proportion of what?—Proportion of persons suffering from the disease.

4004. Have you found cases of persons suffering from the disease?—I am accepting Dr. Collis's figures, and in connection with his figurers he states, of course, that on account of the trade not having been so long in Scotland there are not so many persons suffering. However, he examined more cases of lace curtain minders in Scotland than he did in Nottingham.

4005. Yes, we have Dr. Collis's report.—I wish to make one remark upon it. One would expect if it were a disease of occupation that in the younger classes the numbers would be relatively speaking the same, but in Scotland under 45 years of age the percentage is only 1·2 against 6 per cent. in Nottingham, and again under 50 years of age I find that it is only 1·5 against 7 per cent. in Nottingham.

4006. You mean of persons of the same age?—Of persons of the same age. Dr. Collis points out correctly that the trade has not been so long in Scotland, and he could not see persons engaged in the trade beyond 40 years, but the lace minders there have, with few exceptions, been working at the trade since they left school. Taking them up to 50 years of age I think is a fair test, and in that case we find only 1·5 per cent. of 264 lace workers as against 7 per cent. in Nottingham out of 185 examined, and it is the suggestion of our Association that that shows that it is not a disease of occupation, but a disease which is governed apart altogether from occupation.

4007. By what?—I do not wish to differ from Dr. Collis, who is an expert and I am not, but one of the two medical men suggested that it might arise from Nottingham being a beer drinking district. Ours is not a beer drinking district, and he suggested that perhaps that might have some effect.

4008. Is yours a whisky drinking district?—It is not actually a great drinking district at all.

4009. There is less tendency towards gout there than there is in Nottingham?—Yes.

4010. Is the view, held by your Committee, that this disease should not be included based on the difficulty of ascertaining whether it is of an industrial character or not?—That is entirely so.

4011. The fact that there are very few cases would not in itself be an objection?—No. They think it would be difficult to prove.

4012. Have you considered the question, supposing it was included, that the *onus* should be placed on the workman or upon the employer if the workman is engaged in that industry?—If the Committee decide that it should be included it should be on the workman.

4013. If the *onus* was in every case thrown upon the workman the inclusion would be less objectionable to your Association?—Yes, that is so. At the same time we know that though the *onus* is on the workman it is sometimes very difficult to get rid of liability.

4014. You say that there are two large factories in Glasgow in the lace curtain industry, and one of them is the largest in the Kingdom?—Yes. I saw the head of that firm, and he had never heard of a case amongst his workers.

4015. How many workers does he employ?—With 65 machines he would probably have about 130 or thereabouts.

4016. The lace industry in Scotland is somewhat recent history, only 37 years old?—Yes.

4017. Alexander Morton & Co. were established in 1876; is that in your district?—That is in Darvel, two miles away. The district is really one.

4018. Do the workmen interchange from one factory to another very much?—They do.

4019. And do you get some of the Nottingham workers?—No, not nowadays. There are a few who originally came from Nottingham in our district, but only a few.

4020. You say that the machines are in most cases new. Do they differ from the older ones?—They are wider machines, but so far as the handle construction is concerned I think they are about the same.

4021. We have had some evidence that the later machines are heavier than the old ones?—Yes, the largest machine in the kingdom is not at Nottingham, but at Newmilns.

4022. Does that require very great stress to pull the lever or handle?—I do not know that it does. It is a compound lever, but I am not an expert on that.

4023. Your Association includes how many employers, roughly?—Twelve.

4024. I think you suggest that no member of your Association ever heard of this disease?—Not until this question turned up.

4025. Have they since the question turned up had any examination made of the workers to see whether they are in course of contracting it?—No, there has been no examination.

4026. (*Dr. Legge.*) There has been no actual examination of the workers to see if they are in course of contracting this disease, that is that they have it in its early stages?—No.

4027. (*Judge Ruegg.*) All the employers insure?—Yes.

4028. Then the increased premium would be little or nothing if the disease is non-existent?—Yes, but they would be classed with the Nottingham class. They would be classed all over.

4029. You think that might follow?—I am certain it would under the tariff rates.

4030. But you mean that the tariff Insurance Companies under this Act always charge the same rates for the same industry in every district?—Yes.

4031. Are you sure you are right there? At all events there are many non-tariff offices which take business under this Act. You are aware of that?—Yes.

4032. You think that if the disease is more prevalent in Nottingham than in your district you would suffer from the Nottingham district?—Yes.

4033. Then of course the expense of resisting claims is always thrown on the Insurance Companies?—Yes, but that always has an effect on the premiums. With regard to the last point, the view of the Association is that until it is shown by a full inquiry that the disease is more prevalent among lace workers than it is amongst other sections of the community it should not be scheduled as a disease due to occupation.

4034. (*Dr. Legge*) Taking that last point that you make that inquiry should be made in other industries to see whether the disease is less prevalent in them, that was done by Dr. Collis in his report, and he compared the figures he found in Nottingham with those in the making of tin plates and the dressing of granite, and although the figures are small he does find a greater proportion in the Nottingham lace workers than in the persons engaged in making tin plates and granite dressing?—My point was rather that inquiry should be made among industrial workers from another class in Nottingham, in the same district, because I wish to point out that there may be local causes altogether.

(*Judge Ruegg.*) Yes, we have had evidence as to that. I quite appreciate your point.

4035. (*Dr. Legge.*) And it has been stated in evidence to us that the position of the hand while at work in Nottingham is like that (*illustrating*) and that there is localised pressure in consequence. You cannot say whether the practice is the same in Newmilns?—I cannot say, but I do not know that there can be any difference. We got the industry from Nottingham, and we have the same machines, and the man would take the same grip of the handle.

4036. (*Judge Ruegg.*) The original workers came from Nottingham?—Yes.

4037. (*Dr. Legge.*) The absence of any illness in serious form in Newmilns must be due to some other cause than the way of holding the handle?—Yes.

4038. Would you explain what you mean when you say "any employé suffering from the disease would "claim compensation. While the *onus* would be on "him there would be always the trouble and expense "of fighting claims, and the Medical Referee, in view "of the Home Office report, would be disposed to "declare that it was due to this cause." What report are you referring to?—The report of Dr. Collis. I say that because, if the Committee did schedule this disease upon this report of Dr. Collis, then I should think that Medical Referees might be inclined to follow it to some extent.

4039. (*Judge Ruegg.*) I do not think you would find in practice that the Medical Referee does act in that way. It is not my experience.—There is always the chance that some of them might.

4040. (*Dr. Legge.*) Are you in the Lanarkshire district?—No, Ayrshire.

4041. You have a specialist Medical Referee in Glasgow, Dr. Scott, who takes all industrial diseases and covers your district I think?—No, I do not think so.

(*Judge Ruegg.*) The Committee is much obliged to you for your evidence.

The witness withdrew.

Dr. John Sinclair called, examined by Dr. Legge.

4042. Will you state what your position is at the Post Office?—I am second medical officer. I am a Doctor of Medicine and a Member of the Royal College of Physicians.

4043. You gave evidence before the previous Committee on the subject of telegraphists' cramp?—Yes.

4044. Would you state generally to the Committee what in your opinion is the relation of writers' cramp to telegraphists' cramp?—I consider writers' cramp to be exactly on parallel lines with telegraphists' cramp and other cramps which are included in the list of occupational cramps. The term "occupational cramps" is, I suggest, a useful term. If you will recollect, Sir Clifford, we were discussing the names given to these maladies, and I think you suggested palsy, which I myself did not like, because I think it frightens people.

4045. (*Sir Clifford Allbutt.*) Yes, that is so. People think palsy means paralysis?—I suggest myself that the term "occupational cramps" is a good covering term.

4046. (*Judge Ruegg.*) That would include a number of cramps?—Yes, I have here a long list of cramps.

4047. That would include a list of cramps which are due to certain occupations?—Yes, there are 13 altogether in my list. I compiled this list some years ago for the Post Office. Analogous cases of cramp are the cramps (manual and labial) of players of musical instruments, the cramp of writers, the cramp of sempstresses, cigarette makers, sawyers, milkers, tailor treadlers, glass blowers, ballet-dancers, and bricklayers; and the aphonia, or loss of voice, of clergymen, public singers, and auctioneers.

4048. (*Dr. Legge.*) What views are generally held as to the causation of these cramps?—The view that

is accepted now is that it is a disorder of the central nervous system. It is a disease of the central nervous system, and is the result of a weakening or breakdown of the cerebral controlling mechanism in consequence of strain upon a given set of muscles.

4049. Would that apply to the aphonia of clergymen?—Yes, I think so.

4050. Is not that an actual inflammation?—No, I look upon this condition as different from laryngitis, which may cause aphonia.

(*Sir Clifford Allbutt.*) I noticed that you did give that opinion, but it was a point I knew nothing about.

4051. (*Dr. Legge.*) You draw a distinction between the aphonia of clergymen, public singers, and auctioneers, and clergymen's sore throat?—Yes, undoubtedly.

4052. (*Judge Ruegg.*) We should call that clergymen's sore throat?—No, a sudden loss of voice may occur.

4053. (*Dr. Legge.*) What are the characteristic features of the disease?—As applied by the term "cramp"?

4054. Yes?—Involuntary, violent, and painful contraction of the muscles; and, speaking of the telegraph service, such visible spasm is regarded as the mark of the disease, and with this there is impairment of the power of making the specific co-ordinated movements needed for the manipulation of the telegraphic instrument.

4055. In what respects does telegraphists' cramp differ from writers' cramp as regards objective symptoms or objective conditions?—I do not think there is much difference. There is in both cases visible cramp or spasm. In the case of the telegraphists' cramp there is an alteration in the Morse signals, and in the writers' cramp there is an alteration in the handwriting. That is in established cases.

4056. How would you distinguish that from mere fatigue?—The breakdown in the central controlling mechanism of the brain is essentially different from muscular fatigue. The latter may affect a perfectly healthy telegraphist or clerk and supervenes upon a prolonged period of work. After a night's rest in such a case, however, the pain and stiffness will have disappeared, and the clerk is able to perform his ordinary duty without any trouble on the following day.

4057. Is that the same in the case of the cramp?—In the subject of cramp, however, the disability is often experienced as soon as the key or pen is touched, that is, long before any fatigue of the muscles could have developed. At the same time it is considered that muscular fatigue, when endured over long periods, is an important provocative cause of the central breakdown.

4058. (*Judge Ruegg.*) A practical distinction. The pain passes away?—In a healthy man it passes away after a night's rest. A nervous disposition, outside worry, and sudden extra strain may also be other factors which may induce the onset of cramp. Then, and this is an important point—The constitutional state of the operator must be taken into consideration equally with the use of the pen as a cause of cramp; the first may be regarded as the predisposing cause, and the second as the exciting cause, of the condition.

4059. That might be said about so many industrial diseases?—Yes, the constitutional state of the person must be taken into consideration.

4060. (*Dr. Legge.*) Does pain play any considerable part in the diagnosis?—No, but I should like to qualify that. As long as there is pain and nothing else, that is only a statement of the complainant, and I should not diagnose a case as one of cramp simply from an expression of pain on the part of the patient. Pain without any visible sign of cramp is met with in the earlier stage.

4061. (*Judge Ruegg.*) That was what I wished to ask you about. That seems to be very important because you say that before these objective symptoms appear you get a subjective symptom of pain and discomfort, but would the person at that stage be suffering from writers' cramp?—No.

4062. Might it not be said, if the disease were scheduled, that he had got it in the incipient stage?—I should treat it in the same way that we treat telegraphists' cramp. We invite people, men or women, as soon as they feel some discomfort to come to us for examination. We then examine them. If—and this is the important point—we find a total absence of all local disease, local abnormality, symptoms of a generalised disease of the nervous system and a perfect physical condition, we say there is presumptive evidence that this man is going in for cramp, but we do not put that down as a case of cramp. We recommend relief from telegraphic duties for three months.

4063. You are speaking now of a large and well managed Government Department. We have to deal with the whole thing generally. That would not occur in the case of small employers, and I am looking at it from the point of view of a person who has to carry out the Act. A person comes before me and says "This is writer's cramp," and the disease is there, and the man has thrown up his employment and is entitled to compensation?—He says that he has pain.

4064. He has got to that stage that he is going in for writers' cramp—to use your own apt expression?—He may or may not be. Since writers' cramp is characterised by visible spasm it should be possible to determine the presence of the malady by personal examination. To detect cramp in the early subjective stage must be more difficult. The medical man must trust the good faith of the worker concerned and to detect malingering his medical skill must be supplemented by his general shrewdness and knowledge of men. There might often be no reason to doubt a clerical worker's statement, but a neurasthenic subject might believe difficulties to be real which exist only in his imagination, and occasionally a clerk who wished to give up his work might feign the symptoms of cramp.

4065. That is the very thing that seems to me in practice might raise a considerable difficulty in including this disease. You have a neurasthenic subject who may be honest and who may be going in for writer's cramp, but that has to be dealt with, and not only by the Post Office, but by the courts?—I follow on there: in these early cases the personal examination by the medical man should not be confined to a single examination, and he must distinguish between those whose difficulty is due to cramp and those whose difficulty is due to local causes.

4066. I quite follow you there, but that does not quite meet my difficulty. You say that when you find a man in that condition, in the incipient stage of the disease, you as a precautionary measure deal with him and knock him off his work, or give him a long holiday. You cannot expect that that would be done by the ordinary employer of we will say a single clerk, but the claim may be made and come before a judge. Do you not think that would or may be, in practice, a considerable difficulty?—It would be a matter of difficulty, but I do not think it is a matter which could not be got over. The medical examiner should repeat his examination on several occasions. I myself in such a case would not be content with inquiring into the nature of the work, but I should say to the subject: "Sit down and let me see what you can do," and I should make him write to dictation or to copy for a space of half-an-hour, watching him carefully the whole of the time. If no definite evidence came out on the first occasion, I should say that I must put back his case for a month and see him again and then make him go through the same procedure.

4067. You are again speaking of the procedure in a large Government office. Now, assuming that you were in the witness box in a given case, and you were told that this man has these pains and appears to be going in for writers' cramp, the question would be asked you, "Has this man got writers' cramp or not"?—I should say, no.

4068. Because the objective symptoms have not yet appeared, and consequently you say that those objective symptoms when they appear—and not until they do appear—are causing incapacity for work?—Yes.

4069. And anything else would be a mere precautionary measure?—Yes, a precautionary measure. I should wait before making a definite diagnosis until I saw visible cramp.

4070. There is no power under the Workmen's Compensation Act for granting compensation as a precautionary measure, although it might be wise to do it. The man must have the disease to start with?—May I give you an example of how we act in the Post Office? There symptoms of telegraphists' cramp and partial disability may have gone on for some years, but we fix the actual date, for the purpose of the Act, of the disability as the day after that on which the subject last does his duty on the Morse instrument.

4071. I quite follow that working rule?—Yes.

4072. (*Sir Clifford Allbutt.*) In our last discussion on this subject a good deal was said about the form of the handle or knob which the telegraphists use. There was some proposal that the form of that should be altered, but I do not know if anything has happened?—Yes, we went into that subject most fully. We have tried all sorts of knobs, flat knobs, large rounded knobs, small rounded knobs, bars, and we have given all a practical trial. The opinions are about equally divided, and we could not arrive at any conclusion.

4073. Nothing is to be gained by any change?—No.

4074. I quite agree with the witness about the matter of diagnosing. I think the witness has wisely put the difficulties a little more strongly than they come about in practice, and I should say it was easier really. But we go on from writers' cramp to telegraphists' cramp, and the question I wanted to ask was this, whether having telegraphists' cramp involves a man having writers' cramp?—Not necessarily, but frequently it is so.

4075. So in order to set a man to rights would it be of some assistance to know if he had telegraphists' cramp or not?—No.

4076. Some assistance I said?—The movements are essentially different.

4077. You mean a man might have both. His having telegraphists' cramp would not involve his having writers' cramp also?—No.

4078. One would not be any test for the other?—No.

4079. There seems to be a difficulty in ascertaining that writers' cramp is not considerable. In practice I do not foresee much difficulty in that, but in telegraphists' cramp the difficulty would be considerable?—We have to examine very closely. For my own part I have had to study the Morse language so that I can watch the work at the key, as I do in every possible case, so that when a case is before me where cramp is suspected I take a man up to the gallery and put him on to a short-circuited Morse printer and test him myself.

4080. The movement is so very much less fine than the writing. It is a course of uniform movement?—May I point out the movements which are worked out in the "cramp" report. They are very fine movements. They appear on page 42 of the report by Dr. Thompson and myself.

4081. Fine movement with the fingers as well as with the hand?—Yes. In one minute for 20 words a man makes 515 different movements.

4082. Would you mind showing us with your hand how it is done, what the man actually does?—He puts the first and second finger on the top of the knob, and the thumb is placed lightly underneath. The thumb really does not take any part in the movement, it is placed there simply for balancing purposes. The arm is held out free from the body, so that the action of the wrist may be as free as possible. The hand and forearm should be level and in a line with the key. His fingers are lifted from the key between each letter just to give a momentary relief. (*The witness illustrated what he was explaining.*)

4083. What would you describe as the signs of cramp?—The signs of cramp are varied. I saw a case yesterday. I put the man to the key. He had not signalled one word before he had cramp which curled his arm up. On the other hand I have seen a case where the hand will be glued to the key, and the sufferer cannot get it off. A dot or a dash will be indefinitely prolonged. I think the figures I give are interesting. Assuming the telegraphist works at the rate of 20 words a minute, each of five letters—that is slow working—there must be 515 muscular contractions in that minute on the Morse system.

4084. When you say different muscular contractions they are different in intensity, though they are the same movement?—There are five different durations.

4085. Duration, yes, but the same movement?—Yes.

4086. Might I just ask you whether this is known among typists?—Two cases were put forward recently in the Post Office as cases of cramp, but after examination I deleted them.

4087. To the best of your knowledge it does not occur?—There were cases of local disability, and that is where I make my distinction, that there must be no local symptoms if it is to be dealt with as an occupational cramp.

4088. When you write with a pen, for every letter there is a different set of movements for each one, whereas in telegraphy you have no variety of movement, it is merely duration?—The vocabulary is limited.

4089. It is more or less dotting?—Yes.

4090. (*Judge Ruegg.*) Has the old fashioned style of working the handle backwards and forwards gone out?—Yes, though there are railway companies which use it.

4091-2. Will you tell us whether that system of telegraphy caused cramp?—No, it was a coarse movement.

4093. As to telegraphists' cramp, you do meet with it?—Yes.

4094. It is sufficiently frequent to require consideration?—Certainly it is.

4095. Does the Post Office pay much compensation for it?—That is laid down by the Act.

4096. I want to come back to my same question again. I have to administer this Act, and I am thinking of the practical difficulties, and you say it would be no use for a person to come and say he has cramp. I understood you to say that you would not consider that writers' cramp existed until you had objective signs of writers' cramp?—Yes, and until—may I add—the complainant is incapacitated.

4097. Would it not be possible for a writer to be incapacitated before these symptoms appeared?—No, I do not think so. He may experience pain and discomfort, but he may go on with his day's work.

4098. Then arises the other question, how much pain you are entitled to call upon a man to endure in that case?—Before you decide that it is a case of cramp, it must be observed by visible spasm or by the handwriting, or both.

4099. (*Dr. Legge.*) But do you maintain that the pain only occurs while the work on the particular instrument is being done?—I do. I can say that from my own personal experience.

4100. And from your experience of other cases too, but you say when they are not writing or working the instrument there is no pain?—That is so.

4101. (*Judge Ruegg.*) You say it occurs when the operator begins to key or to write or soon afterwards before any muscular fatigue is possible. Why should not a person say, "I cannot write without such a pain, "which is one of the symptoms of writers' cramp, "that I ought not to endure such a pain, and I am "entitled to my compensation. I cannot write with "this torture"?—It is possible they may be right. The medical examiner would then say, "Please sit down and write," and if he is a shrewd man he ought to be able to see during that complainant's writing for half-an-hour, something which would lead him to the belief that the man's statement was absolutely genuine.

4102. Supposing he believes the statement is true?

(*Sir Clifford Allbutt.*) Probably the witness would demur to that.

4103. (*Judge Ruegg.*) Then, you would get the very symptoms you were looking for?—Here is another

illustration. If I have had a bad night and have slept badly, when I commence to write the next morning I always stick at the letter "c" in "secretary," I can get over other letters but always stick at that particular one. That is on parallel lines with the telegraphic work.

(*Sir Clifford Allbutt.*) I should be disposed to cut down this incipient stage myself almost.

4104. (*Dr. Legge.*) The objective symptoms must be there, you say?—Yes. In several cases, where men have made complaint of difficulty in "sending" but the quality of their work has not been complained of, examination has revealed signs of cramp.

4105. (*Judge Ruegg.*) I was taking your own evidence. Before any cramp or spasm is apparent there may be a stage apparent by subjective symptoms?—That is so; that is the earliest stage.

4106. (*Dr. Legge.*) I take it you agree as a medical man that it would be impossible to legislate for purely subjective symptoms?—I do say so.

4107. (*Judge Ruegg.*) But many a disease is manifested by such symptoms. I cannot in a case reject subjective symptoms any more than I can reject objective symptoms?—There is a difficulty in telegraphists' cramp. If I may give an illustration—a telegraphist retires from the Service and claims that he has telegraphists' cramp. We say "No, you have a disability but not cramp." There is an appeal; the appellant goes before a Referee, and the Referee says, "We can only go by the appellant's statements," and the appeal is allowed. I consider that that Court of Justice ought to have been held in a telegraph gallery where the appellant could be watched at work.

(*Dr. Legge.*) I do not understand how such a case as this, if it went to the Medical Referee, should come before the Judge at all. I thought they never came into Court. How could they come into Court?

(*Judge Ruegg.*) Diseases do not as a rule, but I am speaking more generally as to accidents. I can find in accidents on purely subjective symtoms. You are right in saying with regard to disease I am largely relieved of it, but that does not alter the principle we are discussing now.

(*Dr. Legge.*) It is confined to section 8 of the Act.

(*Judge Ruegg.*) That is true, but it is a matter which we must consider. Either I or the Medical Referee has to decide it. He must see the man and hear his statement, and if he believes his statement the subjective symptoms which he describes may be most valuable in making his decision. I find it so when once I am satisfied he is telling the truth.

4108. (*Dr. Legge.*) If a person is telling the truth, that he is suffering pain which makes it impossible for him to write, there would be apparent symptoms?—I think there would be a visible expression of them.

4109. Would you give us some of the figures that you have collected as to the incidence of writers' cramp as distinct from telegraphists' cramp in the Postal Service?—Inquiries have been made at the General Post Offices in London, Edinburgh and Dublin as to the existence of writers' cramp amongst the clerical staffs.

4110. Can you give us the numbers of the staff?—8,518 in the three.

4111. (*Judge Ruegg.*) Are those persons engaged solely in writing?—In clerical and supervising work.

4112. (*Dr. Legge.*) And how many cases were found?—14 cases, and those were in London alone.

4113. That works out at an average of what?—·16 per cent.

4114. Would you state particulars of those cases. (*The witness handed in tables, see* Appendix XVII., page xxvi.)

4115. (*Judge Ruegg.*) Before you go on, you had certain cases of writers' cramp which have been since found amongst telegraphists who suffered from telegraphists' cramp. How many of those are included?—That is since 1908. As I said, I consider those cases to be examples of the extension of the disease. They number about 10 and have not been included in the figures.

4116. (*Dr. Legge.*) Adding up these figures, I gather that no less than 10 out of 14 occurred to persons who were under 31 years of age?—Yes.

4117. Would there be an opportunity during the time of their service of eliminating them if they had shown signs of the disease in an early stage?—Yes, but you will see they have remained in the Service. I have made some remarks about each case, and they have been given alternative duty. Most of them are using their left hand, and they are giving efficient service.

(*Judge Ruegg.*) What do you mean by "eliminating"?

4118. (*Dr. Legge.*) They undergo a certain stage of apprenticeship do they not?—A probationary period of one year before any appointment is confirmed.

4119. (*Judge Ruegg.*) Every junior clerk that is. He probably would not show any signs of the disease in the first year?—No.

4120. Have you any trouble during that first year?—No.

4121. After the first year there is no opportunity of eliminating?—No, they would only leave the Service under the ordinary regulations. They would be superannuated if they were found to be incapable of doing any work.

4122. (*Judge Ruegg.*) Have there been any cases?—No. I have the 14 cases here, and none of those come under that heading. They all educated their left hand, and many of them are doing their work entirely with the left hand at the present time. I could show you specimens of their handwriting which is wonderfully good.

4123. (*Dr. Legge.*) Would you just mention the maladies which may be confused with writers' camp?—Local diseases, rheumatic affections, neuritis, wasting of the muscles from some local causes. Those are the chief maladies.

4124. And then with regard to the personal factor, what plays an important part in that?—The personal factor is a state of nervous instability which may be prominent or may be found in varying degree, but I am of opinion that that personal factor is always present. The personal factor may be a constitutional weakness; that would be general constitutional weakness in which would be included all the neurasthenic states.

4125. And what else?—Cramp has also been attributed to (*a*) inaptitude for clerical work—a person has mistaken his vocation; (*b*) to the nature and amount of clerical work and the conditions under which it is performed; (*c*) bad style of penmanship; (*d*) too much overtime, perhaps, *e.g.*, in a small office with one clerk; (*e*) work outside the employment; (*f*) the construction of the penholders; and (*g*) insufficient desk space or imperfect conditions to work in.

4126. I take it that throughout the postal service there are postal medical officers who are in close touch with the workers. They examine them regularly, see them at stated intervals and know them thoroughly so that supervision over their health is easier than it would be over clerks generally?—Yes.

4127. And administratively, therefore, to deal with telegraphists' cramp is a much easier thing than to deal with writers' cramp?—Yes, that would be so.

4128. You spoke of repeated examination for instance as being necessary to diagnose writers' cramp. How many examinations do you think would be necessary—two or three?—If the cramp is manifest by visible contraction and the handwriting is affected, one examination is sufficient, but in cases of doubt I should say three examinations are necessary at intervals of a month or two months.

4129. Would you expect repeated examinations to be made by the medical referee or by the certifying surgeon as it would be in writers' cramp?—By a responsible person, not by the patient's own medical adviser but by an independent man.

4130. Then in the case of the postal service if a worker has a general nervous breakdown which is also due to breakdown of the central controlling mechanism of the brain, is he dealt with in precisely the same way as a person with telegraphists' cramp?—No, he must show definite evidence of telegraphists' cramp before

he comes under the Act. We have cases of neurasthenia in the office, and neurasthenia is found amongst telegraphists, but telegraphists who suffer from neurasthenia are not necessarily cramp subjects.

4131. But are they dealt with as regards payment of salary and so on?—Yes, but they do not come under the Act for special compensation.

4132. Do they get the equivalent?—Only the ordinary Treasury regulation amounts.

4133. Once in the Postal Service are they always there?—An established officer spends his official life there unless he is transferred to another department.

4134. A telegraphist or a clerk?—

4135. (*Judge Ruegg.*) Are the Post Office servants under the Act or under a scheme?—They are all Civil Servants. They only come under the Act if we certify that they are victims of cramp. We have only the Act.

4136. (*Dr. Legge.*) Can you give us the number of postal servants who are now receiving compensation for telegraphists' cramp?—I think it is 24, but I am not quite sure. I did not make a special return of that.

4137. It has not given rise to great difficulty in administration?—No.

4138. Have any cases gone beyond you and the principal Medical Officer, and have there been appeals to the Medical Referee?—I only know of one case of appeal and in this the Chief Medical Officer did not consider the case to be one of telegraphists' cramp. The man had been off the instrument for a number of years, and the opinion was held that the disability for work arose from want of practice and age.

4139. Do you know who the Medical Referee was?—It was a medical man in Streatham.

4140. Just the ordinary Medical Referee, and not a specialist?—No, not a specialist.

4141. Do you think there ought to be a specialist for writers' cramp?—I do.

4142. (*Judge Ruegg.*) But do you mean in every district?

4143. (*Dr. Legge.*) Or for important districts?—Yes. On page 6 of the Telegraphists' Cramp Report is the following statement, "There is reason to suspect "that many telegraphists concealed their manipulative "disability from fear of the consequences to their "career, and that there was sympathetic connivance "on the part of many supervising and executive "officers." Certain cases which have come to light are suggestive of the accuracy of that statement We have had cases of long-standing telegraphists' cramp which have shown signs of writers' cramp afterwards.

4144. Is not rest the best thing in such cases?—Yes.

4145. How long should the rest last to remedy the disease?—If visible cramp or spasms have appeared there is no recovery. I am most pessimistic on this point.

4146. (*Judge Ruegg.*) The only case I knew of was where a barrister got it, and he has never recovered. He learnt to write with his left hand?—To give you an example of a telegraphist. He had been working in a certain branch for over 20 years, and in the course of certain revisions in the office his case was inquired into to see why he was doing these special duties. He said he was a subject of cramp. There were no office papers in existence; they had been destroyed, and nobody knew of the case. The case was sent to the medical department, and I was able to turn to my original notes taken more than 20 years ago; it was on my own recommendation that that officer was taken off telegraphic duties, and I had in my notes the exact signs of failure at the key which he had displayed. We took him to the gallery again, and he reproduced those failures after 20 years.

4147. During which time he had been working?—Yes, but not on the Morse instrument.

4148. (*Dr. Legge.*) Then you always find the sufferer some other employment?—We find them employment. There is a certain rota of duties, and a man may be able to perform the whole number in the rota. Then he may fail in two of those, and there may be six he can do, but at last he may be able to perform only two of those duties, and then he is retired on pension and compensation. I had such a case the other day.

4149. But in the case of an ordinary clerk of 25 years of age who is incapacitated by writers' cramp that means compensation for the rest of his life?—Yes. I would suggest, if possible, that the Treasury regulations should provide for a yearly review of the case.

4150. (*Judge Ruegg.*) But supposing the incapacity continues?—If we had to give a certificate every year that the incapacity continued compensation would be paid.

4151. It is a serious thing for a small employer?—It is.

4152. (*Dr. Legge.*) Do you think it desirable that a person at such an early age as 25, having mistaken his vocation, should rather be made to take up some other employment?—If he wished to remain a clerk he would on his own account educate his left hand and try to continue in that way to save his place. Many are able to continue by using the left hand, and many telegraphists have been able to continue for many years after having met with some disability with the right hand.

4153. (*Judge Ruegg.*) Do you know cases where they write just as quickly with the left as with the right hand?—Yes, I saw a splendid specimen the other day, all done with the left hand.

4154. Not a left handed man but one who had cultivated his left hand simply?—That is so (*handing in specimen of left hand writing*).

4155. That was a bad case of cramp?—Yes.

4156. (*Dr. Legge.*) Do you think it would be well to recommend that compensation should be given for six months? Would that rest be of any value?—I should suggest that it should be for a year.

4157. You mean that would give a good chance of recovery?—Yes.

4158. (*Judge Ruegg.*) I suppose there would be certain cases you could at once diagnose, and say, "This man will not be well; in fact, he never will be well"?—Yes.

4159. (*Dr. Legge.*) Then it is desirable for him to take to some other employment altogether?—Yes.

4160. And therefore limit the amount of compensation he may be entitled to?—Yes. Here is one specimen of a man's writing before he suffered from cramp. He has done all his work with the left hand since 1907. He has educated his left hand; but he wrote that with his right hand with the utmost difficulty. Here is another case where a man's thumb and fingers were absolutely glued to the paper. It was as much as he could do to get them off. Then here is a specimen of a lady's writing. She does her work with the left hand; but she wrote this for me with the right hand, having, of course, had relief. But if you look at the words "great" and "intimidated," there are signs there. You could see there a visible expression of failure. She could not continue to write to my dictation any longer.

4161. (*Chairman.*) You say there are obvious signs of cramp here?—Yes.

4162. You are used to it; but do you think an ordinary medical practitioner would find it?—No. That is why I say you ought to have a specialist. Here is another specimen. The top piece is written with the left hand, and the lower one is written with the right hand with a full arm movement; he signs his cheques in this manner. He could not write in the ordinary way.

4163. (*Sir Clifford Allbutt.*) He was learning to write with his left?—He wrote that for me a day or two ago.

4164. It is the normal left?—Yes, the normal left. (*The witness handed specimens in.*)

4165. (*Judge Ruegg.*) Could you give us any information at all in ordinary cases of the time it takes for this disease to develop until it arrives at the incapacitating stage?—It may go on for several years before the stage of incapacity develops.

4166. You appreciate that in the case of what may be called the ordinary clerk in the country, who belongs to a somewhat migratory class, he would be in half a dozen employments in that time?—Yes.

4167. Do you think that adds rather to the difficulty? It would be the last employer at the time the incapacity manifested itself, who would have to pay for the whole of the results of this disease. Of course, that has occurred in other cases?—I should apply the rule that we have in telegraphist's cramp, as these are diseases which run on in an indefinite way for a long time. Take the stage of total incapacity.

4168. And make the employer in whose service he happens to be at that time, although he has only been in his service a month, pay the compensation?—It would be a case of *caveat emptor*; the employer must be more careful. We are trying to do that in the case of candidates now. We are asking our medical men to be very careful now in the case of youths who wish to be telegraphists.

4169. That raises another very important question I suppose that we cannot lose sight of, that a person who is known to have incipient writer's cramp would probably find it very difficult to get another situation?—Yes. Here is a manual which has just been brought out for the use of our medical officers.

4170. I daresay you are very careful now; but you have not considered it from that point of view as to the interests of the clerks as a body; whether it would be a good thing that they should be subject to this disability in obtaining a situation if they are showing any manifestations?—I have thought of it since you asked me to give evidence, and it appears to me that the only possible method is to act on parallel lines to the way in which we deal with telegraphists, that is, to make the date of incapacity the day of disability.

4171. I follow that. But you see you make the employer who incidentally gets the man in his service at the time the incapacity manifests itself, responsible for the results of this man's work in half a dozen previous employers' service, and you put the whole of the burden on him?—I take it when engaging a new clerk ——.

4172. He should take care not to have him?—Yes; *caveat emptor*.

4173. That might be a very bad thing for the clerks themselves. Any man who showed any signs of writer's cramp would not be able to get employment. There is that to be considered?—Yes.

4174. Would you consider the question at all as to the possibility of spreading the compensation amongst previous employers? It is done in some instances already. In the case of lead poisoning a man can call in and ask for contributions from anybody who has employed the man in a similar dangerous process a year before. Do you think it would be practicable to do that in the case of clerks, and call on previous employers?—I should not care to offer an opinion.

4175. It does not arise in your department at all. Your clerical staff comprises everybody who does writing—whose duty may consist partially of writing?—Yes.

4176. But in a large number of cases the duties are not wholly writing?—In the Post Office there is an administrative staff and a manipulative staff. It is the administrative staff I have taken here.

4177. But there are a large number of officers who would not be included in the words clerical staff?—No.

4178. And are there a large number of them whose duties are largely other than writing?—Yes. For instance, whenever I have to make any long endorsements now, I write a rough draft and send it to be typed.

4179. I am afraid you do not follow me. Amongst this large number of 8,000 of your clerical staff, there are a number who are not strictly employed in writing. They are not what are commonly called quill drivers?—No; I include supervising officers in that number.

4180. They are not writing from morning till night?—No.

4181. We have had evidence given to us that these cases manifest themselves much more frequently in cases where there is a single clerk who is a quill driver who has to write from morning till night, and that is the class of men who are more affected than the persons who occupy comparatively easy posts in the Government service. The Government service does not work their men to death, whereas it is said in some cases the small employer does work his clerks to a very high degree indeed?—We can take the Savings Bank as a good example, male and female.

4182. How many hours a day would they average?—Seven hours, with time off for a meal.

4183. Those are short hours compared with the hours of many clerks both in London and the country. Do you not think that probably if we took the average clerks who were engaged in nothing but writing, for example a single clerk who does the whole of the clerical work of an office, the percentage of cases would be a great deal higher than in your post office?—I think it is possible, as it was in the case of these telegraphists, that at first many cases would come up where a clerk had been perhaps hiding his difficulty in view of the fact that he was afraid of losing his employment.

4184. You do not follow what I want. Do you not think there would be a much greater percentage of clerks suffering from writers' cramp among the class of clerks who are engaged in writing from morning till night with long hours and who is a single clerk in an office, than in your staff?—I agree, but a great deal of the continuous writing at the Post Office is done by boys who leave at the end of a few years.

4185. (*Chairman.*) And do not as a rule during those years show evidence of writers' cramp?—No.

4186. (*Judge Ruegg.*) You then say there were a number of other diseases which might be mistaken for writer's cramp. But in practice do you think there would be any difficulty in diagnosing writers' cramp from these other diseases you mention?—Not if a careful examination is made

4187. One always assumes a careful examination. Do you mean by an expert, or an ordinary practitioner?—By an ordinary practitioner; but he must strip the complainant and examine him.

4188. What would you say as to whether the onus, assuming this disease were scheduled, should be on the workman to show that the disease arose from the occupation, or on the employer to show that it did not? In some cases of disease already scheduled, the onus is on the employer if the man is engaged in the industry to show that it did not arise from the industry. In other cases the onus is on the man to show that he really had writers' cramp. It must arise from the occupation in this case?—Yes, quite so.

4189. Then on the other hand a man may be engaged in clerical work at home. Do you think that will raise a difficulty with a person who has to say whether the disease arises from his occupation?—I call attention to that; the medical examiner should inquire closely into the character of the clerk's daily work, the number of hours spent daily with the pen, and the length of time during which his clerical occupation had been followed.

4190. And the length of time which he follows it at home. He may be a writer and keep books?—Yes; that must be closely inquired into.

4191. If you thought he did both, how would you say he got the disease?—That would be a matter for the court to decide.

4192. Those are difficulties that arise in practice, and have to be considered before deciding whether a new disease should be scheduled. It would be more difficult for a man who is in the habit of writing at night considerably, and writing also to some extent at the office, to show that his disease arose from the employment, would it not?—Yes.

4193. Do you know the view that the Post Office hold as to whether this is a disease that should be scheduled?—I do not.

4194. (*Sir Clifford Allbutt.*) I have not much to ask you unless it be to emphasise a few points. I think what may need emphasising is that this is not a slowly accumulating local strain on certain muscles acting over a very long time so much as in the individual rather a capricious disability which comes on, as I suggest you very properly say, without any constant relation to the amount of work performed?—Yes; it is personal to the individual.

4195. That although it is quite right to take into consideration what work the man has done, and the number of hours and so on, it is more a question of the individual liability?—Yes; the individual must be considered equally with the work.

4196. Another point is this, that we must not assume that a person could get out of this by using his left hand. He is rather lucky if he does. But it is so very apt to attack the left hand after the right hand in my experience?—Yes, I agree.

4197. And it may extend to the shoulder and other muscles?—Yes, it may extend to other movements.

4198. (*Judge Ruegg.*) It is very liable to attack the left hand?—Yes.

4199. (*Sir Clifford Allbutt.*) And to extend to larger groups of muscles?—Yes.

4200. (*Judge Ruegg.*) Of course if that is so, in many cases it may well happen that there is nothing for it except that the compensation should be paid for life?—That is so.

4201. (*Sir Clifford Allbutt.*) That is a point to make out. The next point is what I have already said, but I suggest to you the incipient stage is practically negligible?—Yes.

4202. If it exists at all, it is so short that it is scarcely worth considering?—Yes.

4203. What first happens is that a person feels an unnatural grip or jerk?—Yes.

4204. Then supposing you had, as in most cases you would have, the person's normal handwriting to go by, going back to previous books or whatever it may be, would not a fairly skilled person who is familiar with affections of the kind by comparison of the graphic records have a very good guide to diagnosis?—Yes, I agree.

4205. So that malingering would be difficult?—Yes.

4206. It would be very difficult for a man to imitate a writers' cramp style?—I think so; and if he were tested for say half an hour at a time, I think it would be very difficult for him to keep up any attempt at malingering for such a period.

4207. Then one goes on to the Morse matter. There the duration of these marks is actually measureable by the eye or otherwise?—Yes.

4208. Then I ask whether irregular durations would not be a very delicate test of telegraphist's work?—Yes; the irregularity of signalling is an important point.

4209. We have had it before us?—Yes, there is a definite allotment of space between each signal and each portion of a signal.

4210. Therefore it would reduce the diagnosis to something measureable?—Yes.

4211. Which is a great assistance, I need scarcely say. Going on to matters of diagnosis, will you look at this case:—E.J.K., a woman aged 40, and so on. She lost power. The arm would appear to fall dead. Pain and dull ache up the arm. Then sick leave for two months. Then she began to educate the left hand and she took eight months' leave. General neurasthenia, and disability extended to the left hand; is now using the right hand for writing, varied duties and uses the left hand a little. The writing has not deteriorated. Do you consider that was a case of writers' cramp?—Not a true one, but I put it in.

4212. You are quite right. I do not question that for a moment. It is a very instructive case?—Yes, but I do not consider it a true case.

4213. (*Judge Ruegg.*) It is just the sort of case that might be mistaken for one, is it not?—Yes, it is.

4214. Supposing that lady brought an action and she was not employed in the Post Office but employed by some ordinary firm, do you think that compensation would probably be awarded by a lawyer? Although you say it is not a real case of writers' cramp, would that not be one of the very cases that would be examined for writers' cramp where compensation would probably be given?—It is one of those cases which would doubtless be fought.

4215. (*Sir Clifford Allbutt.*) One more point. Have you ever seen non-progressive cases? I suggest to you that there are non-progressive cases?—Do you mean of writers' cramp or telegraphists' cramp?

4216–8. I am thinking of writers' cramp. I know nothing of telegraphists' cramp.

(*Judge Ruegg.*) Where the occupation is continued?

(*Sir Clifford Allbutt.*) Yes?—There is my own case.

4219. Perhaps you will tell us your own case shortly?—My nerve tone was lowered considerably after doing a certain amount of special work and there was a contributory cause. I used to have a bad style of penmanship. I used to hold my pen in rather a contracted form. Then for some time I had pain, and after this particular bit of work I have referred to I developed spasm. It dies away, but if I have a bad night's rest perhaps it will reproduce itself next morning, and, as I say, I always stick at the letter "c" in "secretary," and at the same time there will be a definite spasm and twitching of the finger and thumb muscles.

4220. It has not got appreciably worse?—No.

4221. I suggest those cases are not very uncommon. Of course, it is not for me to give evidence as a witness; but I think I may say conversationally that I have seen several cases. One was a solicitor whose hand was apt to grip, and he had to support it with the other. It is his right hand. He began with a little writers' cramp, but by just steadying his hand he managed to carry on his occupation until he was 80 years of age?—I agree, I have known such cases.

4222. Prognosis is not so easy as diagnosis, but of course in the majority of cases it is common?—Yes.

4223. (*Dr. Legge.*) Do you think that having to consider this matter of writers' cramp and to dwell on it so much also assisted in development?—In my case?

4224. Yes?—No, I do not think that.

4225. The reason I ask is, I was thinking if it were scheduled and compensation was to be paid in the ordinary way, the mere fact of the patient dwelling on the fact "Now I am going to get compensation" might be the best way of perpetuating the disease, and would destroy the chance of recovery largely; it would take away the stimulus to recover?—Yes; and for that reason if it were possible I should say there should be a yearly review of the case; that the case should be kept under observation, if he were compensated, and the compensation should be reviewed at the end of the year.

4226. (*Judge Ruegg.*) You are speaking of review rather from the point of view of your department. But we are speaking of it largely with regard to the outside public?—Yes. But in the case of the outside clerk, could he not be ordered to appear before the Referee at the end of 12 months?

4227. Do you mean every half-year or year to obtain a certificate from the certifying surgeon?—Yes.

4228. (*Judge Ruegg.*) Of course that might be valuable. If you take No. 16 of Schedule 1 it says any weekly payment may be reviewed either at the request of the employer or workman, and that such review may be ended, diminished or increased. That means coming before the courts. I do not think I understood Dr. Sinclair to say it should automatically end at the end of six months or 12 months unless the man was unable to get a fresh certificate from the certifying surgeon. It might be worth considering?—We act as certifying surgeons under the Act, and, as such, we review our cases at the end of 12 months, inquiring into the health of the subjects and into the money they may have earned in the interim from outside sources.

4229. (*Judge Ruegg.*) There are not many spheres that are open to a clerk who cannot write. He is generally a man of no great education, and there are not many places open to him, are there? At least I should have thought not.

(*Dr. Legge.*) Do you remember Dr. Grünbaum suggested they should go into some shop and become shop assistants.

4230. (*Judge Ruegg.*) I was going to ask you that. Sometimes it leads to absolute deformation of the hand, does it not?—No.

4231. I only know one case, but it certainly did in that case. His fingers are not exactly drawn up, but

they are in an extraordinarily cramped position; it it was not a normal hand?—I say in these cases there is no paralysis, that is, in these occupational cramps. Was your case absolutely diagnosed as true cramp?

4232. I do not know. He was a barrister who wrote regularly in court, and at last lost the use of his right hand, and learnt to write with the other. But you think if the man were suffering from writers' cramp past recovery, nothing would prevent him doing ordinary manual work?—I agree with that.

4233. Such as the work of a shop assistant?—Yes; similar to the case of telegraphists' cramp. The hand is perfectly normal although the man may be absolutely incapable of handling a key, or even shaving or holding a walking stick. I have seen that in an exaggerated case.

4234. He could serve at the counter?—Yes.

4235. And carry packages or goods?—Yes.

4236. (*Dr. Legge.*) With regard to the question of the modification that may be attached in scheduling a disease, I think you agree that a year would give a good chance for recovery if recovery were going to take place; and if recovery were not going to take place, then it should give time for the individual to consider some other employment altogether?—Yes, I think a year is a fair average time to be allowed.

4237. (*Sir Clifford Allbutt.*) Is there a fair prospect of a certain substantial percentage recovering at the end of the year, with rest?—In my opinion they may recover temporarily, but I think you cannot guarantee permanency if they return to their occupation.

(*Dr. Legge.*) Then obviously they ought not to return.

4238. (*Judge Ruegg.*) You speak about your examinations from time to time. That is largely a new examination if you suspect them of inclination towards this disease?—If they make complaint, or if their work is complained of.

4239. Perfectly irrespective of the fact whether they are or are not receiving compensation?—No; if they are receiving compensation their cases come up for review every twelve months.

4240. Supposing persons are not receiving compensation, or showing signs, or their work is complained of, they also are examined?—Certainly. I should say "I want to keep this person under observation," and I should see him regularly every three or six months.

4241. You are in a position to deal with it, and to use preventive means?—Yes. I see that difficulty with an outsider.

4242. That would never be done in the case of the ordinary clerk?—I take it an ordinary clerk must go on working and hoping to get better.

(*Judge Ruegg.*) Thank you.

The witness withdrew.

The Committee adjourned sine die.

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APPENDIX I.

REPORT*

OF AN INQUIRY ON

DUPUYTREN'S CONTRACTION

AS A DISEASE OF OCCUPATION, WITH SPECIAL REFERENCE TO ITS OCCURRENCE AMONG

MINDERS OF LACE MACHINES,

BY

EDGAR LEIGH COLLIS, M.B.,
H.M. Medical Inspector of Factories,

AND

ROBERT EATOCK,
H.M. Inspector of Factories.

HOME OFFICE,
4th June, 1912.

SIR,

Dr. COLLIS and Mr. Eatock have jointly made enquiry as to the occurrence of "Dupuytren's contraction" among lace workers, the conditions giving rise to it, and the precautionary measures which should be adopted.

Their report is submitted herewith.

I am,
Sir,
Your obedient Servant,
ARTHUR WHITELEGGE,
His Majesty's Chief Inspector of Factories.

The Right Honourable REGINALD MCKENNA, M.P.,
His Majesty's Principal Secretary of State
for the Home Department.

* Copies of this Report, containing illustrations of the machinery used and photographs of the hands of persons affected, can be purchased, either directly or through any Bookseller, from Wyman and Sons, Limited, Fetter Lane, E.C.; or H.M. Stationery Office (Scottish Branch), 23, Forth Street, Edinburgh; or E. Ponsonby, Limited, 116, Grafton Street, Dublin; or from the Agencies in the British Colonies and Dependencies, the United States of America, the Continent of Europe and Abroad of T. Fisher Unwin, London, W.C. *Price Sixpence.*

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FACTORY DEPARTMENT,
HOME OFFICE,
London, S.W.

SIR,

WE have the honour to present our report on Dupuytren's contraction as a disease of occupation with special reference to its occurrence among minders of lace machines.

INTRODUCTION.

The attention of the Factory Department was called during 1910 by Mr. Wardle, Secretary of the Amalgamated Society of Operative Lace Makers, to the fact that a number of the members of this Society suffered from the affection known as Dupuytren's contraction. He submitted information concerning forty-eight cases, and made an application for inclusion of this disease, when it affects lace workers, in the third schedule to the Workmen's Compensation Act, 1906.

The present report is the result of an inquiry carried out during the end of 1910 and the beginning of 1911 to ascertain (1) whether this disease is more prevalent among lace workers than among other operatives; and (2) what, if any, remedial measures can be adopted to prevent its occurrence. One hundred and eighty-two factories and tenement factories were visited in Beeston, Long Eaton, Nottingham, Sandiacre, Stapleford, and Southwell, and 1,360 operatives employed in the lace trade were examined at work.

DESCRIPTION OF THE CONDITION KNOWN AS DUPUYTREN'S CONTRACTION.

The disease in question causes permanent flexion, partial or complete, of one or more fingers. A Parisian surgeon, Dupuytren (born, 1777; died, 1835), gave special attention to the condition, and showed, by post-mortem dissection of a case, that primarily only the fascia of the palm of the hand is involved. From Dupuytren's teaching* it appears that the malady had been noted by other observers, such as M. Boyer and Astley Cooper, though no one had carefully studied the condition, or attempted its cure by operation before Dupuytren.

In more recent times Adams† and Arbuthnot Lane‡ have written on the subject, and the condition is thus described by the latter§ :—

> "the disease is almost entirely limited to the male sex, and rarely appears under the age of 25 years. It commences in the little finger,‖ which becomes flexed upon the palm, and gradually extends outwards to the other fingers and finally to the thumb. The amount of flexion may become so extreme as to render the hand useless. The disease is painless in its progress. . . This condition consists in what is apparently a cicatricial contraction and hypertrophy of the palmar fascia, of the superjacent skin, and sometimes also of the vaginal sheaths and palmaris longus tendon. In undergoing this change the fascia first becomes adherent to the skin in the position of the natural grooves."

CAUSATION.

Congenital malformation.—Dupuytren, when describing* twelve cases, mentions two in little girls aged 4, one in a young girl, one in a boy aged about 14, and one in an individual aged 20, who had been affected since infancy. In the records¶ of 90 hospital cases information is given of four congenital cases; and during this inquiry one case, aged 42, with both hands involved, was seen in which the condition was known to have been present in early youth.

Predisposition.—The notes of 8 of the 90 cases treated in London hospitals, showed that other members of the patient's family were similarly affected; in one instance the father, and a daughter aged 7; in a second his brother, aunt, and uncle; in a third his father and a brother who had been affected from birth; and in a fourth

* Leçons orales de Clinique Chirurgicale. Vol. 4. 12th edition Paris, 1839.
† Lancet. P. 838, June 9th, 1877.
‡ Guy's Hospital Reports. Vol. XLIII, 1886.
§ A System of Surgery, edited by F. Treves. P. 29. Cassell & Co., 1896.
‖ In the present inquiry the annularis or ring finger, rather than the minimus or little finger, has usually been the first affected.
¶ Records courteously placed at our disposal by the authorities of St. Bartholomew's Hospital, Guy's Hospital, and St. Thomas' Hospital relating to 90 cases who received in-patient treatment during the 10 or 12 years previous to 1910.

the grandfather of the patient, a girl, aged 14, affected from birth. During this inquiry a sufferer stated that his father, an uncle, and a brother, all lace makers, were also affected, but six other males in the family, occupied in other trades, were not. In another family the father, and three out of five sons, all seen at work lace-making, showed contraction of the palmar fascia.

Rheumatic and gouty diathesis.—In Dupuytren's opinion* the disease was caused by gout, rheumatism, external violence and inflammatory conditions, coupled with pressure from hard bodies held in the palm of the hand. Adams suggested† that it depended entirely upon constitutional, and not upon any local causes, such as the use of tools in various occupations. D'Arcy Power attributes‡ the condition to " such predisposing causes as gout and rheumatism, or to habits and occupations necessitating pressure in the palm and flexion of the fingers, as in digging." He also states it " is by no means uncommon in gouty and rheumatic gardeners as they become advanced in years." Sir Wm. Gowers says§ : " The familiar contraction of the palmar fascia seems to be the result of a peculiar form of fibrositis. It is usually painless and clearly due to habitual postural use of the hand. But it is seldom met with apart from a gouty diathesis." Luff‖ also considers the malady to be an occupational localised fibrositis, but he says : " It is frequently ascribed to gout, but according to my experience, the condition has no connexion with that disease. Certainly I have never seen any gouty deposits in the thickened tissues, nor is the affection common among gouty subjects."

The history of past illnesses suggested the presence of a rheumatic or gouty diathesis in 21 per cent. of the cases, aged 40 years and over, seen during the course of this inquiry; as compared with 12·4 per cent. among 400 tinplate workers, and 17·5 per cent. among 716 unaffected lace operatives of similar age; while for the hospital patients, aged 40 years and over, the records state such a diathesis was present in 13 cases (17·3 per cent.). These figures do not establish a definite correlation between the diathesis in question and the affliction. Moreover, during this inquiry an old man, aged 79, and his five sons were seen at work; in this family the father had both hands involved, and three of the sons, aged respectively 56, 54, and 47, each had one hand involved, but the only member of the family who complained of gout was unaffected—a man, aged 50. If gout is a predisposing cause, the one member of a family with such a predisposition to the condition could hardly have escaped.

Traumatism, (a) *Acute.*—Arbuthnot Lane states‖ : " It would seem in some cases to be started by a wound of the palm, and in other cases by the habitual pressure of some instrument or support." Six out of the 90 hospital cases had a definite history of strain or blow. In one case the injury which occurred 25 years before the onset of the contraction may have had no causal relation with it, in another case the injury occurred 14 years before, in another the injury was to the left hand, though the right hand was also affected, and in five others the malady followed immediately upon an injury, namely, a cut hand, a cut tendon, a crushed hand, a wound from a meat bone, and dislocation of the fingers. During this inquiry fourteen cases of permanent flexion of a single finger of one hand, caused by accident were seen; and in these cases there was no fascial contraction of the palm of the hand.

(b) *Chronic.*—With the exception of Adams, all the authorities quoted above have recognised the influence of chronic and localised pressure in producing Dupuytren's contraction, and their opinion is supported by Arlidge,¶ who says the condition is not very uncommon with carpenters and miners, " caused in the former by the manner in which they hold and work chisels and some other tools, and in the latter by the pressure and chafing of the end of the handle of the small and short ' picks ' used in dislodging coal." The influence of manual labour, with its associated constant use of the palm of the hand, is seen in the occupations of the 90 hospital cases (see Table I.). Of these only eleven were females, six of whom were under 20 years of age, while the remaining 79 were males over 20 years of age. The occupation of hospital patients, drawn from classes whose form of employment often varies, is frequently difficult to ascertain. Eleven were labourers whose exact employment

* Leçons orales de Clinique Chirurgicale. Vol. 4. 12th edition Paris, 1839.
† Lancet. P. 838, June 9th, 1877.
‡ Dangerous Trades, edited by T. Oliver. P. 233, 1902. John Murray.
§ British Medical Journal, January 16, 1904, p. 119.
‖ A System of Surgery, edited by F. Treves. P. 29. Cassell & Co., 1896.
¶ Diseases of Occupations. J. F. Arlidge. P. 553. Percival & Co., 1892.

is not stated, seven were clerical workers, in whom the cramped position of the hand in writing may have been a determining cause, and in two cases the occupation is not stated. Omitting these, there remain 59 cases. Of 41 of these, or 69·5 per cent., it is fairly certain that in their occupation their hands were exposed to chronic localised pressure—nine carpenters, eight bricklayers, six railway porters, four machinists, four carmen (possibly electric tramcar drivers who handle starting levers), three waterside labourers who handle oars and weights, two coachmen, in one of whom the reins are stated to have cut the palms of the hand, two bootmakers using awls, a timberman, a gardener, and a stonemason. In the remaining 18, or 30·5 per cent., the form of occupation does not suggest any special rough usage of the hands, though such may have occurred at some period of their working life—three post office employees, three bakers, two printers, a billposter, a hairdresser, a marine store dealer, a blacking maker, a horse keeper, a signal fitter, a painter, a hawker, a sugar boiler, and a messenger.

Dupuytren's contraction then may be

(1) congenital,
(2) caused by definite injury, or
(3) caused by chronic and localised pressure.

Lace Manufacture.

Lace is made from cotton, silk, &c., on a twist lace machine, so-called because the threads are twisted round one another, and hence in Nottingham and district the machine-minder is known as a "twist hand."

The lace fabric is composed of strong warp threads held together by finer bobbin threads. The warp threads are first wound, by special winding machines, on cylindrical warp beams or on spools which are then placed on suitable brackets or spindles under the lace machine; the threads are carried vertically through holes in thin steel guide bars to a roller above the working parts on which the finished work is wound. The bobbin threads are first wound, by bobbin winding machines, on thin circular brass bobbins, which are then placed in triangular-shaped frames known as "carriages." The bobbins and carriages, of which there may be six to an inch in the coarser-gauged machines, or 36, or even more, in the finer-gauged machines, are placed in the machine resting in curved grooves or combs which form the top of the "comb bar." When the machine is at work the warp guide bars, and with them the warp threads, are moved laterally by a jacquard machine or by wheels, while the bobbin threads are being simultaneously moved at right angles to, and through the warp threads by the to-and-fro movement of the carriages in the grooves of the comb bar.

In Nottingham and district the machines are worked 20 hours daily, viz., from 4 a.m. to midnight. There are two minders to each machine, each man working alone for two shifts of five hours with an interval of five hours.

Branches of the Lace Trade.

There are three distinct branches of the lace trade, viz., Lever's, curtain, and plain net.

*Lever's**.—The average male labour required to work a plant of 10 machines running full time would be 20 machine-minders (10 day and 10 night), one warper and beamer, two brass bobbin winders (more frequently females than males), 8 threaders, 1 bobbin presser, and 1 card puncher.

The Lever's machines (Plate 1), (with which may be considered the "go-through," a type of later design, and with slight differences of detail, but which for our purpose is precisely similar, and produces the same work), vary in width from about 126 inches to 260 inches. Running the full width of the machines and varying in weight directly as the width, there are catch bars and comb bars, which require to be turned out, or lifted, when repairing breakages to the threads, or replacing empty bobbins—the average number of times the catch bar is turned out, though difficult to estimate, is, taking into consideration all classes of goods, about 16 times an hour. The lever actuating the catch bar (*p*, Plate 1) is some 5 ft. to 5 ft. 6 ins. above the working platform. It is grasped in a back-handed manner (as one holds a sword in the position of a low guard), near the end, in order to gain leverage, and, since it has to be moved downwards through an arc of nearly a third of a circle,

* Named after the inventor of the machine used.

the end of the lever is pressed into the palm of the hand. The pull necessary to work these levers varies considerably, from 16 to 85 lbs., and may be exerted by either hand, according to the position of the operator at the moment. The lever handles vary in shape, though in the later machines, the D type (Plate 4) predominates.

The comb-bar levers (*q*, Plate 1) are placed 2 ft. 8 ins. or so above the platform, and are lifted upwards with the right hand; the pull necessary to work them varies from 30 to 130 lbs. In the later and wider machines an improved compound lever is fitted, which reduces the pull, so that it seldom exceeds 75 lbs. The comb bars are lifted practically as often as the catch bars are turned out.

There is also a starting hand-wheel (*r*, Plate 1) directly fixed on the front shaft, which requires to be worked by both hands every time the machine is stopped and started. A pull of 300 lbs. was found necessary to move the starting wheel on a modern 171-inch machine.

Curtain.—The average male labour required to work a plant of 10 machines running full time, would be 20 machine-minders, 1 warper, 2 brass bobbin winders (more frequently females than males), 6 threaders, 3 shop lads, 1 card puncher, 2 readers, 1 corrector, and 2 lads for changing and lacing.

The curtain machines (Plate 2) vary in width from about 144 inches to 468 inches. The catch bar is propped up by a lever, but never turned out as in the Lever's machine; this propping up is done on an average about 10 times an hour. The lever (*p.*, Plate 2) is fixed some 5 ft. to 6 ft. above the platform, and is pulled forward and downward through an angle of about 50 degrees by the right hand. The lever handles vary in shape (though D type predominates in the modern machines), and the pull necessary to actuate them on different machines was found to vary between 7 and 140 lbs. The latest machines have compound levers (Plate 5), by which the pull is so reduced as seldom to exceed 70 lbs. The comb bar in curtain machines is a fixture. The starting hand-wheel (*r.*, Plate 2) in a modern machine is generally at the front of, and at right angles to, the machine, and connected to the driving shaft through bevel wheels. A mechanical advantage is thus obtained, and the energy required to turn the machine reduced; but a further saving in energy would be gained by making the hand-wheel, which is clear of the rest of the machine, of greater diameter.

Plain Net.—The average male labour required to work a plant of 20 machines running full time, would be 20 machine-minders, 1 warper, 5 brass bobbin winders (males and females), 8 threaders, and 2 working foremen.

The plain net machines (Plate 3) vary in width from about 108 inches to 270 inches and over. There are no catch bars to these machines. The comb bar is lifted by the right hand, and the handles (*q.*, Plate 3) which vary in shape, are fixed some 4 ft. to 5 ft. above the platform. The pull necessary to actuate them on different machines was found to vary from 15 to 120 lbs. We estimate, taking into consideration the various classes of goods, and bearing in mind the fact that one man works two machines in this branch of the lace trade, that the comb bar would on an average be pulled up some 14 times an hour. Modern machines are fitted with compound levers, which reduce the pull to 50 to 80 lbs.

The starting hand-wheels (*r*, Plate 3) on these machines are similar to those on the curtain machines.

Supervision of Lace Machines.

The question of the energy to be expended by the operatives in working the levers and starting wheels of these machines has certainly not received that measure of attention at the hands of the machine builders and erectors that its importance demands, as is shown by the fact that several machine builders could not tell us what power was necessary, and by the great difference in, and the magnitude of, the pulls we found were required. A pronounced example of this occurred in the plain net branch in two sister machines (*i.e.*, machines of the same size, built by the same firm, and at the same time), where the pull to lift the comb bar on one machine was 70 lbs., while on the other it was 120 lbs.

The lubrication of the working parts, and the general care of the machines, leave much to be desired in factories on the tenement system, where the charge for power is included in the rental of the tenement. In a modern factory, where each machine was driven by a separate electric motor, careful tests were periodically made to see that each machine was running properly, and not absorbing more power than necessary.

The effect of lubrication on the pulls necessary to work the levers was demonstrated on one Lever's machine where the comb-bar cradle was noticed to be very dry; here the pull of 60 lbs. was, on the application of a little oil on the cradle only, immediately reduced to 55 lbs.

Bobbin Holders.

Although not within the scope of this inquiry, we have noted the entire absence of any means for carrying some bobbin holders for presses. These holders, when full, weigh about 70 lbs., and at present have to be lifted by the flat iron band, 3/32-inch thick, which forms the top of the skeleton frame. We suggest this band should be made of round iron, or else suitable handles should be provided.

Prevalence of Dupuytren's Contraction among Lace-Machine Minders ("Twist Hands") and its Relation to the Machine.

During our inquiry 139 cases of this disease have been seen among operatives in the lace trade; of these 14 definitely followed upon accidents, and therefore require no further consideration. Of the remainder, 85 were seen among 1,156 machine-minders examined at work and 5 among operatives engaged in other processes, and 35 others were brought to our notice by Mr. Wardle. The age and exact employment of the operatives examined, and the distribution of the affected cases is shown in Table 1, and comparison is made with 652 tinplate workers and 1,003 granite dressers.

For convenience of description the cases seen have been divided into four groups according to severity :—

(1) In which the palmar fascia only is involved;
(2) In which the palmar fascia is involved, and one or more digits are slightly flexed;
(3) In which the palmar fascia is involved, and one or more digits are semi-flexed; and
(4) In which the palmar fascia is involved, and one or more digits are totally flexed.

A case from each group is shown in the illustrations* (Plates 6 to 9) which have been placed at our disposal by Mr. Wardle. Of the cases seen, 61 belonged to group (1), 23 to group (2), 8 to group (3), and 28 to group (4).

Cases in groups (1) and (2) are seldom, if ever, affected in their earning capacity by the condition; those in group (3) may or may not be, according to the form of employment; while those in group (4) are usually affected, see Appendix I.

Every case in group (4) must at some time have passed through the stages represented by the other three groups, but the length of time a case takes to reach this stage varies considerably. Thus one man (Plate 6) said he first noticed the malady 20 years ago, and that it had advanced no further since; on the other hand, case 12 in Appendix I. first noticed his condition only three years before it became so advanced as to cause him to leave the trade.

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* *See* footnote at p. i.

TABLE 1.—Showing for Dupuytren's contraction (i) the age of cases, and (ii), as regards operatives in various trades, the number examined and the form of employment.

Age period.	Number of cases treated as In-patients in Three London Hospitals.		Number of Operatives																													
			Making Lace on																In other processes in the Lace trade.					Making Tinplates.					Dressing Granite.			
			Lever's Machines.					Curtain Machines.				Plain Net Machines.																				
			Examined.	Affected.				Examined.	Affected.			Examined.	Affected.				Examined.	Affected.				Examined.	Affected.				Examined.	Affected.			
	M.	F.		1.	2.	3.	4.		1.	2.	3.	4.		1.	2.	3.	4.		1.	2.	3.	4.		1.	2.	3.	4.		1.	2.	3.	4.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)
Under 20 ...	—	6	30	—	—	—	—	3	—	—	—	—	—	—	—	—	—	10	—	—	—	—	118	—	—	—	—	160	—	—	—	—
20– ...	1	—	24	—	—	—	—	18	—	—	—	—	23	—	—	—	—	33	—	—	—	—	81	—	—	—	—	196	—	—	—	—
25– ...	3	—	81	1	1	—	—	23	—	—	—	—	27	—	—	—	—	35	—	—	—	—	75	—	—	—	—	130	—	—	—	—
30– ...	2	—	58	—	—	—	—	25	1	—	—	—	34	—	—	—	—	27	—	—	—	—	69	—	—	—	—	125	1	—	—	—
35– ...	3	—	61	1	—	—	—	20	1	1	—	—	21	—	—	—	—	21	—	—	—	—	61	—	—	—	—	140	1	—	—	—
40– ...	13	1	80	2	1	—	—	34	3	—	—	1	23	1	—	—	—	26	—	—	—	—	75	—	—	—	—	115	—	—	—	—
45– ...	22	2	86	—	—	1	—	34	1	1	—	—	32	3	—	1	—	15	—	—	—	—	57	—	—	—	1	63	—	—	—	—
50– ...	17	—	86	7	3	—	2	38	3	—	—	1	23	2	1	—	—	11	1	—	—	—	55	—	—	—	—	37	—	—	—	—
55– ...	7	1	45	5	1	—	2	31	5	—	—	1	14	2	1	—	—	13	—	—	—	—	43	—	—	—	1	} 33	—	1	—	—
60 ...	6	—	35	5	2	1	—	13	—	2	1	—	11	1	—	—	—	7	2	—	—	—	10	—	—	—	—					
65 and over ..	5	1	34	6	3	—	2	10	—	1	1	—	9	1	1	1	—	6	2	—	—	—	8	—	—	—	1	4	—	—	—	—
All ages ...	79	11	690	27	11	2	6	249	14	5	2	3	217	10	3	2	—	204	5	—	—	—	652	—	—	—	3	1,003	2	1	—	—
Percentage ...	—	—	100	3·9	1·6	0·3	0·9	100	5·6	2·0	0·8	1·2	100	4·6	1·4	0·9	0·0	100	2·5	0·0	0·0	0·0	100	0·0	0·0	0·0	0·5	100	0·2	0·1	0·0	0·0

The number of times each digit and hand was involved in the cases seen is shown in Table 2, and compared with the hospital cases.

TABLE 2, showing for Dupuytren's contraction the number of times each digit and hand was involved in—(i) 90 cases treated as in-patients in three London Hospitals, and (ii) 120 cases working as operatives at lace machines.

Class.	Hand affected.	Digit.					Fascia only.	Number with	
		Pollex.	Index.	Medius.	Annularis.	Minimus.		One hand only affected.	Both hands affected.
(1.)	(2.)	(3.)	(4.)	(5.)	(6.)	(7.)	(8.)	(9.)	(10.)
In-patients in three London Hospitals.	Right ..	2	2	25	57	54	—	22	55
	Left ...	3	4	20	46	50	—	13	
Operatives working at lace machines.	Right...	1	2	23	41	27	60	47	63
	Left ...	2	2	17	29	25	35	10	

Among the lace operatives the annularis, or ring finger of the right hand, was affected more often than the minimus or little finger, and the right hand was proportionately more often concerned than the left; but in considering this table the more advanced condition of the hospital cases must be kept in mind. Moreover, Appendix I., which shows that out of 35 advanced cases one hand was alone involved in only five, demonstrates that in such cases both hands are likely to be affected.

As pointed out on pp. 6 and 7, lace machines, even of the same class, vary considerably in size, and among those of the same size great variety is found in the shape, position of, and the power required to move, the catch bar and comb-bar lever handles. Workers frequently said that they first noticed the condition of their hands immediately after, or while still working at heavy machines, and an effort was made to ascertain whether the causal influence was the weight of the lever handles by which these bars are actuated. The distribution of cases according to these points is given in Table 3.

The data of this table only refer to the machines at which the men were working at the time of the inquiry, but an operative working for the same employer does not always work at the same machine, and in 30, and in some cases 50, years' work an operative may have worked for several employers.

In Lever's machines both comb bars and catch bars are moveable, and are actuated about 16 times an hour. Among operatives found working at machines with a comb bar pull of 75 lbs. and over, 7·9 per cent. were affected, and among those working at machines with a comb bar pull of under 75 lbs., 2·8 per cent.; but no definite relation exists between the pull required to actuate the catch bar and the occurrence of cases.

In curtain machines the comb bar is fixed, and no relation can be established between the pull of the catch bar, which is exerted about 10 times an hour, and the occurrence of cases. We attribute this to the fact that on these machines even greater stress is thrown on the workers' hands, by the hand-wheels used for stopping and starting the machines. The power necessary to actuate these wheels could not be readily estimated, but it is greater than that found necessary to actuate the hand-wheels of Lever's machines, *i.e.*, 300 lbs. When the diameter of these wheels is small, and the grip narrow, the strain thrown on the hands is considerable.

In plain net machines the catch bar is fixed, but the comb bar is actuated about 14 times an hour. The power necessary to actuate the hand-wheels is rather less than is required for curtain machines, but more than for Lever's machines. Among operatives found working at machines with a comb bar pull of 75 lbs. and over, 8·6 per cent. were affected, and of those working at machines with a comb bar pull of under 75 lbs., 5·6 per cent. Of these cases, however, none had advanced as far as the fourth stage, and only two as far as the third.

Most cases were found working at machines with lever handles of the D type, (see Appendix II.). The majority of machines have lever handles of

TABLE 3 showing the pull required to actuate the levers of lace machines and the number of operatives examined at work on these machines.

Pull (in pounds) on handle required to actuate levers.	Number employed who actuate																			
	catch bar					comb bar					catch bar					comb bar				
	handles of Lever's machines.										handles of curtain machines.					handles of plain net machines.				
	Examined.	Affected.				Examined.	Affected.				Examined.	Affected.				Examined.	Affected.			
		1.	2.	3.	4.		1.	2.	3.	4.		1.	2.	3.	4.		1.	2.	3.	4.
(1.)	(2.)	(3.)	(4.)	(5.)	(6.)	(7.)	(8.)	(9.)	(10.)	(11.)	(12.)	(13.)	(14.)	(15.)	(16.)	(17.)	(18.)	(19.)	(20.)	(21.)
Under 10	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—
10–	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—
20–	72	4	1	—	—	—	—	—	—	—	36	3	1	—	1	7	1	—	—	—
30–	210	13	4	1	3	3	—	—	—	—	44	1	—	1	—	4	—	—	—	—
40–	142	4	3	—	—	7	—	—	—	—	74	5	2	1	1	24	1	—	—	—
50–	79	2	—	—	—	27	1	1	—	—	37	1	—	—	—	23	1	—	—	—
60–	109	—	—	—	—	138	2	—	1	—	38	3	1	—	—	66	4	—	—	—
75–	16	1	—	—	—	213	13	2	—	3	5	—	—	—	—	40	2	1	1	—
90–	—	—	—	—	—	110	1	2	1	1	—	—	—	—	—	26	—	1	—	—
100 and over	—	—	—	—	—	127	7	5	—	2	3	—	—	—	—	26	—	1	1	—
Not ascertained* ...	60	3	3	1	3	65	3	1	—	—	8	1	1	—	1	1	1	—	—	—
ALL HANDLES ...	690	27	11	2	6	690	27	11	2	6	249	14	5	2	3	217	10	3	2	—

* Under this heading Foremen and Employers are included, and men employed at machines which were not running at the time of our visit.

this type. Still, the percentage affected (13·0 of those aged 40 years and over) found working on these machines is high, though it is exceeded by that (13·7) found working at machines with lever handles of the B type. Only one case that had advanced beyond the first stage was seen among men found working at machines with lever handles of other shapes, but the number of such men examined was comparatively small, and we are not, therefore, justified in considering that these shapes are free from objection. The C type in particular appeared likely to cause localised pressure. We consider that the shape of the lever handles plays an important part in producing Dupuytren's contraction by concentrating the weight of the levers on a limited part of the palm of the hand.

Conclusions.

The following conclusions seem justified as the result of this inquiry :—

(1) Dupuytren's contraction is more than usually prevalent among lace-machine minders.

(2) This prevalence has a direct relation to (i) the frequency with which the levers and wheels of the machines are manipulated; and (ii) the power required to actuate these levers and wheels, and their size, shape, and position.

Preventive Measures.

We consider that

(1) Levers on all machines should be as long as practicable.

(2) Compound levers should be adopted wherever possible.

(3) Catch bar handles of Lever's machines should, in addition to being as long as practicable, have grips, which do not throw localised pressure on to the palm of the hand. Examples of grips which might be adopted are shown on Plate 4.

(4) Starting hand-wheels should be as large in diameter as possible, and have a rim of about $1\frac{3}{4}$-inch sectional diameter; and should, in all branches, have the mechanical advantage of the modern machines used in the curtain and plain net branches.

We have the honour to be,

Sir,

Your obedient Servants,

EDGAR L. COLLIS

ROBERT EATOCK.

H.M. Chief Inspector of Factories.

APPENDIX I.—Table showing for 35 advanced cases of Dupuytren's contraction, the condition of the hands and the effect on the working efficiency.

Name.	Age.	Branch of trade.	Length of employment, in years.	Part affected.										How long since first affected, in years.	Effect on working efficiency.
				Right hand					Left hand.						
				Pollex.	Index.	Medius.	Annularis.	Minimus.	Pollex.	Index.	Medius.	Annularis.	Minimus.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
J. K. (1) ...	56	Lever's	40	—	—	slightly flexed.	semiflexed	flexed	—	—	slightly flexed.	semiflexed	flexed	14 to 15	Earns five shillings a week less.
S. B. (2) ...	48	Lever's	31	—	fascial band.	fascial band.	fascial band.	semiflexed	—	—	fascia affected			10 to 12	None.
G. K. (3) ...	51	Lever's	30	—	—	—	flexed	—	—	—	—	flexed	flexed	8 to 9	None; but he could not work on certain machines.
W. S. (4) ...	54	Lever's	33	—	—	fascia affected			—	—	—	—	flexed	?	Very little.
H. M. (5) ...	54	Curtain. Plain net	31 3	—	—	—	flexed, now semiflexed.	flexed, now semiflexed.	—	—	—	semiflexed, now better.	flexed, now semiflexed.	4	Right hand operated on in 1907; left hand operated on in 1909. Earned five shillings a week less. Changed work, Condition recurring.
J. H. (6) ...	59	Curtain	41	—	—	—	—	fascial band.	—	—	—	—	flexed	11	None.
R. G. (7) ...	44	Curtain	22	—	—	—	flexed, now better.	flexed, amputated.	—	—	flexed, now better.	flexed, now better.	—	12, after working very heavy machines.	Operation—right minimus amputated.
—. D. (8) ...	60	Lever's	30	—	—	—	—	semiflexed	—	—	—	fascial band.	slightly flexed.	20	A slower worker.
H. T. (9) ...	59	Lever's	40	—	—	—	flexed	—	—	—	—	semiflexed	semiflexed	8	Five per cent. less.
T. S. (10) ...	69	Lever's	50	—	—	semiflexed	flexed	flexed	—	—	slightly flexed.	semiflexed	semiflexed	25	Left the trade two years ago on account of the hands.
G. S. (11) ...	70	Curtain	45	—	—	semiflexed	slightly flexed.	—	—	—	—	flexed	—	15	? Left the trade.
T. P. (12) ...	59	Lever's	14	—	—	—	semiflexed	flexed	—	—	slightly flexed.	slightly flexed.	flexed	3	Left the trade on account of the hands.
T. S. (13) ...	49	Curtain	31	—	—	—	—	—	—	—	slightly flexed.	flexed	flexed	7 to 8	Left the trade on account of the hand.
W. H. (14)	67	Lever's	35	—	—	fascia affected.	semiflexed	fascia affected.	—	—	—	fascia	affected.	2	None.
W. H. (15)	62	Lever's	44	—	—	—	flexed	slightly flexed.	—	—	slightly flexed.	—	—	11 to 12	Affects earnings.
A. R. (16) ...	65	Lever's	44	—	slightly flexed.	slightly flexed.	semiflexed	slightly flexed.	slightly flexed.	slightly flexed.	slightly flexed.	flexed	semiflexed	14 to 15, worked very heavy machines.	Left the trade 8 months ago on account of hands.

Name.	Age.	Branch of trade.	Length of employment, in years.	Part affected.										How long since first affected, in years.	Effect on working efficiency.
				Right hand.					Left hand.						
				Pollex.	Index.	Medius.	Annularis.	Minimus.	Pollex.	Index.	Medius.	Annularis.	Minimus.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
W. S. (17)	58	Lever's	44	—	—	—	—	slightly flexed.	—	—	—	slightly flexed.	semiflexed	7	Fifteen per cent. less.
J. H. (18)...	59	Curtain	41	—	—	—	—	fascial band.	—	—	—	—	flexed	11	Affects earnings.
G. K. (19)...	51	Lever's	30	—	—	—	flexed	semiflexed	—	—	—	—	flexed	8 to 9	Affects earnings.
J. K. (20)...	57	Lever's	40	—	—	slightly flexed.	flexed	semiflexed	—	—	slightly flexed.	flexed	flexed	14 to 15	Earns about five shillings a week less.
W. S. (21)	71	Curtain	40	—	—	flexed	semiflexed	flexed	—	—	—	slightly flexed.	flexed	22	Left the trade 20 years ago, not on account of hands.
J. L. (22) ...	56	Plain net	39	—	—	slightly flexed.	semiflexed	—	—	—	—	slightly flexed.	—	15	None.
R. B. (23)...	65	Curtain	40	—	—	slightly flexed.	semiflexed	slightly flexed.	—	—	slightly flexed.	flexed	flexed	15 to 16	Earns seven to eight shillings a week less.
W. S. (24)...	55	Lever's	35	—	—	slightly flexed.	—	flexed	—	—	—	—	—	10	Cannot say.
J. F. (25)...	65	Lever's; now a gardener.	20	—	—	semiflexed	flexed	semiflexed	—	—	slightly flexed.	semiflexed	—	20	Left the trade 30 years ago; got worse since.
J. F. (26)...	49	Lever's	30	—	—	—	flexed	—	—	—	—	—	—	10 to 12	Affects earnings.
W. B. (27)	72	Lever's	50	—	—	—	slightly flexed.	flexed	—	—	—	semiflexed	—	10 to 11	None.
A. G. (28)...	53	Curtain	35	—	—	semiflexed	flexed	—	—	—	—	—	—	10	Earned money as a clarionet player; cannot play now.
T. T. (29)...	67	Lever's	40	slightly flexed.	semiflexed	slightly flexed.	flexed	flexed	—	semiflexed	slightly flexed.	semiflexed	flexed	15 to 16	Earns five to six shillings a week less.
J. K. (30)...	59	Curtain	31	—	—	slightly flexed.	semiflexed	flexed	—	—	slightly flexed.	flexed	flexed	18	Left trade 9 years ago on account of hands and failing eyesight. Receives Union pay.
H. S. (31)...	54	Plain net	28	—	—	fascia affected			—	—	semiflexed	semiflexed	slightly flexed.	15	None.
A. C. (32)...	65	Lever's	45	—	—	fascial band.	semiflexed	—	—	—	fascia affected			?	None.
T. H. (33)...	59	Lever's	42	—	—	—	—	—	semiflexed	semiflexed	—	flexed	flexed	10	Affects earnings.
W. S. (34)	61	Lever's	42	—	—	slightly flexed.	semiflexed	flexed	—	—	—	—	—	6 to 7	Affects earnings.
A. A. (35)...	67	Curtain. Plain net	34 16	—	—	semiflexed	slightly flexed.	—	—	—	—	—	—	17	None.

APPENDIX II.—Showing for Dupuytren's contraction the age and number of lace-machine minders examined and the shape of the lever handles of the machines at which they were found employed.

Age period.	Number of Operatives employed on Machines with Lever Handles shaped																																			
	*Not ascertained.					A†					B†					C†					C_1†					D†					E†				
	Examined.	Affected.				Examined.	Affected.				Examined.	Affected.				Examined.	Affected.				Examined.	Affected.				Examined.	Affected.				Examined.	Affected.			
		1.	2.	3	4.		1.	2.	3.	4.		1.	2.	3.	4.		1.	2.	3.	4.		1.	2.	3.	4.		1.	2.	3.	4.		1.	2.	3.	4.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
Under 20 ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	1	—	—	—	—	30	—	—	—	—	—	—	—	—	—
20- ...	2	—	—	—	—	2	—	—	—	—	9	—	—	—	—	6	—	—	—	—	3	—	—	—	—	110	—	—	—	—	3	—	—	—	—
25- ...	—	—	—	—	—	2	—	—	—	—	7	—	—	—	—	5	—	—	—	—	2	—	—	—	—	108	1	1	—	—	7	—	—	—	—
30- ...	—	—	—	—	—	2	—	—	—	—	13	—	—	—	—	4	—	—	—	—	1	—	—	—	—	90	1	—	—	—	7	—	—	—	—
35- ...	2	1	—	—	—	2	1	—	—	—	7	—	—	—	—	6	—	—	—	—	1	—	—	—	—	84	—	—	—	—	—	—	—	—	—
40- ...	1	1	—	—	—	3	—	—	—	—	14	—	—	—	—	10	—	—	—	—	2	—	—	—	—	100	4	1	—	1	7	1	—	—	—
45- ...	2	—	—	—	—	4	—	—	—	—	11	1	1	1	—	10	—	—	—	—	5	—	—	—	—	118	3	—	1	2	2	—	—	—	—
50- ...	10	1	—	—	1	4	—	—	—	—	13	1	—	—	—	14	—	—	—	—	6	—	—	—	—	98	10	4	—	2	2	—	—	—	—
55- ...	1	—	—	—	1	2	—	—	—	—	9	1	—	—	—	9	—	—	—	—	3	—	—	—	—	65	10	2	—	2	1	1	—	—	—
60- ...	4	—	1	1	—	1	—	—	—	—	5	—	1	1	—	2	—	—	—	—	3	—	—	—	—	43	5	3	1	—	1	1	—	—	—
65 and over ...	3	1	2	—	—	1	—	—	—	—	6	—	—	1	—	4	1	—	—	—	3	—	—	—	1	36	5	3	—	1	—	—	—	—	—
All ages ...	25	4	3	1	2	23	1	—	—	—	94	3	2	3	—	72	1	—	—	—	30	—	—	—	1	882	39	14	2	6	30	3	—	—	—

* Under this heading employers and foremen are included.

† For explanation of these letters see Plate 4.

APPENDIX II.

Dupuytren's Contraction.

Correspondence with A. R. Anderson, Esq., Surgeon, Nottingham General Hospital, and W. M. Willis, Esq., Hon. Surgeon, Nottingham General Hospital.

Factory Department,
Home Office, London, S.W.,
22nd November 1910.

Dear Sir,

My attention has been drawn to the fact that Dupuytren's Contraction is more than usually prevalent among twist hands in the lace trade, and I am at present investigating the question. Would you be so good as to let me know whether you have come across cases in the course of your practice, either in private or at the hospital? It would be an assistance to me to have the hospital records of such cases for the last 10 years or so. Should the work of searching the records be heavy, I could undertake it, if permitted, on the occasion of my next visit to Nottingham.

The details, if available, which I desire, are (1) name; (2) sex; (3) age; (4) precise occupation; (5) length of occupation, if known; (6) previous illness; (7) extent of affection of (*a*) right hand, (*b*) left hand; and (8) how long affected. Information concerning persons affected employed outside the lace trade is also of value.

I am also writing to Dr. Anderson on this matter.

Yours faithfully,
Edgar Leigh Collis,
Medical Inspector of Factories.

W. M. Willis, Esq.

7, Regent Street, Nottingham.
24th November 1910.

Dear Sir,

In reply to your letter of the 22nd inst. concerning the matter of Dupuytren's Contraction and its prevalence amongst twist hands, I was unaware that this was a fact until your letter arrived.

It is a condition which I very rarely see, either at the hospital or in my private work.

Careful records of out-patients I am afraid are not kept, and I do not think in this way you could gain any information as to its prevalence.

In the Annual Report of the Hospital for 1909 I have failed to find any record of cases of this disease.

Do not you think that a visit to one or more lace factories and enquiries made there from amongst the twist hands themselves would give you some information on the question?

I am sorry, but I am afraid I can give you no help in this matter as I have no information concerning it.

Yours faithfully,
W. Morley Willis.

Letter to Dr. Anderson.

Sir,

2nd November 1912.

I am directed by Mr. Ellis Griffith to send you the enclosed paper showing the terms of reference to the Industrial Diseases Committee, and to say that at the recent meeting of the Committee, at Nottingham, a lace worker stated that he had been operated on by you for Dupuytren's Contraction. This disease among these workers has been engaging the special attention of the Committee, and Mr. Ellis Griffith would be glad to know whether you would be disposed to give evidence, both as to your knowledge of individual cases and as to the general question of scheduling the disease for the purposes of the Workmen's Compensation Act. If you are willing to give evidence will you kindly let me know and I will give you more detailed particulars as to what would be useful. The meeting of the Committee at which your evidence would be taken will be held in London at the end of the month.

I enclose for your information a copy of a report on the subject.

Yours sincerely,
Arthur Locke,
Secretary of the Committee.

A. R. Anderson, Esq., F.R.C.S.,
5, East Circus Street,
Nottingham.

5, East Circus Street, Nottingham,
9th November 1912.

Dear Sir,

I have received your letters concerning the prevalence of Dupuytren's Contraction in lace-makers for which I am obliged. I am afraid I could not conveniently attend the Committee Meeting on the 29th, as I expect to be in Cambridge on that day, but will briefly state what my experience has been in case this may be of any use to you.

I may say I hold the appointments here of Certifying Factory Surgeon, and Hon. Surgeon to the General Hospital, both of which I have held for about 20 years.

In my former capacity I see nothing of the disease as my duties are only concerned with persons under 16 years of age. Judging from what I see of the disease in hospital work, I am suprised to hear that it is prevalent among lace workers, as I see very little of it.

During the past five years there have not been more than a dozen cases treated, both in the In and Out-Patient Departments of the hospital, and only some of these occurred in lace makers. The hospital contains 230 beds, and treats over 10,000 Out-Patients annually, and I feel sure one would find at least an equal number of patients suffering from the complaint in any hospital of this size in the country. It is evident, therefore, that, if the disease is common here, those suffering from it have not applied at the hospital for relief.

I have conversed with my colleague, Mr. Willis, who is also a Certifying Surgeon and on the staff of the hospital, and he tells me his experience is the same as mine, and that he sees very little of the complaint.

If there is any further information I can give you, or any questions I can answer, I shall be glad to do so.

Yours very truly,
A. R. Anderson.

Arthur Locke, Esq.,
The Home Office.

APPENDIX III.

Depuytren's Contraction and Beat Hand.

Departmental Committee on Compensation for Industrial Diseases, 1907. *Extracts from the Report and Minutes of Evidence* [Cd. 3495-6].

"Beat Hand" (Subcutaneous Cellulitis of the Hand).—This is an acute inflammation of the subcutaneous tissues of the hand or palmar side of the fingers, the result of friction of the pick on the hand. There is inoculation with an infective poison, probably through an abrasion. The inflammatory process becomes suppurative, and the products, confined by the dense skin over the palm, track in directions where the resistance of the tissues is least, usually to the back of the hand, but sometimes along the tendon sheaths. Except in the rare event of the inflammation terminating in resolution, operative interference becomes imperative. Complete recovery is almost invariable, although a few instances were cited in which various slight deformities of the fingers or hand had resulted. *We are satisfied that to constitute "beat hand" the inflammation must be acute, a fact which distinguishes it from the chronic puckering of the skin known as Dupuytren's Contraction.*

The complaint is not limited to miners, but may occur from similar causes among workmen using a variety of tools other than the pick. It is among miners, however, that it is specially prevalent, and we consider that when it occurs among them, compensation should be payable, unless the employer can prove that it was contracted outside the employment, while in other trades the burden of proof may properly rest on the workman. (Report p. 21, Para 37.)

References in the Evidence.

Sir Clifford Allbutt asked Dr. Shufflebotham:—

2154. Is it (*i.e.*, "beat hand") of the same nature as the so-called Dupuytren's Contraction?—Yes.

Sir Clifford Allbutt asked Dr. Andrew Lees-Bell:—

5000. Is beat hand known as Dupuytren's Contraction?—No.

5001. What is the difference?—The difference is that Dupuytren's Contraction of the tendon is a *permanent contraction* of the tendon; the other is an *acute inflammation* due to the pressure of the soft tissues of the palm of the hand, or the palmar aspect of the fingers.

5002. That does not go on to contraction?—Not unless as the result of the destruction of tendon.

Sir Clifford Allbutt asked Dr. Moody:—

8497. Do you regard miners' beat hand as the same pathological process as that which is generally known as Dupuytren's Contraction?—I do.

8500. May I take it that, whatever you call it, it is a disease upon which you have tendered the evidence you have given; but that there is also another malady to which you have given the name of beat hand, which is identical with Dupuytren's Contraction?—Yes. When I say beat hand, I mean Dupuytren's Contraction.

8502–3. Do you know the view taken in Scotland. . . . that the name signifies only the acute inflammatory condition, and not the chronic Dupuytren's Contraction form?—No, I was not aware of that.

Dr. Legge asked Professor Murray:—

9103. Supposing it was Dupuytren's Contraction, do you think that should be regarded as beat hand and give rise to claims for compensation?—No, I should say not; I should say that would put it in a different classification; I should say the acute condition (*i.e.*, beat hand) might fairly be considered the result of the occupation; the other (*i.e.*, Dupuytren's Contraction) might be the result of disease.

Dr. Legge asked Dr. Greene:—

9263. Do you ever see any chronic contraction of the hands like Dupuytren's Contraction in miners?—I have seen one or two cases of Dupuytren's Contraction in miners.

9264. Would you call that beat hand?—No, I should not.

9265. Do you think that the process must be acute?—No, it is very chronic.

Sir Clifford Allbutt asked Dr. Leigh:—

10,063. Beat hand does not end in what is called Dupuytren's Contraction?—No, I have not seen that result.

APPENDIX IV.

Dupuytren's Contraction and Gouty Conditions.

Abstract of Clinical Lectures delivered at St. Bartholomew's Hospital by Sir James Paget, Bart., D.C.L., LL.D., F.R.S., Consulting Surgeon to the Hospital. (*British Medical Journal, May* 22, 1875.)

. . . . . .

Attention was next drawn to certain gouty conditions which affected especially the palmar fascia, and sometimes, in the same manner (though usually in a much less degree), the plantar. A number of old people were seen with their fingers drawn down to the palm, especially the little finger and the next, sometimes on one hand, sometimes on both; and, if they lived long enough, they might have all the fingers affected, though the fore-finger was usually very slightly involved. This condition was often characteristic of gout; but it must be clearly understood that, in a certain number of persons, it was entirely due to occupation. Any man who was in the habit of pursuing an occupation which involved constantly the grasp of anything, especially with the little and ring fingers, was very likely to get a thickening and subsequent contraction of the palmar fascia. He had been told that a very large proportion of the elder men occupied in wire-drawing and lock and key-making—in all of which they held pliers from hour to hour in their hands, pressing very hard upon the palmar fascia—were subject to this condition. Another class of men, gardeners, got it not unfrequently; and so did persons who used ill-made walking sticks, with plain knobs at the end, which pressed upon the palmar fascia. All those cases which depended upon occupation that involved repeated pressure upon the hand must be set aside; and so must all cases of scars in the palm following wounds or abscesses, together with those in which one or more of the flexor tendons, from whatever cause, drew down the fingers, and led to contraction. But separating the cases due to occupation, to injury, to deep-seated palmar abscesses, and to contraction of the tendons, there remained a considerable number of persons with contracted fingers; and when these contractions depended upon disease of the palmar fascia, they were almost always significant of a gouty constitution. The disease upon which they depended, let it be observed, was, in its first condition, a disease of the palmar fascia; but it involved always in its course the adjacent sheaths of tendons and the integuments. Here was a point of diagnosis. The tendons of the foot or the hand might be contracted to ever so great a degree, and the distortion consequent might be in proportion; but if the integuments over the contracted tendons were sound, it was not necessary to suspect gout. But in these cases of gouty inflammation, the integuments firmly adhered to the palmar fascia, and the fascia firmly adhered to the sheaths of the tendons beneath; this was gout generally, not of a texture alone, but of a place; it affected all the tissues alike.

. . . . . .

. . . . . .

APPENDIX V.

Cases of "Hook-Hand" found in Glass-Blowers in Holland.

Extract from the "Centraal Verslag der Arbeidsinspectie." Page 238.

In glass-works it frequently happens that the hands of glass-blowers, who, in the course of their work, continually handle the hot blowing tubes, become to a more or less degree "hook-shaped." The Chief Inspector of Labour in District No. 7 has made a photograph of a specimen of this "hooked-hand," a reproduction of which is given below. This photograph was taken with the hand in such a position, that the workman had stretched the bent fingers as much as possible. The owner of the hand here reproduced, ascribed the bending of the fingers to repeated callous formations in the hand, and ulcerating sores, with formation of scars on the inner-side of the hand and fingers. (The scars are clearly visible in the photograph.) These he ascribed to the work on the cup-furnaces on which he had formerly been employed; in these the blow-tubes had to be placed in rather deeply; and consequently became much hotter than is now the case with the trough furnaces. In this way callous formed inside the hand, which subsequently was burned and caused ulcerating sores. The formation of the latter was accelerated by the habit of dipping the hand in the water of the trough, which water was seldom, if ever, renewed, and was generally dirty. Another bad habit was the custom of treating the wounded hands with coal-tar. In this way, by the repeated formation of scars, the flexors (muscles) of the fingers contracted.

APPENDIX VI.

Table of Cases of Dupuytren's Contraction among others than Miners. Dr. Hume.

Occupation.	Right Hand.	Left Hand.	Both Hands.	No. of Men.
Gas stoker	—	—	1	1
Labourers	12	9	13	34
Cattle-drivers	1	1	—	2
Waterman	1	—	—	1
Machinemen	1	1	1	3
Clerks	2	1	1	4
Trimmer	—	1	—	1
Drillers	—	1	2	3
Anchorsmith	—	1	—	1
Boilermakers	—	—	4	4
Coachman	1	—	—	1
Plasterer	1	—	—	1
Joiners	1	1	2	4
Turner	1	—	—	1
Platers	1	—	1	2
Painter	1	—	—	1
Plumbers	2	—	—	2
Corker	1	—	—	1
Rigger	1	—	—	1
Bricklayers	1	1	—	2
Motorman	1	—	—	1
Sailors	5	—	3	8
Fitter	—	—	1	1
Farmer	1	—	—	1
Helper	—	1	—	1
Agent	1	—	—	1
Cartmen	—	—	2	2
Tailors	1	—	2	3
Cooper	1	—	—	1
Blacksmiths	2	1	1	4
Brewer	1	—	—	1
Navvy	1	—	—	1
Optician	1	—	—	1
Engineman	1	—	—	1
Shipyard labourer	1	—	—	1
Publican	1	—	—	1
Strikers	2	—	—	2
Forgemen	—	1	2	3
Shipwrights	2	—	1	3
Riveter	1	—	—	1
Papermaker	1	—	—	1
Bottlemaker	1	—	—	1
Bookbinder	—	1	—	1
Butler	1	—	—	1
Glassmaker	1	—	—	1
Excavator	—	—	1	1
Mechanic	—	—	1	1
Furnaceman	1	—	—	1
Moulder	1	—	—	1
(W—, S—.)	—	—	1	1
Total	57	21	40	118

APPENDIX VII.

Table of Cases of Dupuytren's Contraction among Miners. Dr. Hume.

No.	Age.	Duration.	Hand involved.	Causation.
1	60	10 years	Right hand	Pressure from stick.
2	?	Many years	" "	Cause unknown.
3	?	1 year	Left "	" "
4	?	6 years	Right "	" "
5	?	Many years	" "	" "
6	?	20 years	Right hand	Does not know cause, but does not blame work, not using pick at time.
7	75	Many years	" "	Blames work.
8	61	6 years	" "	" "
9	75	Many years	" "	" "
10	67	12 years	Both hands	" "
11	69	Many years	Right hand	" "
12	70	"	Both hands	" "
13	58	18 months	Left hand	" "
14	70	?	Both hands	Hard work.
15	49	?	Right hand	Cause unknown.
16	63	?	Left hand	Attributed to hanging on tub.
17	68	10 years	Both hands	Due to work.

Hands Involved.

Right Hand.	Left Hand.	Both Hands.
10	3	4

Relationship to Work.

Due to Work.	Not attributed to Work.
10	7

Average age of miners (12) = 65·4 years.

APPENDIX VIII.

Table of Cases of Dupuytren's Contraction among Private Individuals. Dr. Hume.

1. J. S. A merchant, many years' duration, cured by operation.
2. A. W. A merchant, many years, both hands, ring and little fingers.
3. J. C. S. Coalowner.
4. J. W. Farmer.
5. C. S. Veterinary Surgeon.
6. H. T. H. Gentleman.
7. T. H., uncle of H. T. H. Gentleman.
8. R. C. B. Lawyer.
9. R. A. P. Medical man.
10. H. E. F. Merchant.
11. A. P. Clergyman.
12. K. I. S. Schoolmaster.

APPENDIX IX.

Dupuytren's Contraction.

Occupation of Persons treated at the Royal Victoria Infirmary, Newcastle-on-Tyne. (Put in by Dr. Hume to enable incidence of Dupuytren's Contraction in infirmary cases to be compared with that among miners. *See* Question 3403).

Ordinary Labourers	98	Brought forward	297
Shipyard Labourers	67	Electricians	2
Machinemen	13	Coppersmiths	2
Miners	34	Sailors and Firemen	8
Hawkers	7	Platers	2
Cartmen	16	Confectioners	2
Watermen	4	Pattern Maker	1
Clerks	9	Weaver	1
Fitters	15	Strikers	5
Turners	4	Quarrymen	6
Carpenters	3	Blacksmiths	4
Joiners	5	Tailors	9
Bakers	4	Plasterers	3
Warehousemen	8	Slaters	2
Drillers	4	Brassfinishers	2
Rivetters	3	Groom	1
Shop Assistants	3		
Carried forward	297	Carried forward	347

Brought forward	347	Brought forward	369
Picture Framer	1	Shoemakers	5
Ironworkers	7	Boilermakers	8
Platelayers	3	Moulders	2
N.E.R. Porters	3	Painters	5
Glassmakers	2	Printer	1
Tobacco Spinner	1	Bricklayers	4
Mattress Maker	2	Engineers	3
Horsekeeper	1	Agents	3
Butcher	1	Caulker	1
Farmer	1		
Carried forward	369	Total	401

APPENDIX X.

Some References to Authorities on Dupuytren's Contraction.

Dupuytren. Leçons orales de Clinique Chirurgicale. Vol. 4. 12th edition. Paris, 1839.

Paget. Abstract of Clinical Lectures delivered at St. Bartholomew's Hospital by Sir James Paget, Bart., D.C.L., L.L.D., F.R.S., British Medical Journal, 22nd May 1875.

Adams:—
Lancet. P. 838, 9th June 1877.
Finger Contractions and Hammer Toe. London. 1892.

Haward. Orthopædic Surgery. 1881.

Noble Smith. Surgery of Deformities. 1882.

Ashhurst. International Encyclopedia of Surgery. 1883.

Arlidge. Diseases of Occupations. P. 553. 1892. Percival & Co.

Erichsen. Science and Art of Surgery. 1895.

Luff. A System of Surgery, edited by F. Treves. P. 29. 1896. Cassell & Co.

Anderson. Deformities of the Fingers and Toes, London, 1897.

Rose and Carless. 1898.

Pick. Surgery. 1899.

Arbuthnot Lane:—
Guy's Hospital Reports, Vol. XLIII. 1886.
A System of Surgery, edited by F. Treves. P. 29. Cassell & Co. 1896.

D'Arcy Power. Dangerous Trades, edited by T. Oliver. P. 233. 1902. John Murray.

Da Costa. Modern Surgery. 1903.

Gowers. Lumbago; its lessons and analogues. British Medical Journal. 16th January 1904. P. 119.

Garrod. Pads upon the Finger-joints and their clinical relationships. British Medical Journal. 2nd July 1904. P. 8.

Chance. Bodily Deformities. 1905.

Keen. Surgery. W. B. Saunders & Co., 1907.

"Dupuytren's Contraction." Med. Pres. and Circ., Lond., 1912, n.s. lxxxix., 674.

Collis and Eatock. Report of an Inquiry on Dupuytren's Contraction, with special reference to Minders of Lace Machines. Home Office, 1912. (*See* Appx. I. above.)

Duckworth. Treatise on Gout.

As to Beat Hand and Dupuytren's Contraction; Departmental Committee on Compensation for Industrial Diseases. 1907. First Report, p. 21; para. 37 (Cd. 3495) and Minutes of Evidence (2154: 5000–2 and 8497–8503: 9103: 9263–5: 10063) (Cd. 3496). (*See* Appx. III. above.)

APPENDIX XI.

Copy of Circular Letter addressed by the Committee to certain OPHTHALMIC SPECIALIST MEDICAL REFEREES *and others with regard to* (1) *Clonic Spasm of the Eyelids, and* (2) *the question of the way in which Nystagmus should be scheduled.*

Home Office, Whitehall, S.W.,
February 1913.

SIR,

I AM directed by Mr. Ellis Griffith to send you the enclosed copy of the warrant appointing the Industrial Diseases Committee to consider, *inter alia*, whether clonic spasm of the eyelids, apart from nystagmus, can properly be added to the list of diseases in the Third Schedule to the Workmen's Compensation Act, 1906, and to say that the Committee would be glad to have the advantage of learning your views and experience with regard to this matter.

It may be useful to explain that the evidence given before the Committee goes to prove that clonic spasm is not a separate disease but that, in certain cases where men are suffering from the disease generally known as miners' nystagmus, clonic spasm of the eyelids may be an objective symptom of that disease. The Committee gather that the presence or absence of clonic spasm is often disregarded in diagnosing cases of miners' nystagmus, the search for objective symptoms being principally directed, or even confined, to tests for the objective symptom, itself known as "nystagmus," which consists in oscillation of the eyeballs, and said by some witnesses to be invariably present. It is suggested that this method of diagnosis may result in the exclusion of certain genuine cases of miners' nystagmus, either (as some witnesses suggest) because the symptom nystagmus is not necessarily always present in cases of this disease or (as other witnesses say) because all but the most skilled observers may in certain circumstances be unable to detect it. While, therefore, no case is yet made out for scheduling clonic spasm of the eyelids as being in itself an industrial disease, the Committee have to consider whether there is not some ground for recommending either (1) that the attention of certifying surgeons and medical referees should be drawn to the fact that clonic spasm of the eyelids may be an objective symptom of miners' nystagmus, or (2) that the form in which nystagmus is at present scheduled should be amended. The schedule at present reads:

Description of Disease.	Description of Process.
Nystagmus.	Mining.

Section 8 (2) of the Act reads thus—

> "If the workman at or immediately before the date of the disablement or suspension was employed in any process mentioned in the second column of the Third Schedule to this Act, and the disease contracted is the disease in the first column of that schedule set opposite the description of the process, the disease, except where the certifying surgeon certifies that in his opinion the disease was not due to the nature of the employment, shall be deemed to have been due to the nature of that employment, unless the employer proves the contrary."

It has been suggested to the Committee that after "nystagmus" there should appear a definition of the disease, so as to imply that the presence of the symptom nystagmus (oscillation of the eyeballs) should not by itself be held to be a final and conclusive test of the presence or absence of the disease. One suggested definition is:

> Miners' nystagmus:—The name of a group of symptoms most frequent among miners, of which oscillation of the eyeballs is the commonest objective sign.

The object of using the phrase "miners' nystagmus" is to emphasise the fact that the condition scheduled is the whole disease and not merely one objective symptom; but it has been pointed out that the effect would be to take away the legal presumption, set up by the present form of schedule, that nystagmus (even if only a symptom of a nervous disorder such as disseminated sclerosis) is, when contracted by a person engaged in mining, an industrial disease due to the nature of the employment. This effect might be desirable, but it is contended that another result would follow—that the use of the phrase "miners' nystagmus" would have the effect of restricting all possibility of claims for nystagmus as an industrial disease to *miners*. In dealing with this objection it will be necessary for the Committee to consider—

(*a*) Whether nystagmus as an occupational disease (as distinguished from a symptom of a nervous disorder) is confined to *miners*.

(*b*) If it is not so confined, whether the phrase "miners' nystagmus" is so well established as the name of an industrial disease that it can with safety and propriety be applied to such disease even when it occurs among workers other than miners.

The Committee would be glad if you would favour them with a statement on the points set out in the annexed list, and subsequently attend, if necessary, to give evidence on any points on which the Committee may desire to be further informed.*

I am, Sir,
Your obedient servant,
(Signed) ARTHUR LOCKE,
Secretary, Industrial Diseases Committee.

APPENDIX XII.

Answers given by Ophthalmic Specialist Medical Referees and others to questions concerning Clonic Spasm of the Eyelids and the Scheduling of Miners' Nystagmus.

1. Name. 2. Qualifications and extent of practice and experience in ophthalmic cases. 3. The approximate number of cases, seen annually, of the industrial disease generally known as miners' nystagmus (excluding cases of nystagmus as a symptom or sequela of some nervous disorder).

F. P. S. CRESSWELL; 14 years' practice as an ophthalmic surgeon, both in private and as Ophthalmic Surgeon to King Edward VII. Hospital, Cardiff; Consulting Surgeon to the Royal Hamadryad Hospital and Merthyr General Hospital; Ophthalmic Specialist Medical Referee for S. Wales and Monmouth. Roughly speaking, about three or four cases a week, *i.e.*, 150–200 cases a year.

J. COURT, L.R.C.P. Lond., M.R.C.S. Eng.; 45 years' experience amongst coal miners; Medical Referee in Circuit 19. As Factory Surgeon, 9 or 10 cases a year requiring treatment.

H. H. FOLKER, M.R.C.S., Eng., L.R.C.P. Lond.; Hon. Ophthalmic Surgeon North-Stafford Infirmary and Eye Hospital (21 years); Ophthalmic Specialist Medical Referee for Circuit 26. Practice, ophthalmic surgery. Forty to 50 cases per annum.

S. MCMURRAY; Bachelor of Medicine and Surgery of the Royal University of Ireland; Fellow of the Royal College of Surgeons, Edinburgh; late Resident Surgeon and Resident Surgical Officer at the Birmingham and Midland Eye Hospital; since October 1910 practises in Stoke-on-Trent as Ophthalmic Surgeon; Honorary Ophthalmic Surgeon to the Longton Accident Hospital. In the past two years 186 cases of the disease known as miners' nystagmus.

ARCHIBALD STANLEY PERCIVAL; M.B., B.C., Camb. M.R.C.S. Eng.; Eye Specialist for last 22 years; Senior Surgeon North Durham Eye Institution; Ophthalmic Specialist Medical Referee in Circuits Nos. 1 and 2. Forty new cases of coal miners' nystagmus a year.

H. SECKER WALKER; F.R.C.S. Eng., M.Sc. Leeds, L.R.C.P. Lond.; Ophthalmic Surgeon Leeds General Infirmary since 1890; Lecturer in Ophthalmology Yorkshire College and Leeds University since 1894; private practice as Ophthalmic Surgeon since 1890; Ophthalmic Specialist Medical Referee for Circuit 14. Probably from 100 to 150 cases per annum.

STANLEY RISELEY; M.D. C.M. 22 years, 15 as Ophthalmic Surgeon to Sheffield Royal Hospital; Ophthalmic Specialist Medical Referee for Circuits 13 and 18. Over 100 cases of miners' nystagmus seen annually.

* In view of the full answers given no further witnesses were called after the issue of this circular.

4. Does miners' nystagmus occur only among miners or also among other workers?

I have only seen it among miners, *i.e.*, coal miners. *Cresswell.*

Only among miners. *Court.*

I have never seen (industrial) nystagmus in any people other than miners. *Folker.*

I have never seen a case of the disease occurring in any but an underground worker. Of the 186 cases seen by me 179 were colliers, 3 were timbermen (repairing roofs, &c.), 1 was a roadman, 3 had varied so much in occupation that it was not possible to say definitely at what work the symptoms developed. *McMurray.*

Rarely amongst other workers. Has been found in compositors, ceiling paperers. I found it once in case of accountant whose business was to add up very long and vertical columns of figures. *Percival.*

I should say extremely rarely among other workers. Some years ago I saw a ledger clerk with miners' nystagmus. He had not been a miner. *Secker Walker.*

Only amongst miners. *Stanley Riseley.*

5. Is clonic spasm of the eyelids found in cases of miners' nystagmus?

Yes, frequently. *Cresswell.*

Yes. *Court; Folker.*

I found clonic spasm of the eyelids present in 28 of my 186 cases. In seven of these I found it to be the most troublesome symptom in the early stages of the disease and the first to disappear under proper treatment. In other cases I found that the spasm occurred at the most unexpected times when apparently the disease was progressing satisfactorily and the gravity of the symptoms disappearing. In these cases I consider that it was excited by some intercurrent irritation (reduction of the general health, using the eyes for close work without the help of glasses to correct astigmatism, &c.). In other cases (indeed the most numerous) the spasm occurred when the disease had almost disappeared, but in these cases again it was generally possible to find an exciting cause. *McMurray.*

Sometimes. *Percival.*

Yes, but in my experience not very frequently and rarely severe. *Secker Walker.*

Certainly. *Stanley Riseley.*

6. Is clonic spasm of the eyelids found in cases of other diseases?

No. *Cresswell.* I believe not. *Secker Walker.*

Yes. *Court; Percival; Stanley Riseley.*

I have met somewhat similar conditions in children, with congenital fundus disease. *Folker.*

Clonic spasm is found in other diseases, I have found it in the following:—Convulsive Tic; Hysteria; Various conditions of the eyes and eyelids which are accompanied by photophobia. *McMurray.*

7. When found in cases of miners' nystagmus is such spasm a symptom, an associated condition *or* a sequela.

A sequela or late symptom. *Cresswell.*

An associated condition, not a sequela. *Court.*

I am inclined to look upon the condition more as an associated condition than a symptom *per se*. *Folker.*

When clonic spasm of the eyelids is found in miners' nystagmus I consider it to be a symptom of the disease. Although I have found it in only about 15 per cent. of my cases, still I am convinced that it occurs at one time or another in the large majority of cases. My reasons for this statement are 1st, I have found it unexpectedly at every stage of the disease; 2nd, from the patient's history in many cases I gather that it has appeared at one time and disappeared at another. *McMurray.*

I should regard it either as an associated condition or an occasional sequela. *Percival.*

I should consider it an associated condition. *Secker Walker.*

A symptom and associated condition. *Stanley Riseley.*

8. Is such spasm accompanied by oscillation of the eyeballs?

Not always; the oscillations may have ceased, and the spasm still remain. *Cresswell.*

Yes. *Court.*

Yes, as a general rule, but oscillation of the eyeballs may be absent, in which case I think the spasm is compensatory. *Folker.*

In all cases seen by me clonic spasm when present was accompanied by oscillations of the eyeballs. In a number the oscillations were not made apparent until the patient had undergone considerable exertion, and I feel certain that unless the examination had been searching the oscillations would have been overlooked. I have been in the habit of advising my hospital patients to come to me when any unusual symptom developed. Four cases returned to me (less than a week after having been seen) showing clonic spasm of the eyelids which had developed or become worse since the previous examination. In each of these cases the oscillations were more marked and the giddiness more troublesome since the onset or increase of the clonic spasm. *McMurray.*

Have never seen nystagmus and the clonic spasm simultaneously. Sometimes, on fixing the lids with the fingers nystagmus is seen. *Percival.*

In the majority of cases. *Secker Walker.*

It varies. *Stanley Riseley.*

9. Would careful examination with an ophthalmoscope, in a darkened room, under conditions resembling those of a miner's working life, reveal oscillation of the eyeballs—
(*a*) as a rule;
(*b*) invariably?

(*a*) Yes, in the majority of cases.
(*b*) No. *Cresswell.*

(*a*), (*b*) I do not know. *Court.*

(*a*), (*b*) I should say if true nystagmus existed the oscillation would invariably be revealed under these conditions; in fact it is the only sure means of ascertaining the true state of affairs. *Folker.*

I consider that careful examination in a darkened room will reveal oscillations of the eyeballs invariably in those cases suffering from true clonic spasm, provided that the examination is carried out under conditions approaching as nearly as possible to those of the coal pit. My method of examining those cases in whom clonic spasm is present but in whom oscillations of the eyeballs are not readily seen is—the patient takes up the position and performs the acts usually carried out by him in the pit. After working thus for 15 minutes a light is thrown into his eyes. In this way I have never failed to discover oscillations of the eyeballs in those who really have clonic spasm or other true symptoms of the disease. Still I admit the great difficulty of detecting faint oscillations of the eyeballs, and to my knowledge many cases have been overlooked either by the inexperience or the carelessness of the examiner. *McMurray.*

(*a*) Yes.
(*b*) No.

Ophthalmoscope usually only shows a nystagmus that is obvious without it. It is often necessary to put patient in "hewing" (a stooping) position with eyes directed obliquely upwards. *Percival.*

(*a*), (*b*) In doubtful cases I have always used the ophthalmoscope. As a rule it will be found, with several exceptions. *Secker Walker.*

(*a*), (*b*) Yes, as a rule. *Stanley Riseley.*

10. Do you know any cases of miners' nystagmus in which oscillation of the eyeballs is sometimes present and sometimes absent?

Yes. I see a great many cases. In some there is no oscillation when the patients are calm or quiet, but directly they get hurried or nervous, or are put to exertion, the oscillations appear. A stooping position often develops the oscillations. *Cresswell.*

Never saw a case. *Court.*

Yes, especially in those cases which are approaching convalescence. I have known cases to be quite free for some weeks and then return, without returning to underground work, but I must admit that they are rare. *Folker.*

There are cases (especially as the disease disappears) in which oscillations of the eyeballs are sometimes present and sometimes absent. I hold that in a patient recovering from miners' nystagmus the prominence or indeed the presence or absence of oscillations depends upon the general health and the continuance of proper treatment. But I hold that in all cases of the disease oscillations of the eyeballs can be revealed if sufficient pains are taken at the examination (I recently examined a man for two hours before nystagmus was revealed). *McMurray.*

Certainly. The device just mentioned (*i.e.*, in answer to question 9) is often necessary to elicit nystagmus. *Percival.*

In the great majority of cases in this district of Yorkshire oscillation is not always present. *Secker Walker.*

Yes. *Stanley Riseley.*

11. If so, would it be proper to require that when examination gives a negative result it should be renewed at intervals over a period?

Yes. *Cresswell.*

Court and *McMurray*, see answers to 10.

Certainly. If every other symptom could be excluded at the time of examination. *Folker.*

Yes, in cases which present other signs and symptoms of the condition, such as tremor of back of neck, tremor of extended hands, nightblindness, &c. *Percival.*

Yes, a second or third examination might be required. *Secker Walker.*

Not necessarily. *Stanley Riseley.*

12. In a case where oscillation of the eyeballs is absent (either altogether, or at certain times) may clonic spasm be regarded as evidence of miners' nystagmus—
(i) when found *alone;*
(ii) when found associated with other but *subjective* symptoms of miners' nystagmus?

(i) Yes. (ii) Yes, still more so. *Cresswell.*

(i) No. (ii) No. *Court; Stanley Riseley.*

(i), (ii) If there is distinct evidence of oscillation having been present then I contend clonic spasm alone or associated with other symptoms should be regarded as evidence of miners' nystagmus. *Folker.*

(i), (ii) In a case where oscillations of the eyeballs are absent can clonic spasm be regarded as evidence of miners' nystagmus? I have stated above that I consider it possible to find oscillations of the eyeballs in all cases where clonic spasm is present. I do not consider that clonic spasm exists as a disease apart from miners' nystagmus. If clonic spasm associated with other symptoms of the disease were found apart from oscillations of the eyeballs, I hold that this is strong evidence of the presence of miners' nystagmus, and that probably a further and more extended examination would reveal oscillations of the eyeballs. *McMurray.*

(i) Personally I do not think so. I believe that all cases of genuine "clonic spasm" will be associated with the above-described tremors, or with a nystagmus that will be revealed on fixing the upper lids with the surgeon's fingers.

(ii) If complaints be only made of subjective symptoms, such as those of nightblindness, giddiness, dancing of lights (without any nystagmus being found), and in the absence of any tremors, I should not regard clonic spasm as evidence of coalminers' nystagmus. If, however, the clonic spasm were definitely rhythmical for at least five minutes, and if one *knew* that he had previously suffered from genuine nystagmus, I should regard it as a sequela. *Percival.*

No, clonic spasm is so easily brought about at will. I have many times seen it come on when a miner has been trying to show nystagmus. *Secker Walker.*

In my opinion, clonic spasm of the lids is not likely to occur with total absence of oscillation of the eyeballs and only occurs in bad cases of miners' nystagmus. *Stanley Riseley.*

13. If the answer to either of these questions (12 (i) and (ii)) is in the affirmative, is the condition thus disclosed liable to incapacitate a miner for work—

(*a*) altogether;

(*b*) below ground?

(*a*) No, can often do light work on the surface; (*b*) Yes. *Cresswell.*

(*a*), (*b*) *See* answer to 12 above. *Court.*

(*a*), (*b*) In the severe forms a man is totally incapacitated to my mind, but I always advise every case (slight or severe) to give up underground work entirely. *Folker.*

(*a*), (*b*) I consider that clonic spasm associated with other subjective symptoms would incapacitate a miner from work underground for so long as the clonic spasm lasted. In fact, clonic spasm, being a symptom of the disease, shows by its presence that the disease has not disappeared. *McMurray.*

(*a*), (*b*) It may incapacitate him from work below ground. *Percival.*

I have seen no cases of clonic spasm unaccompanied by oscillation of the eyes sufficiently severe to prevent a man working either above or below ground. *Secker Walker.*

See answer to 12 above. *Stanley Riseley.*

14. Would such a condition, when it comes at the end of an incapacitating attack of miners' nystagmus, lead you to order the postponement of resumption of underground work? If so, for how long?

Yes. Until the spasm stopped. I consider that once a person has had nystagmus he is sure to develop it again sooner or later if he goes back to work underground. *Cresswell.*

No. *Court.*

Yes, for all time. *Folker.*

I consider that clonic spasm associated with other symptoms would incapacitate a miner from work underground for so long as the clonic spasm lasted. In fact clonic spasm, being a symptom of the disease, shows by its presence that the disease has not disappeared. *McMurray.*

Yes. Certainly, as long as there is clonic spasm. I should advise him to avoid underground work altogether if possible. *Percival.*

Yes, I think it would if severe. *Secker Walker.*

See answer to 12 above. *Stanley Riseley.*

15. In diagnosing a case of miners' nystagmus where the objective conditions would not alone make out a case, may a certifying surgeon or medical referee properly take into account the *history* of the case?

Yes, he should. One frequently sees cases with no nystagmus nor spasm present, but where one feels convinced from the history that he has had the disease; and one may also have the evidence of his medical man to state that he had definite symptoms three or four weeks previously. *Cresswell.*

No. *Court; Stanley Riseley.*

Yes, in many cases it is the only ground one has to work on. *Folker.*

I consider that the medical referee or certifying surgeon is not justified in diagnosing a case of miners' nystagmus from the history alone, as, in all cases of the disease, one at least of the objective signs can be found if proper pains be taken in the examination. *McMurray.*

He may take into account the history if corroborated by other evidence, or if other statements of the patient have been found trustworthy. *Percival.*

Yes, but I prefer a re-examination. *Secker Walker.*

16. So long as the disease is scheduled merely as nystagmus, do you consider there is risk that certifying surgeons or medical referees will refuse certificates of disablement in cases of miners' nystagmus simply because the objective symptom "nystagmus" is absent or difficult to detect?

Yes, they do refuse. *Cresswell.*

If there are no objective symptoms of nystagmus the case ought not to be certified. *Court.*

I do not think the disease, whether scheduled "miners' nystagmus" or simply "nystagmus," makes much difference, though personally I prefer the former. Possibly certifying surgeons may be apt to rely on oscillation only, I think, but the difficulty could be overcome by referring to spasm specifically in the instructions to certifying surgeons and altering the schedule to read "miners' nystagmus." *Folker.*

I consider that so long as the disease is scheduled merely as nystagmus, certifying surgeons or medical referees might refuse certificates of disablement in cases of miners' nystagmus because the objective symptom of nystagmus is difficult or impossible to detect. *McMurray.*

Possibly. *Percival.*

Yes, I think so, and rightly except in rare cases, the oscillation being by far the most important symptom. *Secker Walker.*

No. *Stanley Riseley.*

17. If so, would you suggest the alteration of the schedule so as

(i) to read "miners' nystagmus";

(ii) to refer specifically to clonic spasm—

as a disease,

as a symptom;

(iii) to refer generally to the symptoms of miners' nystagmus?

To read (i) miners' nystagmus (as the name of a group of symptoms of which oscillation is the commonest sign). *Cresswell.*

To read miners' nystagmus and to refer specifically to chronic spasm as a symptom. *Court.*

I favour (iii) to be inserted in instructions as stated above in answer 16. *Folker.*

I have long considered it a grave mistake to call the disease by the name of a symptom—no matter how important. I suggest that the schedule be altered to refer generally to the symptoms of the disease known as miners' nystagmus, and I suggest that a more comprehensive title should be employed, such as coal-workers' neurasthenia. *McMurray.*

I prefer the name "coal miners' nystagmus," as other miners do not suffer from the affection. The nystagmus is most frequently "rotating," the eye rotating apparently clockwise and counter clockwise through an arc of about 45 or so. This is characteristic of coal miners' nystagmus. A less common

form is the oscillatory form, which is usually seen in disseminated sclerosis and other nervous diseases. *Percival.*

It might better refer generally to symptoms of miners' nystagmus so as to include exceptional cases. *Secker Walker.*

I do not see that anything is to be gained in altering the schedule, as "nystagmus" or "miners' nystagmus" includes oscillation of the eyes, spasms of muscles, &c. *Stanley Riseley.*

18. Can clonic spasm be simulated?

Yes, perhaps, but not for long. Simulated spasm can generally be easily detected—especially by distracting the patient's attention. *Cresswell.*

Certainly, and when there are no objective signs, it no doubt is simulated. *Court.*

The true spasm cannot be simulated easily, though it is quite possible if a man was very observant and had a typical case to imitate. I could do so myself, but it would not be easy for a layman. *Folker.*

Clonic spasm can be, and often is, simulated. I consider that true clonic spasm is shown by its—

1. Character;
2. Increase during exertion;
3. Regularity during observation;
4. Lack of obvious mental effort required to keep it up. *McMurray.*

Yes. With regard to the simulation of clonic spasm I think detection is easy. If the clonic spasm be genuine, the movement is rhythmical and the period is constant. If simulated, there will be, say 10 clonic spasms in the first five seconds, and on noting them five minutes later there will perhaps be only three clonic spasms in five seconds. As nervousness may increase the rapidity of the clonic spasm, this is not absolutely conclusive, although very suggestive of malingering. The sign of tremors above described, especially that of tremors in the back of the neck, is very good evidence of the disease. The tremors are too rapid and too fine to be simulated. *Percival.*

Yes, easily during periods of examination. *Secker Walker.*

Yes, in a way. *Stanley Riseley.*

19. Is there any other tremor or spasm that should be recognised as a symptom of miners' nystagmus?

There is sometimes some spasm of the muscles of the neck, the head being held backwards. *Cresswell.*

No. *Court.*

I have seen a case where there was distinct spasm of the muscles of the neck and one shoulder, in conjunction with spasm of the orbicularis. *Folker.*

There is a fine tremor of the head which I have found after exertion in almost all early cases. It is only in a very small proportion of cases that the tremor can be seen, but it is easily felt if the examiner's hand be allowed to rest lightly on the patient's head during examination. *McMurray.*

Very often in severe cases a tremor, felt by hand placed at back of neck, or a tremor of hands when extended. *Percival.*

I have seen several cases of tremors of the head, but not complained of by the patient. *Secker Walker.*

Tremors of muscles of the head, neck, body in bad cases of nystagmus. *Stanley Riseley.*

20. Are there any other points you would wish to bring to the notice of the Committee?

I consider that there is an acute and a chronic form of miners' nystagmus.

(1) There are the acute cases which come on for the first time in comparatively young men, and which cause them to give up work.

(2) There are many older men down the pits who work with what I may call a chronic condition of nystagmus present, but who, perhaps, are of a more phlegmatic type, and do their work, which apparently they can (from old experience) with very deficient sight, rather than claim compensation, and be put to work at less wages on the surface and in all conditions of weather.

Some of what I call the acute cases go back to work after a temporary recovery of their symptoms, and develop nystagmus again, but prefer to stay underground again and earn more wages, than work outside in bad weather. Of course in a large number of the cases the nystagmus and its accompanying symptoms of giddiness, &c. become so bad that it is impossible for them to do work underground. *Cresswell.*

No. *Court.*

I shall be very pleased to appear before the Committee at any time to fill in any gaps which naturally occur, when filling up a form such as this. I hold very decided views on the subject, and sincerely hope that spasm will be included in this unfortunate disease. *Folker.*

I suggest that medical referees, when a case of miners' nystagmus is sent to them, be asked whether the patient is totally incapacitated or merely for work underground. In a large number of cases it would be to the patient's advantage to have employment in the open air and in daylight, but having been certified as incapacitated by a medical referee the patient refuses to do work which would do him good. *McMurray.*

I prefer the name "coal miners' nystagmus," as other miners do not suffer from the affection. The nystagmus is most frequently rotatory, the eye rotating clockwise and counter-clockwise through an arc of 30° or 45°. This is characteristic of the disease. A less common form is the oscillatory form which is usually seen in disseminated sclerosis, and some other nervous diseases. The objective signs that are usually present, and on which, when present, I lay stress, are tremors of the back of the neck and tremors of the extended hands; these are best detected by touch. They are usually fine tremors, that either cannot be seen or are seen with difficulty.

Nightblindness and giddiness, being only subjective symptoms, cannot be diagnosed with certainty.

The nature of the disease is still obscure. I think it is allied to writers' cramp and similar professional affections. Essentially, I think it is due to an inborn defect of the nervous system, which manifests itself as nystagmus especially after hewing; that it is not caused by hewing underground in the same sense that "brass founders" ague is caused by dealing in molten brass. I should think about 1 per cent. of the population have this inherent tendency to nystagmus. When once the nystagmus has manifested itself, whether cured or not, the patient should never return to his old employment. When cured he is not in any way incapacitated from other work.

It is unjust that the employers (or their insurance company) should have to pay compensation for life to a hewer who has at one time acquired a nystagmus, and who may be perfectly able to do other work, if he would take steps to obtain it.

Coal miners' nystagmus is not, in my opinion, an industrial disease in the same sense as lead poisoning is due to working with lead. The enormous majority of hewers may hew all their lives without getting nystagmus.

In my opinion it is most important that the "deputies" who first inspect the mines to see that they are safe and free from firedamp, before the hewers are allowed to enter the mine, should be tested every three months for coal miners' nystagmus. The "blue cap" which appears over the flame of the safety lamp when firedamp is present is not seen by sufferers from coal miners' nystagmus. I believe a common cause of explosions in pits is due to the blue cap not being recognised by the deputies. I think it would be a great advantage to the owners if every workman had to keep a "health card" with all his defects and past diseases noted on it. This would prevent an employer accepting a workman who has suffered from nystagmus. It is a common habit for a patient who has been temporarily cured of nystagmus to seek and obtain employment at another colliery. *Percival.*

I would refer to the great difficulty in deciding in which cases the oscillation is really a disabling symptom. Before the disease was scheduled the cases coming up for treatment were few, while many cases continued at work without complaint and even now a considerable number continue at their work. *Secker Walker.*

From the above (*i.e.*, the schedule of questions, &c.) it appears to me that the tendency is to try and find nystagmus in some form, and having found it to look upon a man as unfit for work. This is not my view as shown in my presidential address at the opening meeting of the Sheffield Medico Chirurgical Society, published in the *Lancet* March 1st, 1913. *Stanley Riseley.*

APPENDIX XIII.

Letter from Priestley Smith, M.Sc., M.B., F.R.C.S., as to the occurrence of Miners' Nystagmus in others than Miners.

95, Cornwall Street, Birmingham,
12 February 1913.

DEAR SIR,

I REPLY to your question with pleasure.

Nystagmus as an occupational disease is very rare among workers other than coal miners. The late Dr. Simeon Snell, who studied the matter extensively and published a book on Miners' Nystagmus (Simpkin, Marshall & Co. 1892), met with one case among compositors and another in a baker's assistant who carried a tray on his head. I have myself seen two cases; one in a girl who had to stand on a step-ladder and hang up objects above the level of her head; the other in a foreman on the railway whose duty it was to test the laying of the permanent way and who, in so doing, stooped low down and turned his eyes much upwards. I have met with no other cases due to employment except those in coal miners.

It is quite likely that cases do occur occasionally, in persons who are predisposed to nervous exhaustion, from various occupations which require the frequent use of the eyes in extreme lateral or upward rotation, but they are certainly rare.

There is no evidence, so far as I know, that mining of other kinds leads to nystagmus. Snell found it absent in a Cornish copper mine. These latter miners work in less constrained positions.

Apart from occupation, nystagmus is a common concomitant of congenital defects of eyesight, and a symptom of certain nerve disorders.

The occupational form is, in the immense majority of cases, the miners' nystagmus.

Yours faithfully,
(Signed) PRIESTLEY SMITH.

Arthur Locke, Esq.

APPENDIX XIV.

Nystagmus in others than Miners. Extract from evidence before the Committee on Industrial Diseases, 1907.
[Cd. 3496.]

Dr. Snell was asked:—

1626. Are there other trades than mining where something of the same kind is produced?—Yes, I was going to refer to that, if you allow me now. The first case that I saw of the sort was a compositor working in the "Telegraph" Office just down here. I went to follow him at his work, and he had to cast his eyes upwards when getting the type. Since then I have collected together 21 cases. Six of these were compositors, two were metal rollers, and there was a platelayer, a plank cutter, a saw maker, a sanitary tube maker, a fitter, an iron founder, a worker in a "cage," two glass workers, a youth in a confectionery workhouse, a man at the screens on the surface of a coal mine, a blacksmith, and a man whose duty it was to hang up harness. The platelayer, whose case came to the notice of a friend of mine, was a middle-aged man acting as foreman over platelayers, and it was his duty to look along the rails to see if they were laid truly in line. He had to bring his head to a low level, and had to rotate the eyes strongly upwards. My friend said, "I made him show me the position in my room." He further says, "I was puzzled at first, for he had normal vision in both eyes, and nothing to be seen amiss; but on "learning the precise nature of his work and "questioning him further I learned that his trouble "was that objects danced before his eyes—no "doubt nystagmus brought on by the position."

1627. Have you ever had complaints with regard to plasterers of ceilings or decorators of ceilings?—Yes; I have referred to this in my books and papers. It is historically true, I believe, that Michael Angelo suffered from a weariness of his eye muscles if not nystagmus. Michael Angelo, after his great work of decorating with frescoes the vault of the Sistine Chapel, which he accomplished in 18 months, suffered from the discomforts attendant on the strained attitude he then assumed, and from looking upwards at the vault. He worked on a special platform, and he wrote a sonnet describing his position. . . .

1629. In respect to the next question, the truth is then, Mr. Snell, that this is not a specific disease of a specific occupation so much as an incapacity produced by a peculiar use of the eyes in any occupation?—Only other occupations do not require such prolonged strain and do not produce it to the same extent, therefore, as in mining. In mining the conditions are particularly favourable for the production of nystagmus. Might I just refer to some cases, particularly to the point, in a paper which I read to the Ophthalmological Society in London. I got permission to examine a man with a friend of mine. This was a man working in a bad light. He was a cab cleaner. I found out that he had given up cab cleaning at my friend's desire, but he still pursued other work, and the nystagmus was still very marked. His occupation had formerly been that of washing cabs. This he had for some time relinquished, and had been taking money and entering the amounts received. I had permission to ask any question I desired, and it appeared that he hung up a great deal of harness. I found out the interesting fact that when cab cleaning he had also to hang up many sets of harness. This he had continued to do up to the time of my seeing him. Every night he hung up as many as 50 sets of harness, which occupied him for about three hours. He was a man of 5 feet 7 inches, and he had to reach the harness up to a height of 7 feet or more, and to see that each portion of the harness was properly placed on the rack, and turned his eyes directly upwards. This he demonstrated to us, and he also asserted that he found this upturning of the eyes very distressing. The explanation for the onset of the nystagmus, and for its continuance in spite of a change of work in other respects was thus fully explained. The position the man resumed closely resembled that often required of a deputy in a coal mine when examining the state of the roof.

Dr. Shufflebotham was asked:—

2184. Have you seen nystagmus arising in occupations other than mining?—I have seen it, but I do not know whether it is due to the occupation or not. This year I have seen a case in a coachman, who is coachman to a coalowner, but he has never been down in a mine in his life. I should like to say, with regard to the coachman I mentioned (because it raises another point) suffering from nystagmus, he was a coachman to a colliery proprietor. He broke his arm and was not allowed to drive any more. As a matter of fact, he did get employment on the surface of the colliery, but had that man gone into the mine to work, it is quite possible that, say, in 12 months' time, if he had met with any accident, his eyes would have been examined in the ordinary way.

for nystagmus and it might have been put down to the nature of his employment, whereas he had it before.

2206. (*Mr. Cunynghame.*) You have explained, I think, that nystagmus might be contracted in other things besides mining?—Yes.

APPENDIX XV.

Clonic Spasm.

Tables put in by Dr. W. E. Hume.

TABLE No. I.

Collieries in which Cases Occurred and have been Examined.

Colliery.	Number of men employed.	No. of Cases.
C—— Iron Co.	6,650	10
W—— Coal Co.	?	2
S—— B——	2,146	1
P——	835	4
L—— and H——	8,146	7
S—— D——	2,357	4
B—— and P——	1,963	9
S—— Coal Co.	2,714	5
	24,811	42

TABLE No. II.

Collieries in which there are no Known Cases.

	Number of men employed.
C—— Coal Co.	2,148
M—— Coal Co.	514
C—— S—— Coal Co.	1,771
F—— Coal Co.	950
B—— Collieries	?
B—— and C—— Coal Co.	?
E—— Coal Co.	?
B—— B——	?
W—— and H—— Coal Co.	?
B—— Iron Co	3,949
	9,332

TABLE No. III.

Details of Cases Affected.

C—— Iron Co. Colliery, 6,650 men:—

No. 1, J. R.; aged 17; working at Bank taking tokens, cleaning nuts. Been a driver. Eyes markedly hypermetropic. Very slight blinking at present.

No. 2, E. A.; aged 41; hewer. Marked nystagmus. Had it some time before he left off work.

No. 3, G. P.; aged 58; stoneman. Eyes steady.

No. 4, M. B.; aged 36; stoneman. Slight blinking. Astigmatism, wears glasses.

No. 5, T. R.; aged 55; shifter. Very slight blinking. Left coal hewing 12 years ago. Slight nystagmus.

No. 6, T. H.; aged 49; stoneman. Nystagmus, no blinking at present.

No. 7, J. B.; aged 35; hewer. Worn glasses 4½ years. Hypermetropia.

No. 8, L. S.; aged 54; stoneman. Slight nystagmus. Small cyst.

No. 9, R. H.; aged 58; deputy. Granular lids. Styes."

No. 10, J. J.; aged 55; hewer. Nystagmus.

W—— Coal Co. Number of men not stated:—

No. 11, M. S.; aged 33; hewer. Slight nystagmus and blinking. Receiving compensation for nystagmus.

No. 12, M. J.; aged 50; hewer. Said to have had both nystagmus and blinking; neither obvious at present.

S—— B——, 2,146 men:—

No. 13, T. N. aged 50 (?); hewer. In September 1910, a fall of stone struck the back; after being laid up with bad back for three weeks was found to have clonic spasm of the eyelids, which has persisted. At present there is rapid blinking of the lids, which is thought to be due to a condition of "granular lids."

P——, 835 men:—

No. 14, C. W.; back overman. Quite steady.

No. 15, W. W.; deputy. Nephew of C. W. Quite steady.

No. 16, J. G.; deputy. Marked rotatory nystagmus on looking upwards. Slight blinking.

No. 17, W. C.; timber drawer. Eyes watery. Cold, marked blinking. Slight nystagmus.

L—— and H——, 8,146 men:—

No. 18, J. H. D.; slight nystagmus. No blinking.

No. 19, C. M.; nothing abnormal seen in eyes.

No. 20, J. P.; marked nystagmus, slight blinking.

No. 21, W. D.; aged 18; a rapper. Has recently had marked blinking, at present very slight. Nervous, fidgety youth. Eyes normal.

No. 22, E. H.; aged 40; a drawer. Nystagmus.

No. 23, T. M.; aged 38; hewer. Blinking movement associated with a stammering speech.

No. 24, W. B.; aged 32; hewer. Nystagmus and blinking.

S—— D——, 2,357 men:—

No. 25, F. B.; aged 43; stoneman. Granular lids; no lashes since measles when 3–4 years old. "If snow came on the ground, dazzling-blinking." Slight blinking.

No. 26, E. N.; aged 45; hewer. Always weak eyes. Father has very few eyelashes. Thick lids, sometimes red. Marked blinking due to "Granular lids."

No. 27, A. S.; aged 57; hewer. Had blinking since he was a boy; attributed to blow on forehead.

No. 28, G. D.; aged 35; hewer. No trouble with eyes. Marked nystagmus after having head down.

B—— and P——, 1,963 men:—

No. 29, S.; has nystagmus, and the blinking movements are part of it.

No. 30, B.; aged 37; hewer. Nystagmus. Compensation paid for nystagmus.

No. 31, B.; aged 40; hewer. Blinking movements are excessive. At present there is some rotatory nystagmus which is the cause of the blinking.

No. 32, P.; aged 47; stoneman. Very slight blinking and nystagmus.

No. 33, S. Very slight nystagmus and blinking.

No. 34, T.; aged 26; hewer. Reference made in detail in evidence.

No. 35, D.; aged 64; hewer. Marked nystagmus on looking upwards, succeeded by blinking movement when the eyes are steady.

No. 36, Y.; aged 53; hewer. Lost left eye 11 years ago. Right eye marked nystagmus, very slight blinking.

No. 37, H.; aged 29; hewer. Rapid rotatory nystagmus. Optic atrophy of the right eye. Very slight blinking movement.

S—— Coal Co., 2,714 men:—

No. 38, W. G.; aged 39; hewer. Nystagmus.

No. 39, J. H.; aged 41; hewer. Neither nystagmus nor other eye disease. No blinking.

No. 40; J. K.; aged 40; deputy. Nystagmus on looking upwards.

No. 41, W. A.; aged 63; hewer. Nystagmus, no blinking.

No. 42, R. W.; aged 33; hewer. Blinked since he was a boy 10–11 years old. Has a girl aged 9 who blinks. He was broken of the habit when a lad by his parents giving him a penny, &c. Dust gets into eyelashes—cleaning makes them sore.

TABLE No. IV.

CASES GROUPED ACCORDING TO CONDITION.

Group No. I. Nystagmus.—Cases 2, 5, 6, 8, 10, 11, 16, 17, 18, 20, 22, 24, 28, 29, 30, 31, 32, 33, 34 (?), 35, 36, 37, 38, 40, 41. Total 25.

Group No. II. Inflammation of Eyes.—Cases 9, 13, 25, 26. Total 4.

Group No. III. Refraction Error.—Cases 1, 4, 7. Total 3.

Group No. IV. Nervous Disease.—Cases 21, 23, 27, 42. Total 4.

Group No. V.—Eyes Normal at time of Examination.—Cases 3, 12, 14, 15, 19, 39. Total 6.

Total for Groups I. to V.—42.

APPENDIX XVI.

NYSTAGMUS. TERMS OF THE SCHEDULE.

Report of the case M'Ginn v. Udston Coal Co., Ltd., 49 *Sc. L.R.* 531, 5 *Butterworth's Workmen's Compensation Cases*, page 559.

COURT OF SESSION, SCOTLAND.

Before LORD PRESIDENT, LORDS KINNEAR, JOHNSTON, and MACKENZIE.

March 8th, 1912.

An appeal by the workman from an award of Sheriff-Substitute Hay Shennan at Hamilton.

The workman, a miner, brought proceedings for compensation on the ground that he was suffering from nystagmus, a scheduled disease, and that it was due to his employment.

On February 20th, 1911, the workman obtained the following certificate from the certifying surgeon:—

> "I, as certifying surgeon appointed under the Factory and Workshop Act, 1901, for the district of Hamilton (or as a medical practitioner appointed by the Secretary of State to have the powers and duties of a certifying surgeon for the purpose of section 8 of the Act), hereby certify that having personally examined John M'Ginn on the 20th day of February 1911, I am satisfied that he is suffering from nystagmus, being one of the diseases to which the Workmen's Compensation Act applies, and is thereby disabled from earning full wages at the work at which he has been employed; and I certify that the disablement commenced on the 7th day of February 1911."

Nystagmus is the disease set opposite to the process of mining in the Order in Council, so that on this certificate it was presumed in the workman's favour, according to section 8 (2), that the disease was due to the nature of the employment.

The employers appealed, under section 8 (1) (*f*), to the medical referee, who, on March 9th, 1911, gave his decision as follows:—

> "I hereby give you notice that having duly inquired into the above-mentioned matter in accordance with the regulations of the Secretary of State, I decide as follows:—I allow the appeal of the Udston Coal Company against the certificate given to John M'Ginn by Dr. Crawford on the 20th day of February 1911, and that for reasons given in the note which accompanies this."

The note was as follows:—

> "The facts of this case are briefly these: M'Ginn unquestionably has nystagmus, particularly on fixation in the upper part of the field of vision, and the question which occurs to my mind is as to the nystagmus being that form of it known as miner's nystagmus. The probability in this case is that it is not miner's nystagmus. There are other signs of nerve degeneration. For example, the optic nerves are markedly affected, as shown by their appearance, by marked contraction of the field of vision and by loss of visual acuteness. The knee jerks are absent, and altogether I think that the case is rather one of sclerosis or nerve degeneration than of ordinary miner's nystagmus. This view of the case is confirmed by the following facts:—He says that he was idle for a period of five months, namely, from August 8th, 1910, to January 11th, 1911; that he resumed work below ground on January 11th, and that shortly thereafter the nystagmus developed so that he was incapacitated for work by February 6th. He avers that during the time of his being off work his sight was perfectly good, and that he had no nystagmus, but that shortly after he resumed work on January 11th the symptoms appeared. If we take his own statement as correct, that there was nothing wrong with his sight on January 11th, it seems to me that the period was too short to have caused ordinary miner's nystagmus to appear, and that fact, taken with the other symptoms of nerve degeneration which I have found, have caused me to form the opinion that this is not in the ordinary acceptation of the term of miner's nystagmus, but is one of the other forms of the disease."

The Sheriff-Substitute was of opinion that the decision of the medical referee and the note which accompanied it were not contradictory, that the decision and note read together amounted to a finding that while the appellant was suffering from nystagmus, this nystagmus was not due to the nature of his employment as a miner, and that it was competent for the medical referee to allow the appeal on that ground. He, therefore, dismissed the claim as incompetent, on the ground that the appellant had not obtained a certificate as required by section 8. The workman appealed.

Moncrieff, for the appellant (the workman): The referee was entitled to amend the certificate of the certifying surgeon by adding that the disease was not due to the employment. But, provided there was a scheduled disease, as there was, he could not refuse a certificate; this was to usurp the position of arbiter. The referee was not final as to whether the disease was due to the employment. His decision that it was not so due merely avoided the presumption otherwise given by subsection (2). As to addenda to certificates, *see* Garrett *v.* Waddell and Son (1911) S.C. 1,168; 48 Sc. L.R. 937; *ante*, p. 507; Winters *v.* R. Addie and Sons' Collieries, Ltd. (1911) S.C. 1,174; 48 Sc. L.R. 940; *ante*, p. 511.

Russell, for the respondents (the employers): The workman has to get a certificate that the disease is due to the employment. The medical referee has decided that it is not so due, and his decision is final under subsection (1) (*f*). "Unless the employer proves the contrary" in subsection (2) means, unless the employer satisfies the medical referee to the contrary.

Lord President (after stating the facts and reading the relevant subsections): The first step to be taken is obviously the procuring of a certificate from a certifying surgeon that the workman is suffering from a scheduled disease. There is provision in subsection (1) (*f*) for an appeal to the medical referee, and he can review the surgeon's certificate, and say either that it was rightly given or that it ought not to have been given. Then there is subsection (2). Now, I think the effect of that section is not doubtful. It means this: First of all, you must get the certificate of the certifying surgeon that the man is suffering from a disease which is in the schedule. Then, if he says nothing more, and if as a matter of fact the workman has been working at the occupation which in the second column is set opposite that disease, there is a presumption that the disease was due to the employment. That is to say, so far as he is concerned he has fulfilled, not only the first requirement—that of obtaining a certificate from a certifying surgeon—but he has fulfilled also the duty put upon him by the general words which come after, which say that the "disease is due to the nature of the employment in "which the workman was employed." The employer may rebut that presumption, but, so far as the workman is concerned, he need not do any more. But then there are the words, "except where the certifying sur-"geon certifies that in his opinion the disease was not

"due to the nature of the employment." I think that where he does put that addendum to his certificate the result is only that the presumption is gone. There is no presumption, and therefore it is necessary for the workman to prove, in terms of the first section, that the disease was due to the nature of the employment.

Now, I think it is quite clear that the medical referee may do anything that the certifying surgeon could have done; and therefore if the certifying surgeon puts an addendum to the effect that the disease was not due to the nature of the employment I think the medical referee might take it out; or, on the other hand, if the certifying surgeon leaves it out I think the medical referee may put it in.

The question that really arises here is, What is the precise nature of the report of the medical referee? In terms, in its first words it professes to allow an appeal. Now, allowing an appeal would strictly mean that the certificate given ought not to have been given, and, if the certificate were not there, then the whole matter must necessarily fall, because the condition precedent to the application of section 8 has not been fulfilled. That is really the view the Sheriff-Substitute has taken; and upon whatever the medical referee does say, he is final.

But we have already decided in the case of Winters *v.* Addis (*supra*) that when a medical referee says: "I allow an appeal subject to the following note," we are bound to read the note along with the finding in order to see what he has really done. Now, when I read the whole thing here, I cannot read this determination by the medical referee as saying that the certifying surgeon ought never to have given any certificate at all. What the medical referee says is that the man is suffering from nystagmus, but that the nystagmus is not due to the nature of the employment in which he was engaged. In other words, I think the effect of this appeal is not to say that there ought to have been no certificate given, but that the certificate ought to have had the addendum which the certifying surgeon here did not put in.

The result is, in my view, that this case must go on, but with no presumption in favour of the workman. On the contrary, it will be for him, if he is to recover, to show affirmatively that the disease of nystagmus from which he is certified to be suffering really arose from his employment and did not arise from other diseases, such as sclerosis, a possibility which the medical referee points out.

That is the opinion to which I am driven by the way in which I find nystagmus mentioned in the schedule, where it is mentioned as purely and simply nystagmus. Here the certifying surgeon says that the man is suffering from nystagmus, and that being so, I cannot read this addendum by the medical referee that the man is not suffering from industrial disease as ending the case. I come to that conclusion with great regret, because I am quite certain that the real view of the medical referee is that he is not suffering from an industrial disease. But the fault is the fault of the Home Secretary, and not mine. The fault is that nystagmus is put in the schedule as being nystagmus instead of being put in as miners' nystagmus.

I do not know that I have any right to know these matters, and if my judgment turned upon it I should not consider that I had any right to say anything upon it. But, by the best advice I have got upon the question, there seems to be no question that miner's nystagmus; that is to say, nystagmus induced by the position in which, to do his work, the miner has to keep his eye, is a pathological condition of the eye which is idiopathic, while all other forms of nystagmus are not so, but are the symptoms of other diseases, of which this sclerosis is one, and there are several others. Now, if the Home Secretary had been awake to that and had put the disease in the schedule as "miner's nystagmus," then a pronouncement such as the medical referee here has given would be a pronouncement that the workman is not suffering from an industrial disease. I think one can get a very good illustration of that in the next disease that happens to come in the schedule. The next disease is scrotal epithelioma—chimney-sweep's cancer. I have no doubt whatsoever that a certificate that a man was suffering from cancer would never be a good certificate under section 8, because cancer is not an industrial disease, although chimney-sweep's cancer is. I cannot help thinking that nystagmus ought to have been treated in the same way. But as it is I have to look at the schedule and I find nystagmus, and I am told by the medical referee that this man has nystagmus. That seems to be equivalent to an industrial disease in spite of his note, with the additional opinion that the disease was not due to the nature of the employment.

My opinion, therefore, upon the whole matter, is that the case must go down to the Sheriff-Substitute that he may allow the matter to go on in order to let the man prove if he can, because he has no presumption in his favour, that the nystagmus from which he is suffering is a nystagmus which arose from the nature of his employment and not from sclerosis or any other cause.

Lord Kinnear concurred.

Lord Johnston: I have experienced very much greater difficulty in this matter than apparently your Lordships have, for I cannot personally reconcile the provisions of section 8 (1) (i), followed as it is by the words "and the disease is due to the nature" of the workman's employment, with the finality of the referee's determination under section 8 (1) (*f*), and with section 8 (2). But my own reading of the statute is not, to my mind, sufficiently satisfactory to justify me in differing from the judgment your Lordship proposes.

Lord Mackenzie concurred.

Appeal allowed; case remitted to be heard.

APPENDIX XVII.

Details of Cases of Writers' Cramp, &c.
(Dr. Sinclair.)

Mr. M. W. B. Age now 51; appointed 1880; date of first symptoms 1895; duties clerical; in 1895 power of holding pen was lost—pen used to slip out of fingers. After trying palliative measures for six months gave up use of right hand and wrote with left, which he had been educating gradually. No trouble with left—uses right in signing cheques only—pencil held firmly between second and third fingers. All movements done by whole arm off table. Is now on travelling duties.

Mr. T. B. Age now 23; appointed 1906; date of first symptoms 1912; could not be seen—at Birmingham. Began service as boy clerk.

Mr. L. F. A. Age now 26; appointed 1903; date of first symptoms 1912; began work as boy clerk. Could not be seen. In country.

Mr. A. G. S. Age now 26; appointed 1904; date of first symptoms 1907; began work as telegraph learner—then sorting clerk and telegraphist. Was run down when the malady showed itself at its worst. No preferential duty. Performs ordinary work for a 7-hour day. Uses thick penholder and writes from the arm.

Miss E. M. B. Age now 22; appointed 1908; date of first symptoms 1912; on writing duty; began with "strained feelings in wrist and pain in upper arm." Spasm which caused pencil to slip from fingers. 8-hour writing duty for 18 months. Then educated her left hand and performed daily work with that—was placed upon a duty which allowed of some relief—is now ambidextrous and changes over when a hand is tired.

Miss M. F. P. Age now 32; appointed 1899; date of first symptoms 1912; on writing duty; became very tired after short periods of work, fingers went stiff, pencil slipped—then took advice, four months' sick leave. Is educating left hand. Placed upon a sorting duty—no writing. 8-hour day.

Miss E. N. B. T. Age now 34; appointed 1898; date of first symptoms 1906; 7-hour day on writing duty. First felt that she could not control pen. Arm began to ache—14 weeks' sick leave, during which period began to educate left hand. Does 7-hour duty now with left hand, but an easy duty.

Miss E. J. K. Age now 40; appointed 1889; date of first symptoms 1907; on writing duty; loss of power—arm would seem to fall dead—pain and dull ache up arm—then sick leave for two months—and began to

educate the left hand. Had to take eight months' leave—general neurasthenia—and disability extended to left hand. Is now using the right hand for writing—varied duties—uses left hand a little—writing has not deteriorated. 7-hour day.

Mr. E. J. S. Age now 42; appointed 1889; date of first symptoms, 1910; began with stiffness and gripping of pen, which gradually got worse so that letters could not be formed. Educated left hand and does all work now with left hand (7-hour day), but is freed from much writing by office arrangements of typing, &c. Was a telegraphist (Morse work) for 12 years before getting into present clerical work.

Mr. T. L. B.; age now 37; appointed 1895; date of first symptoms, 1900. Began work as sorting clerk and telegraphist. Writing began to be a burden; thumb gripped the pencil rigidly; no pain. Educated left hand and is now ambidextrous. Now performing ordinary duty. 8-hour duty. Plays violin without any trouble.

Mr. M. E. B. Age now 30; appointed 1900; date of first symptoms 1903. At Cambridge, so not seen. Before entering postal service as clerk was in the employ of Great Northern Railway as telegraphist and suffered from telegraphists' cramp (Morse working). No difficulty in writing followed.

Mr. F. E. P., clerk. Age now 21; appointed 1912; date of first symptoms, some years ago. *Ex* National Telephone Company. Could not be seen.

Mr. H. S. T., clerk. Age now 35; appointed 1898; date of first symptoms, 1905. On annual leave. Could not be seen.

Mr. A. F. S., clerk. Age now 36; appointed 1897; date of first symptoms 1908. Trouble began with inability to control thumb, which slipped away from pencil. Educated left hand and does all work with it now. 7-hour day duty performed.

Summary.

LONDON, EDINBURGH, and DUBLIN.

Combined clerical staff, 8518.
Number of cases, 14.
Percentage, ·16.

Age and length of service when malady came under notice.

2	at age of	20	after 3 years' service.	
1	"	21	" 4	" "
1	"	22	" 6	" "
1	"	24	" 5	" "
1	"	25	" 9	" "
2	"	27	" 7 and 8 years' service.	
2	"	31	" 11 and 15	" "
1	"	33	" 15 years' service.	
1	"	34	" 18	" "
1	"	39	" 21	" "

1 doubtful.

APPENDIX XVIII.

List of Associations &c. invited to give evidence on Writers' Cramp, that decided not to do so.

Scriveners' Company.
Law Society.
Committee of Stock Exchange
Bankers' Clearing House.
Prudential Assurance Company.
National Union of Clerks.

APPENDIX XIX.

Correspondence with His Honour Judge Cluer as to a case of Cow-pox.

Whitechapel County Court,
Great Prescot Street, E.
May 13th, 1913.

SIR,

UNDER section 8, subsection 6, of the Workmen's Compensation Act, 1906, you have power to extend by order the industrial diseases in respect of which workmen may obtain compensation.

I had a case last week in which a cowman had a bad attack of cow-pox by milking a cow suffering from that disease. It is a disease that is generally cured in the case of the animal within three weeks, but the effects on the cowman had not quite disappeared after four months.

Possibly, after consulting those who advise on this subject, you may think it just to include this disease in some future order, and I have therefore brought it to your notice.

Your obedient Servant,
The Secretary of State for the Home Department. A. R. CLUER.

Whitechapel County Court,
Great Prescot Street, E.
May 22nd, 1913.

SIR,

IN reply to your letter of the 20th instant, I enclose a copy of my notes taken in the case of cow-pox which was heard at this Court.

It occurred to me that such a disease might be considered by the Secretary of State as fit to be scheduled under the Workmen's Compensation Act, 1906, because a cow suffering from this disease must be milked, and the operation is necessarily dangerous if the cowman has any abrasion or cut on his hands.

On the other hand, in some cases a claim might be held good under the Employers' Liability Act, but it would be difficult to establish, as the defect in the plant if a cow is "plant," cannot be remedied.

In the case before me the defendants, while disputing liability, consented to pay the injured man the amount that he could have received if the case had fallen under the Workmen's Compensation Act. I enclose the order.

Your obedient Servant,
Arthur Locke, Esq. (Signed) A. R. CLUER.

In the Whitechapel County Court.
Cause remitted, Section 66.

Between - *A. B.* - *Plaintiff,*
and
Y. Z. - *Defendants.*

Plaintiff:

"Cowman employed by Defendants since September 1912. They are dairymen, and have 120 to 140 cows in sheds.

"I milked 17 and cleaned half the sheds. About Christmas Day fresh cows came—one dark brown.

"I milked her—she was sore round her udder and teats. She was suffering from cow-pox. I had to strap her to make her stand still while I milked her.

"I told foreman and Mr. J. the cow was in a fearful state.

"He took not much notice at the time. Two or three days after I told G. and he examined cow, and said he would mix ointment and Condy's Fluid.

"I asked him if he thought it was catching. He said, he thought not, if bathed in Condy's Fluid it would be all right.

"I went on with milking.

"The milk went into churn with the rest of the milk.

"My thumbs got inflamed and painful to about 8th January.

"They were very much swollen and painful. I told the foreman I thought I could do no work and I saw Mr. J. I showed him my thumb—I said, I thought I had cow-pox, and he advised me to see a doctor.

"I went to Poplar Hospital next evening. My left thumb was lanced—my right was bound up—I could do no work. Next Saturday, 11th, I went to Defendants—to Dr. S. on Monday 13th.

"11th I saw G. and J.—said my thumbs were very bad.

"I asked how about my money—he gave me 10*s*. and said "Call next Saturday." I went—he said he couldn't do anything. I gave him the doctor's certificate and he said he would send it to the Insurance Company. Both nails came off.

"My right hand is better all but nail of thumb.

"The other is very painful and tender. I have done no work since.

"I have felt bad—was covered with red blotches."

Cross-examined:

"Seven years a cowman.

"It is my duty not to put milk which has pus in it into other milk.

"When G. saw milk he couldn't see any trace of blood or pus in it—he would not have put it with other milk if he had seen it.

"You can't help cows getting cow-pox sometimes.

"A cow with pox must be milked.

"I complain of being asked to milk a cow with cow-pox."

Asked why he did not refuse to do it, Plaintiff replied:—

"You've got to be willing when you are at work.

"I could have said to G. I won't milk this, and he could have said you can go.

"I went on because I asked him if there was any fear and he said he would make up ointment.

"I used ointment—I got it two or three days after I spoke to G.—I only told him once about cow-pox.

"I've seen cow-pox before.

"I have used Condy's on the teats before.

"I did not ask G. again for Condy's Fluid when I did not get it from him.

"I have used Condy's or Jeyes' before on cow-pox.

"Mr. G. only comes twice a week.

"I did not think Condy's unnecessary.

"I did not think it safe to merely wash my hands, but I went on without insisting on Condy's Fluid.

"With proper treatment cow-pox is put right in two or three weeks."

Re-examined:

"I had to do the milking or leave, and I could not get out of it very well.

"They usually separate cow with cow-pox from other cows.

"Others caught it in defendants' premises.

"When I milked cows with pox before I've had plenty of preparations and disinfectants and suffered nothing."

——, Veterinary Surgeon:

"It is highly contagious disease.

"You should set apart a man with no cuts on his hand to milk it.

"You can't do anything to the disease.

"Condy's is no good if you have cut on your hand."

Cross-examined:

"The only precaution you can take is to see you have not cut on hand.

"Nothing in Condy's at all."

Dr. S.:

"13 January. Plaintiff came to me suffering from septic thumbs caused by cow-pox—Very severe pustules—he had never been vaccinated—he was very ill.

"Attended him ever since.

"Not fit to work now.

"In another month he may be fit."

Wages were 24*s.* 1*d.* per week.

In the Whitechapel County Court of Middlesex, holden at Great Prescot Street, Whitechapel, E.

Between *A. B.*, Cowman: *Plaintiff*,
and
Y. Z. Cowkeepers: *Defendants.*

And in the Matter of the Workmen's Compensation Act, 1906

I hereby certify that on the 1st day of March 1913, the above-named Plaintiff commenced the above-named action against the above-named Defendants in the High Court of Justice, King's Bench Division, claiming damages for personal injuries sustained by him owing to the negligence of the Defendants or their servants.

And that on the 1st day of April 1913, such action was by order of a Master in Chambers remitted to this Court for trial.

And that on the trial of the said action on the 9th day of May 1913, it was determined that the injury in respect of which the Plaintiff claimed damages in the said action was one for which the Defendants were not liable in the said action.

And that thereupon judgment was entered for the Defendants, but the Court, on the request of the Plaintiff, and with the consent of the Defendants, made the following consent order.

That the Defendants, whilst not admitting liability to pay compensation under the Workmen's Compensation Act, 1906, should pay to the Plaintiff the sum of 15*l.*, such sum to be in full and final settlement, satisfaction and discharge of all claims arising out of or in connection with the injuries sustained by the Plaintiff on or about the 11th day of January 1913.

And that by consent no costs either side.

Dated this 9th day of May 1913.

(Signed) M. R. Webb,
Registrar.

APPENDIX XX.

Writers' Cramp. Authorities Mentioned in Evidence.

Bernhardt. Neuropathologische Mittheilungen Centralbl. J. Neweuk, 1886.

Remak. Eulenberg's Real-encyclopädie de ges ammten Heilkunde, Vol. III, page. 270, 1894.

Poore:—

"Craft palsies"; Allbutt's System of Medicine, Vol. VIII, 1899.

"Writers' Cramp"; Quain's Dictionary of Medicine, 3rd Edition, 1902.

Oliver. "Writers' Cramp"; Oliver's Dangerous Trades, 1902.

Jelliffe. A System of Medicine, Osler and McCrae, Vol. VII, page 789, 1910.

Osler. "Writers' Cramp" Osler's Principles and Practice of Medicine, 8th Edition, 1912.

Judson Bury. "Writers' Cramp"; "Diseases of the Nervous System," Manchester, 1912.

Wilfred Harris. "Occupation Neuroses"; Encyclopædia of Medicine.

Head. "Craft Palsies"; Allbutt and Rolleston's System of Medicine (2nd Edition).

See also the Minutes of Evidence before the Industrial Diseases Committee [Cd. 3496], Questions 1482, 5085, 8504; [Cd. 4387], *e.g.*, Questions 11,933–41, 11,945, 11,956; 12,013–39;

Report of a Departmental Committee on Telegraphists' Cramp [Cd. 5968], Extracts from the Report, Lancet, 30th March, 6th April, and 13th April, 1912.

INDEX.

(1) Clonic Spasm of the Eyelids; Nystagmus; Miners' Nystagmus.

See the evidence of Laws, 254–390; Shufflebotham, 1732–54, 1874–2011; Moody, 2457–2611; Moir, 2735–94; Llewellyn, 2795–3006; Hume, 3051–3346; McGhie, 3579–3650; and the letters and schedule of questions and the replies thereto in Appendices XI. and XII. at pp. xviii and xix.

Authorities quoted in note to Question 2802.

Miners' Nystagmus.

Causation:
Laws, 306–7; Moody, 2515–6, 2520, 2594–7.
Predisposition:
Percival. Question 2, Appendix XII., p. xxii.
Occurrence in Non-Miners:
Not found. Moir, 2786;
Possibility of, Hume, 3217–21; Moody, 245–9.
What workers are affected. Laws, 301–4.
Compositors. Laws, 302.
Engine cleaners. Moody, 2603.
Cf. Appendices, XII., question (4), p. xix; XIII., p. xviii; and XIV. p. xix.
Is it confined to *Coal* Miners:
Priestly Smith, App. XIII., p. xix. Percival, App. XII. (17), at p. xxi.
Should "Miner's nystagmus" be the term used in the schedule? *See* "Terms of the Schedule" below.

The word "nystagmus."

Meaning. Shufflebotham, 1738.
Names only a symptom. Moir, 2748.
Used alone, extends to cases which are not cases of industrial disease. *McGinnis* v. *Udston*.
And *see* "Terms of the Schedule" below. App. XVI. p. xxv.

The Symptom "Nystagmus."

(*i.e.*, Oscillation of the eyeballs.)
The sufferer may be unconscious that he exhibits the symptom, Llewellyn, 2839; Hume, 3076, 3245–48;
or not incapacitated. Moody, 2490:
Slight signs much commoner in miners than in others. Hume, 3103–5.

Is the symptom nystagmus necessarily present in cases of Miner's Nystagmus?

See answers to questions 8, 9 and 10 in App. XII., p. xx.
Usually present. Moir 2741.
Not always. Shufflebotham, 1747; Laws, 297.
In all cases present at some time. Moir 2758; Lewellyn 2794–5; Hume, 3341–6. In long standing cases most difficult to detect. Llewellyn, 2913.
Cannot be said ever to be entirely absent. Moir, 2746–7, 2749–59, 2771–2774–6, 2793–4; Llewellyn, 2809, 2813–5.
Absence. In cases when he had not found it, it did not follow that clonic spasm was present. Llewellyn, 2861–66, 2903–4, 2919–20; it would not be, Laws 361; it might be, Hume, 3508, but then subjective symptoms will be absent, Hume, 3124–6; some cases however give rise to difficulty. Three typical cases cited, Hume, 3102, 3106–9, 3127–43, 3146–59, 3172–82, 3251–2, 3264–8, 3273–9, 3330–2, 3117, 3290–3310. Absence of symptom nystagmus so rare as not to call for special provision, Llewellyn, 2992–3. It may come and go, Llewellyn, 2984–91; and *see* App. XII (10); Absence renders diagnosis difficult, Llewellyn, 2985; cases of absence cited, Moody, 2465–86, 2494–505, 2528–544.
In some cases never present, Moody, 2515–20.
In others it may go and leave other objective signs, Moody, 2522.
Should examination be repeated to elicit nystagmus? Llewellyn, 2994–7, 3003, Hume, 3338–40. *See* the replies to Question 11 in App. XII., p. xx.
When there is clonic spasm will careful examination, *e.g.*, in a darkened room with ophthalmoscope, elicit the symptom nystagmus?
See the replies to Question 9 in App. XII. at p. xx.
Yes, Laws, 390. In all early cases, yes, Llewellyn, 2860–67, 2901, 2932–5; usually yes. Llewellyn, 2994–7, 3003; Hume, 3338–40. It may, but only in modified form, Moody, 2491–3. Yes, McGhie, 3594, 3623–5, 3636–9.
In the absence of the symptom nystagmus, is clonic spasm, alone or with other symptoms, evidence of miner's nystagmus, App. XII. (12), p. xx.

In diagnosing a case of miners' nystagmus where the objective conditions would not alone make out a case, may a certifying surgeon or medical referee properly take into account the *history* of the case?

See the replies to this question (15) *in App. XII., at p. xx.*

The Occurrence of the Symptom Nystagmus in Diseases other than Miners' Nystagmus.

In Friedreich's ataxia, Shufflebotham, 1740; in disseminated sclerosis, Shufflebotham, 1740; in some congenital diseases of the eye, Shufflebotham, 1740; in nervous disorders—how to distinguish from Miners' Nystagmus, Hume, 3316–29; after ankylostomiasis, Moody, 2506; after illness, *e.g.*, influenza, or any debilitating cause, Moody, 2506–8.

Clonic Spasm of the Eyelids.

Is not a separate disease.

Laws, 308–9, 353; Shufflebotham, 1733; Moody, 2457–62; Moir, 2772–3; Llewellyn, 2816–22; Hume, 3171, 3183–5; McGhie, 3579, 3592.

Its connection with Miners' Nystagmus.

See the replies to Question 7 in Appendix XII. at p. xix.
It is associated with, or is a sign symptom or indication of Miners' Nystagmus.
Laws, 259–61, 265–6, 276, 281–9, 329; Shufflebotham, 1734–6, 1743–8; Moir, 2736–72–3; Llewellyn, 2823–4, 2850; Hume, 3234–38; Moody, 2457–62. It may be the most prominent objective sign, Shufflebotham, 1748.
An *early* symptom, Shufflebotham, 1748; Moir, 2737–8; but *cf.* 2742–3; Moody, 2477; McMurray, Appendix XII. (5), at p. xix. Not a preliminary symptom; Laws, 310–11, 333, 373–4; Llewellyn, 2840–2; Hume, 3260–3; McGhie 3635.
A *late* symptom, Moody, 2477; McGhie, 3636; McMurray, Appendix XII. (5), (6); and Folker (6), at p. xix.
A *remaining* symptom or condition, Laws, 262–3, 272, 279, 286, 296, 312, 319–20, 334, 337, 375; Moir, 2743–5, 2753–5, 2759, 2769–70; Hume, 3186–99, 3264–3270; McGhie, 3591, 3626–8; Llewellyn, 2843–2939–42; with other symptoms, Llewellyn, 2844, 2906, 2910–2, 2914–7.
A *sequela*, Laws, 285, 287, 326–8; McGhie, 3636.
An *effect*, Laws, 261, 278, 298–9.
See the answers to Question 7 in Appendix XII., at p. xix.
Cf. "Order in which Symptoms of Miners' Nystagmus appear" below.

Not found with other forms of Nystagmus. Laws, 340, 367–9; Llewellyn, 2826–32.

(1) Clonic Spasm of the Eyelids; Nystagmus; Miners' Nystagmus.

Clonic Spasm of the Eyelids—*continued.*

Its connection with conditions other than Miner's Nystagmus.

See the replies to Questions 5 *and* 6 *in Appendix XII., p. xix.*

Ocular disorder, Hume, 3123; Laws, 365–6.

e.g. Photophobia, Hume, 3314–5; McMurray, App. XII. (6) p. xix.

Errors of Refraction, Hume, 3118–9.

Conjunctivitis, McGhie, 3580; Hume, 3106, &c.

Glaucoma, McGhie, 3604.

Granular lids. Hume, 3117, 3290–3310.

Nervous Conditions, Laws, 365–6; Hume, 3120–3, 3144, 3169, 3315; McGhie, 3599; *e.g.* Neurasthenia or psychasthenia, McGhie, 3580–3, 3602.

Hysteria, Hume, 3144–5; McGhie, 3584; McMurray, App. XII. (6) p. xix.

Mental distress, McGhie, 3604.

Injury, McGhie, 3580.

Cerebellar tumour, Hume, 3203–4.

Congenital fundus in children, Folker, App. XII. (6), p. xix.

Convulsive tic, McMurray, XII. (6) p. xix.

With clonic spasm in other muscles, McGhie, 3589.

Its prevalence.

Hume, 3071–86 and App. XV. p. xxiv; McGhie, 3587–3621; in cases of Miner's Nystagmus, Hume, 3165–6, 3254–8. *And see the Answers to Questions* 5 *in App. XII. at p. xix.*

Differentiation of Clonic Spasm of the eyelids from other forms of blinking.

Fineness of tremor of Clonic Spasm, Llewellyn, 2959–73; 2977–81; Moody, 2510–4; Hume, 3110–6, 3146–54, 3222–6, 3311. Clonic Spasm is of various types not equally easy of simulation (compare heading "Simulation" below); Hume, 3207–10; of two types, McGhie, 3629, 3633; is not Blepharospasm, Laws, 343–5, 349–50; which is involuntary, Laws, 346. Photophobic blinking, Llewellyn, 2957–9. Blinking in neurasthenic hysteria, Llewellyn, 2976. Blinking from mere nervousness, Laws, 341–2; Llewellyn, 2976. Tonic Spasm, Llewellyn, 2968–70. *Hume* investigated all cases, working or compensated, reported to him as cases of blinking, 3063–66, 3080–1, 3088–3100, 3240.

Other Objective Symptoms of Miners' Nystagmus.

See the replies to Question 19 *in App. XII., at p. xxii.*

Head tremor, Llewellyn, 2922–31, 2936–39, 2948, 2982–4, 3004–6; McGhie, 3633–4; McMurray, Stanley Riseley, Secker Walker, Question 19, App. XII., p. xxii. Head movements, Laws, 351. Head nodding is not a result of Nystagmus, Shufflebotham, 1739. Neck Spasm, Cresswill; Folker; *Percival*; *Stanley Riseley*; Question 19 in App. XII., at p. xxii; Wryneck, Laws, 351; Shufflebotham, 1746–7. Shoulder movements, Laws, 351; Folker, Question 19, App. XII., p. xxii. Clonic Spasm of various muscles, McGhie, 3589. Eyebrow tremor, Llewellyn, 2923. Hand tremor, Percival, Question 19, App. XII., p. xxii. Twitching of muscles, Shufflebotham, 1746–7. Body Tremor, Stanley Riseley, Question 19, App. XII., p. xxii. Various tremors, Shufflebotham, 1746–7. Injection of Eyes and eyelids, Moody, 2466–73. Errors of refraction, curable by use of glasses, Moody, 2534–41; McGhie, 3639–50. Generally, how to distinguish remaining objective signs from nervous tricks or habits, Moody, 2522–8.

Subjective Symptoms of Miners' Nystagmus.

Depression, Moody, 2478–82. Night Blindness, Moir, 277–8; more constant symptom than clonic spasm, Llewellyn, 2936. Giddiness, Vertigo, Shufflebotham, 1743–4; Moody, 2465, 2478–82. Headache, Shufflebotham, 1743–4;

Subjective Symptoms of Miners' Nystagmus—*continued.*

Moody, 2465. Photophobia (Fear of light, weak eyes), Moody, 2465–73, 2478–82, 2512; Hume (and clonic spasm may result, 3314–5), 3205, 3314–5; may remain after symptom Nystagmus goes, 3264–68. Nystagmus does not lead to blindness, Laws, 359–60. Various subjective symptoms, Laws, 313–4; Llewellyn, 2834–5. Generally, severity of subjective symptoms cannot be judged by presence or absence of symptom Nystagmus, Moody, 2580. Subjective conditions are not implied when clonic spasm is present and symptom Nystagmus is absent, Hume, 3124–6. How to connect them with the disease, Moody, 2522–68.

Order in which Symptoms of Miners' Nystagmus appear, *cf.* "Clonic Spasm; its connection with Miners Nystagmus" above.

The symptom Nystagmus is never the first symptom, Shufflebotham, 1748. Early symptoms, loss of sight, Llewellyn, 2835–6, 2949–56. Night blindness, Llewellyn, 2855–6. Next are Subjective Symptoms, *e.g.*, dancing of lights, Llewellyn, 2836–7. The objective symptom Nystagmus may appear with the subjective symptoms, Llewellyn, 2838–9. Nystagmus—Clonic Spasm—return to work—Nystagmus again, Laws, 379–85. Clonic Spasm—other symptoms—Clonic Spasm, Shufflebotham, 1749. Depression—Clonic Spasm—Symptom Nystagmus—Clonic Spasm producible in darkened room, Moody, 2478–82.

Incapacitation in cases of Clonic Spasm.

See the replies to Question 13 *in App. XII. at p. xxi.*

Not caused, Laws, 269–96, 300, 321–3–6, 362; Moir, 2739–40; Llewellyn, 2834–5, 2845–7.

May continue when only clonic spasm and other symptoms remain, but in such cases is not caused by the clonic spasm, Llewellyn, 2906, 2910–2, 2914–7.

With other symptoms (headache, giddiness, vomiting, tremors) and without nystagmus may incapacitate, Shufflebotham, 1750–1.

Clonic spasm, in absence of symptom nystagmus, does not carry with it subjective symptoms of miners' nystagmus or incapacitate, Hume, 3124–6, 3127–43, 3172–79; he could not certify such a case, 3129–30, 3131–34, 3158–9, 3288–89. But clonic spasm with some other symptoms of miners' nystagmus might incapacitate, 3272.

Clonic spasm alone does not incapacitate, McGhie, 3599, 3607–8.

But compare the entries under "Refusal of Certificates" below.

Incapacitation by Miners' Nystagmus.

See answers to Question 20 in App. XII. at p. xii, *e.g.*, Incapacitation for work as Deputy, Percival. Acute cases disabling young men, and chronic cases not disabling older men, distinguished, Cresswell; Medical Referee should be asked to state whether incapacity is for work below ground only, McMurray; and, generally, Secker Walker, Stanley Riseley, and Percival.

Certificate of Disablement.

Refusal of, when clonic spasm, but not the symptom nystagmus, is found.

Justified, Laws, 337–75. There are cases constituting hardship, Shufflebotham, 1743–4, 1746–47; Moody, 2465, 2483–6, 2494–505, 2528–44, 2464. Compensation is paid when clonic spasm is a remaining symptom of nystagmus, Hume, 3593, 3622. Refusal would be a hardship, Moir, 2779–80. Occurs, Llewellyn, 2851–60, 2994–9; This inquiry a sufficient intimation to certifying surgeons, Llewellyn, 2875. Compensation stopped when the symptom nystagmus was absent, and clonic spasm, photophobia, and injection of eyes and eyelids present, Moody, 2466–73.

See the replies to Question 16 *in App. XXII. at p. xxi.*

(1) Clonic Spasm of the Eyelids; Nystagmus; Miners' Nystagmus.

Voluntary causation of Clonic Spasm. Controllability.

Controllable, Laws, 267–9, 347.

Voluntary causation possible, Llewellyn, 2906; Laws, 347–385–6.

Is *in*voluntary and becomes automatic. Laws, 259–61, 265–6, 276, 288, 329, 348, 363, 387–8; Hume, 3171, 3183–5. The habit may be hereditary, Hume, 3167–8.

Partly voluntary, *i.e.*, controllable; partly reflex, Llewellyn, 2962–64.

Simulation or Malingering—

of Clonic Spasm, Laws, 317, 375–8. Possible, Moir, 2761–3, 2766; Llewellyn, 2885–6, 2906–7–8, 2943–73. Impossible, Moody, 2510–8. Easy, McGhie, 3596–7. Easy with certain hysterical individuals, Hume, 3145. Some types can be simulated, Hume, 3206–12, 3311–4. But not all, Hume, 3207–10. *See the replies to Question* 18 *in Appendix XII. at page xxii; Secker Walker's reply to Question* 12.

of fine tremors, not possible to sustain, Hume, 3114–6.

of the Symptom Nystagmus, Laws, 318; Impossible, Moir, 2764–5; Attempts are made, Llewellyn, 2887–8; Impossible, Llewellyn, 2909.

of Photophobia, impossible. Moody, 2512.

Cures for Miners' Nystagmus, Laws, 292–5. Rest, Llewellyn, 2894–5. Glasses, use of, McMurray, Question 5, App. XII., p. xix., and *see*, as to their use to cure errors of refraction, under "Other Objective Symptoms" above.

Risk of Recurrence of Miners' Nystagmus;

Advisability of return to work. *See the replies to Question* 14 *in App. XII. at p. xxi.*

Generally, Laws, 275–6, 281, 336, 354–8, 360; Moody, 2584–2593; Llewellyn, 2889–94, 2896–901.

Instances of resumption of work without recurrence, McGhie, 3609–19, 3639–50.

What is the risk when the only symptom is clonic spasm? Laws, 338–9, 370–2, 379–83, 390; Moody, 2534–41, 2569–79, 2581–93; McGhie, 3595–3600.

Compensation for Miners' Nystagmus, burden of, Llewellyn, 2879–83.

Terms of the Schedule:—

Existing terms:—Only one symptom is named, but sufficiency of schedule asserted, Moir, 2748, 2757, 2767–8; Llewellyn, 2848–50. Clonic spasm already covered, Moody, 2462. Is the position clear or should there be amendment? Moody, 2487–90, 2506. *Criticism by the Court in McGinn* v. *Udston, App. XVI., p. xxv.*

Specific mention of clonic spasm:—Not justified, Moir, 2782–85; Llewellyn, 2868–78, 2883–6, 2944; Shufflebotham, 1745. *See the replies to Question* 17 *in App. XII. at p. xxi.*

General reference to symptoms of Miners Nystagmus. Not objected to, Moir, 2784–5. Desirable, Shufflebotham, 1746. Objections to vague definitions, Hume, 3230, 3333—46. *And see the replies to Question* 17 *in App. XII. at p. xxi.*

? Schedule as Miners' Nystagmus.

See the replies to question 17 (1) in Appx. XII., at p. xxi, and the report of *McGinn* v. *Udston* App. XVI., p. xxv.

Favoured, Moir, 2789–82; Llewellyn, 2869–71.

Significance in practice attached to "Miners' Nystagmus," Shufflebotham, 1741; even "Miners' Nystagmus" not a good name, Shufflebotham, 1736–42–49; Moody, 2598–2603, 2608–11.

? Schedule as "*Coal* Miners' Nystagmus?" *See* the replies to Question 17 in App. XII. at p. xxi, especially *Percival.*

Other suggestions:—

Snell's disease? Moody, 2604–8; coalworkers' neurasthenia, *McMurray*, Qn. 17 in App. XII., p. xxi; Nystagmus and its sequelæ, Laws, 326–8.

Onus of Proof.

Effect of schedule as at present worded, in cases where a miner has the symptom nystagmus arising out of some other condition than Miners' Nystagmus.

See McGinn v. *Udston*, App. XVI., pp. xxv, xxvi.

(2) Cowpox.

See throughout the evidence of Copeman, 3651–3741; Penberthy, 3835–3904; McFadyean, 3905–3966;

Authorities, references to. Copeman, after 3741.

Cowpox in the Cow.

Description:

Copeman; 3654–59, 3715–17. Ceely quoted, 3675. Diagnosis clear. Penberthy, 3874.

It is the remaining form of small-pox in the cow. Copeman, 3715–7.

Transmission must be from cow to milker and milker to cow. Copeman, 3670, 3677–8.

Disease never spontaneous. McFadyean, 3908.

Desirability of preventing infection in herds not a ground for compensating infected milkers. Pemberthy, 3895.

A recently vaccinated person might infect a cow. Copeman, 3667.

Cleanliness and lighting of cowsheds important. Copeman, 3689.

Cows must be milked as usual. McFadyean, 3954–5.

Precautionary methods of one company described. McFadyean, 3951–3. *Cf.* Evidence in App. XIX.

Risk of infection of man through milk supply. McFadyean, 3931–3, 3956–7.

Vaccination, protective against such infection. McFadyean, 3933, 3956–7. *Cf.* the entries under "Cowpox in Man" as to continuance at work of infected milker.

Prevalence. *See* under "Cowpox in Man" below.

Disease not known in goats. McFadyean, 3948.

Cowpox in Man from Inoculation, *i.e.*, **from Vaccination.**

Called "Innoculated Cowpox." Copeman, 3663.

Should not be a matter for compensation. Copeman, 3663, 3720–22.

May be conveyed to cows. Copeman, 3667.

Under modern conditions is less virulent. Copeman, 3688, 3690, 3717, 3720.

As a protection from cowpox by infection, *i.e.*, from "casual cowpox":—

Is a safeguard. Copeman, 3688, 3690, 3717, 3720; McFadyean, 3932;

Not completely so. Copeman, 3729.

As protection against infection from drinking tainted milk. McFadyean, 3933, 3956–7.

Cowpox in man from casual infection.

Called "Casual cowpox." Copeman, 3662, 3720–23; and *cf.* "Terms of Schedule" below.

Infection is from cow in process of milking. Copeman, 3654–59, 3675–76; by means of a non-identified micro-organism. McFadyean, 3908; usually through abrasions in the skin. Copeman, 3656–61; McFadyean, 3914, 3934–5.

Question whether one human being can infect another. Penberthy, 3896–3900; McFadyean, 3915.

Back of hand not first attacked; usually fingers or cracks under nails. Copeman, 3712, 3724–5; Penberthy, 3878–79.

Cleanliness, light, and use of disinfectants as safeguards. Copeman, 3689.

(2) Cow-pox.

Cow-pox in man from casual infection—*continued.*

PREVALENCE.

Less prevalent now than a century ago. Copeman, 3666–69.

Prevalence in the interval, Copeman. 3679–80.

List of outbreaks officially reported since 1887. Copeman, 3679–80.

Doubtful whether it is more prevalent at any particular season of the year. Copeman, 3674.

Cases not always reported. Both masters and men may have reasons that influence them against reporting cases. Copeman, 3703–5, 3711, 3739.

Prevalence not great but more cases might come to light if compensation were given. Copeman, 3704–5.

Statistics as to serious outbreak at Frome, 1910. Copeman, 3726–8.

Not prevalent and likely to be less prevalent if cows' udders and teats are regularly inspected under tuberculosis and milk regulations. Penberthy, 3843–48, 3855–70.

Prevalent, McFadyean, 3906–7, 3913–14, 3949–56.

DURATION AND SEVERITY, INCAPACITY:

Duration usually three weeks. Copeman, 3681–2.

Incapacitates for about a week, but, in severe cases, much longer, even months. Copeman, 3685–6, 3706–7, 3729–31, 3736, 3739. And *see* case in App. XIX., p. xxvii.

Duration of incapacity usually short, but where long enough to qualify should qualify for compensation. McFadyean, 3916–21, 3936–7.

A very acute disease (3868) which may incapacitate for more than a week (3872), but incapacity usually so slight and brief that scheduling is not necessary. Penberthy, 3838–9, 3850–4, 3892–5, 3903–4.

Severity as compared with inoculated cow-pox accounted for; Ceely quoted by Copeman, 3677; cases not so severe as formerly, probably because of previous vaccination, Copeman, 3687–8.

Pain sometimes intense. Copeman, 3701, 3711, 3712; and *see* evidence in App. XIX., p. xxvii.

Headache and delirium. Copeman, 3701.

Increase of severity by septic conditions. Ceely quoted, 3677; Copeman, 3683–4, 3732–35; McFadyean, 3937–38.

COMPLICATIONS:—

Intractable ulceration, cellulitis, lymphangitis, axillary abscess. Copeman, 3687.

Ophthalmia, photophobia in two cases affecting the eyes described. Copeman, 3729–30.

Lymphangitis, &c., two cases described. Copeman, 3731.

Cow-pox in man from casual infection—*continued.*

DURATION AND SEVERITY, INCAPACITY—*continued.*

Existence of incapacity could be determined by a court with medical advice; its extent discussed. Copeman, 3708–11; but compare McFadyean, 3930.

No fatal cases known. Copeman, 3684.

OCCUPATIONAL CHARACTER:

Is clear. Copeman, 3692; Penberthy, 3871.

DIAGNOSIS:

Can be made with great degree of certainty, and confirmation by experiment is possible in early stages. Copeman, 3694–9, 3731.

A good diagnosis could be made by any person with much experience of milking. McFadyean, 3958–61; *cf.* Copeman, 3702–3.

Diagnosis easier when more than one person affected. McFadyean, 3910, 3956, 3962–4.

Early stages most characteristic. McFadyean, 3964–66.

CONTINUATION IN EMPLOYMENT WHILE SUFFERING: AND QUESTION OF RISK OF DISMISSAL:

Copeman, 3703–5, 3711, 3738–9, 3741.

Penberthy, 3850–1.

McFadyean, 3918, 3922–26.

TREATMENT:

Little possible beyond rest and protection. McFadyean, 3947; and *see* the case in Appendix XIX.

BURDEN AND VEXATION OF COMPENSATION:

See throughout Penberthy, 3835–3904; also McFadyean, 3927–9; Copeman, 3704–5.

TERMS OF SCHEDULE:

? As "Casual Cowpox," to prevent claims for "Innoculated Cowpox," *i.e.*, cowpox through vaccination. Copeman, 3662, 3720–23; Penberthy, 3880, 3882, 3888–90. McFadyean, 3939–45.

? Add "and its sequelæ." Copeman, 3732–35; McFadyean, 3938.

ONUS OF PROOF:

? Should it be on the workman? Penberthy, 3882–7; McFadyean, 3930.

(3) Dupuytren's Contraction.

Authorities, list of: App. X., p. xviii.

Witnesses list of. *See* Table of Contents.

General description:

Collins; App. I., p. iii.; Jones, 1066–77; Black, 1405–8; Shufflebotham, 1539–41; Moody, 2305–14; Hume, 3360–2; McGhie, 3511–2, 3433–3446.

A fibrositis, not hypertrophy: Moody, 2305–8, 2409–10.

Question of association with pyorrhea; pyorrhea alveolaris; Moody, 2402, 2413–6.

May be associated with syphilis; McGhie, 3528.

May be secondary to dislocation of a nerve; McGhie, 3528.

Presence of leucocytosis:

Jones, 1079; Shufflebotham, 1656–61.

Presence of pads on knuckles:

Jones, 1084–5; Garrod, reference in App. X., p. xviii.

The disease in the foot (Dupuytren's Contraction of Plantar fascia): Paget, App. IV., p. xvi; Jones, 1134–5; Shufflebotham, 1670; Moody, 2240, 2365–7.

In the horse; Moody, 2246–8, 2368–70.

Analogous conditions:

Arthritic contraction; Collis, 56–8.

Hookhand; Collis, 56–8. App. V., p. xvi.

Habit fixtures or postures; Jones, 1086–8.

BEAT HAND distinguished from Dupuytren's Contraction:

Collis, 56–8, 157–163; Shufflebotham, 1671–4; Moody, 2275–8, 2388–90; McGhie, 3529–30, 3549–52, 3563–69. Evidence before Committee of 1907, App. III., p. xv.

Beat hand *and* Dupuytren's Contraction in same man; Moody, 2316–28, 2405–6; Moir, 2684–5.

Point of origin (*cf.* "Hand affected," "Finger affected," "Part of palm affected," below).

Subcutaneous; Jones, 1148–8.

Presence or absence of callus or corn at:

Jones, 1136–7, 1144–8; Black, 1429, 1442, 1464, 1783, 1803–4; Shufflebotham, 1667, 1857, 1860–4; Moody, 2240–5, 2284–6; Llewellyn, 3036–7; Hume, 3409, 3500–3504.

The hand affected (right, left, or both):

(The evidence was generally to the effect that the right hand is affected more frequently than the left, but that the left is sometimes alone affected.

(3) Dupuytren's Contraction.

The hand affected (right, left, or both)—*continued.*

or soonest or most seriously affected, and that the condition is frequently bilateral.)

Collis, 35–8 and 1391, Tables in App. I., pp. ix, xii, xiii; Lace operatives, 725–27, 734, 772–4, 804, 830, 907, 927, 958, 987; Jones, 1021, 1027–31, 1053–6, 1069–70, 1073–6, 1079–83, 1096–8, 1108–1149; Smith, 1318; Underwood, 1354; Black, 1410–16, 1428–9, 1463, 1768–70–76, 1801–5; Shufflebotham, 1653–66, 1668; Moody, 2228–9, 2279–81, 2283; Moir, 2679–82. App. XVI., p. xvii. App. XVII., p. xvii.

In bilateral cases same part affected in each hand; Black, 1411.

Occurrence in left hand only; Black, 1428, 1769.

Case more advanced in left hand though right apparently used more; Shufflebotham, 1663–6.

Finger affected:

In cases among general population the little finger said to be first affected in most cases:

Arbuthnot Lane, quoted by Collis, 82; Shufflebotham, 1540.

But Dr. Jones found it to be the ring finger, 1024–5–6. Tables showing incidence in cases examined in hospital and found in the lace trade respectively; Collis, App. I., pp. ix, xii, xiii. (These include the cases of the operatives who gave evidence, 682–1007.)

In lace workers; the ring finger first affected:

Collis, 82–4, 101–4; Shufflebotham, 1540. The ring and little fingers; Black, 1801–2; but *cf.* statistics, 1463.

Part of palm affected:

Jones, 1021–7; Black, 1428; Shufflebotham, 1542, 1632, 1667; Llewellyn, 3036–7.

Stages of the disease: **Incapacitation:**

Collis.—Four stages described. App. I., p. vii. Lace workers sometimes incapacitated in the 3rd stage, but not all incapacitated even in the 4th; incapacitating stage should be defined, 109–11, 127; but *see* 147–8. Cases may remain quiescent at early stage, 143–6, 149; Tables showing existence and extent of incapacity, App. I., pp. xii, xiii.

Lace Operatives.—References throughout their evidence to stage disease had reached in the individual cases, 681–1007.

Jones.—Incapacity a rare cause of recourse to doctors, 1159.

West.—As to confinement of compensation in lace trade to incapacitating stage, 1264–5, 1270–6.

His figures not confined to later stages, 1265–6.

Wardle.—How disease handicaps workers, 548–50.

Black.—Stages to which his statistics as to lace workers relate, 1438–9, 1442–50, 1774–6.

Figures for early stages were not at first included, 1775, 1842–4, 1847–9, 1853–4.

Workhouse inmates were in advanced stages of the disease, 1467, 1758–60, 1770–73, 1776; and the advanced stages were found in persons who had worked less, 1797; and there were only 34 lace workers in any stage, 1765.

There is incapacity at the 3rd stage, 1838, but there would be risk of claims at earlier stages, 1845–6.

Shufflebotham.—Cases in mines in early stages not usually seen by doctors, 1684.

Incapacity begins at 2nd stage, 1686–7.

Some men in 3rd stage work, 1688.

Moody.—Some cases of incapacity found in mines, mostly in 3rd and 4th stages, 2287–91.

Treatment appropriate at various stages, 2333–54.

Llewellyn.—His own case quiescent at stage 1, 3008.

Other persons, not manual workers, with early stages, 3022–3.

The disease may incapacitate, 3027–9.

Stages of the disease: **Incapacitation**—*continued.*

Hume.—Cases in workhouse not there because of the disease, 3382–3.

But some of those there and at the infirmary attributed incapacity to it, 3474–9.

cf. "Treatment."

Rate of development: duration generally, Collis, 72–3. Table in App. I., pp. xii, xiii. Existence of periods of dormancy: Collis, 119–143; Black, 1787; Moody, 2373–5. In some cases the disease has a "momentum" of its own, Jones, 1140–1.

Age.—(The disease is more common in persons of advanced age); Collis, 80–8, 121–4, 156, 1391. Tables in App. I., pp. viii, xi, xii, xiii, xiv. App. XVII. p. xvii; Underwood, 488–90, 498–503; Smith, 440–4, 467; Jones, 1019, 1024; West, 1251; Black, 1455–63, 1467–72, 1528, 1758, 1759–76, 1796, 1836, 1851–2, 1896; Shufflebotham, 1552, 1632, 1710–18; Moody, 2223, 2256–7, 2358–60; Moir, 2625, 2659–60, 2716–8; Hume, 3367–70, 3375–6, 3381, 3433, 3340, 3461–4, 3369–73, 3482–7; McGhie, 3538.

Sex.—(The disease is more common in men than in women); Collis, 112, 113. Statistics in App. I., p. iv. Jones, 1024, 1032, 1069; Black, 1463–6, 1488–98, 1776, 1789–72; Shufflebotham, 1546, 1552, 1643–4–6; Moody, 2249–51; Moir, 2629, 2634–45, 2668, 2712; Hume, 3379, 3452–4.

Pain:

Some sufferers speak of pain in the earliest stage, Jones, 1041–9, 1158. This is not the usual experience, Shufflebotham, 1541, 1639–43. Difficulty in testing the allegation of pain and of resulting incapacity, Black, 1505, 1510–1, 1845–6. Admitted; but allegation might be well founded in cases with rheumatism or gout, Shufflebotham, 1688.

Diagnosis:

Difficulty of establishing character of causation, *see* "Causation." Also—

Collis, 77, 84, 98–100; Jones, 1100–34, 1199–1204; Black, 1505–9; Shufflebotham, 1671–5, 1723–4, 1868–72; Moody, 2234–9, 2253–55, 2294; Moir, 2719–26, 2728–34; Llewellyn, 3040–50; McGhie, 3559–70.

Difficulty of testing allegation of pain, *see* "Pain" above.

Distinguishing analogous conditions, *see* "Analogous conditions," above.

Difficulty arising out of the bilateral occurrence of the condition. *See* "Hand affected."

Simulation of the disease impossible:

Collis, 125–6; Shufflebotham, 1688; Moir, 2727.

Risk of claims for non-incapacitating stages, Black, 1845–6.

CAUSATION:

General observations: authorities quoted by Collis, App. I., p. iii; Paget, App. XIV., p. xv.; Jones, 1063–5; Shufflebotham, 1857; Moody, 2371–3; Hume, 3405–8, 3437–56; McGhie, 3539.

(1) Heredity:

Dupuytren quoted in App. I., p. iii; Jones, 1015–8, 1055, 1057; Black, 1418–9, 1428, 1459–60; Shufflebotham, 1554, 1668; Moody, 2282, 2403, 2436; Moir, 2625–8, 2705; Hume, 3384–7, 3408, 3430–42; Llewellyn, 3011–2.

(2) Congenital:

Dupuytren quoted in App. I., p. iii; Collis, 46–7; Shufflebotham, 1675.

(3) Trauma: Causation by wounds:

Violence, with pressure from hard bodies, as a cause of Dupuytren's Contraction. Dupuytren, quoted in App. I., p. iv; Collis, App. I., p. iv, 56–8, 106–7; Jones, 1058, 1060, 1067–8, 1071–2; Shufflebotham, 1559–69; Black, 1442, 1810–3;

(3) Dupuytren's Contraction.

(3) Trauma: Causation by wounds—*continued.*

Hume, 3399–402, 3408, 3443–9; McGhie, 3569–72; Moody, 2300–4; Moir, 2673–8, 2686–7, 2700, 2716–26, 2728–34.

Origin of Dupuytren's Contraction in minute lesions, Jones, 1138.

Distinction between true trauma and repeated pressure, Hume, 3444–9.

cf. "Pressure," below.

(4) Toxic Causation:

Black, 1416–7, 1487; Moody, 2230.

(5) Microbic Causation:

Black, 1409, 1487, 1523–4; Shufflebotham, 1669; Hume, 3388–42.

(6) Alcoholism:

Moody, 2385–7; Young, 4007–8.

(7) Constitutional predisposition.—Gout, rheumatism, &c.:

Dupuytren and other authorities quoted by Collis, App. I., p. iv; Paget, App. XIV., p. xvi.

Evidence against theory of predisposition:

Collis, 30–4; 76–8; incidence of gout, &c., less in sufferers from Dupuytren's Contraction than others, App. I., p. iv.

Lace employers' evidence for:

Underwood, 480–1, 532–6; Smith, 444–7, 469, 479–81, 1318; West, 1254; Black, 1411, 1428, 1487, 1495–8, 1554–9, 1785–91, 1787, 1821; Young, 4009.

Answers by affected lace operatives to questions as to rheumatism, &c., in them and their relatives, 723, 760–2, 793, 812, 862–3, 901, 915–6.

Predisposition admitted. Discussion of its share in producing the condition: Jones, 1059, 1061–2, 1068, 1099, 1134, 1149–57.

Predisposition asserted: Shufflebotham, 1668–9, and *cf.* 1582, 1660–1. Predisposition admitted. Part played by discussed. Possibility asserted of separating cases in which pressure, &c. was the determining factor: Moody (for the Miners' Federation), 2219, 2244, 2323–4, 2330, 2383–7, 2351–57, 2371–4, 2382–91, 2397–404, 2436–47. Evidence of the representatives of the Mining Association of Great Britain: Dupuytren's Contraction bound up with constitutional tendencies; Moir, 2705; and *cf.* 2625, 2639–58, 2662–4, 2682, 2688–91, 2714–5; Hume, 3389–98, 3408, 3431–2, 3454–6; Predisposition. Part played doubtful; some connection with gout and rheumatism: McGhie, 3555–8, and *cf.* 3528, 3537–9.

(8) Pressure, &c.

Generally: the theory of causation by pressure Dupuytren's view, App. I., p. iv. Other authorities quoted by Collis. App. I., p. iv. Collis, 30–4, 39–43, 48–54, 78–82, 132–6; Smith, 440–4, 467; Jones, 1050, 1069–70, 1094–5; Black, 1487, 1506–9, 1521; Shufflebotham, 1570–76, 1633–54, 1855–64, 1868–72; Moody, 2218–22, 2233–39, 2253–55, 2330, 2394–404, 2411–2, 2436–47; Moir, 2635–9, 2646–8, 2688–91; Hume, 3406–29*a*, 3443, 3488–504.

See also, as bearing on the question of causation by pressure:

"Classes of persons affected" below; "Hand affected," "Finger affected," "Part of palm affected," above.

Intermittency, &c. of pressure: Black, 1810–13, 1815–6; Shufflebotham, 1868–1872; Moody, 2389.

Distinction between types of pressure, &c.:

Pull; drag; stress; Eatock, 235–7; Jones, 1142–3; Black, 1806–9, 1815; Hume, 3422–3. Clinging pressure, Hume, 3413–23. Concussion, Moody, 2313–4; 2430–5.

Distinction between trauma and results of pressure, Hume, 3444–9. Distinction between repeated and exceptional stress, Eatock, 235–7.

(9) Games, hobbies, &c.:

Cricket: Collis, 79–82; Shufflebotham, 1695.

Rowing; Collis, 79–82.

Driving; Moody, 2224–39.

Gardening; Jones, 1105–8; Smith, 450–58; Wardle, 578–84, 611–7; Underwood, 1358–63; Black, 1519–20; Shufflebotham, 1695. Lace operatives affected who had not gardens, 720–2, 789–92, 864–5, 902, 917, 946, 979, 995. An operative who gardened, 813–21.

Fishing; Wardle, 578–84. An operative, 752–4.

Professional playing of games:

Polo, 1034–5, 1039–40, 1109–1114.

Walking sticks, use of:

Jones, 1069, 1129–30; Moir, 2666; McGhie, 3538. Paget, App. IV., p. xvi. A case in App. VII., p. xvii.

cf. "Persons not manual workers," below.

Classes of Persons affected:

General evidence and statistics, Collis, App. I., p. v; Jones, 1109–15, 1207–13; Shufflebotham, 1545–55; Black, 1483–6, 1782–6, 1798–1800.

Persons not manual workers, Collis, App. I., p. v., 44–5, 141–2; Jones, 1013–46, 1114, 1123–9; West, 1257; Black, 1420, 1440, 1468, 1486–7, 1501–4, 1529–33, 1755–85, 1792–6, 1817; Smith, 1289–97; Young, 3986–8; Shufflebotham, 1554–5, 1632, 1637–44, 1663–6, 1704–15, 1858; Moody, 2224–39, 2407–8; Moir, 2661–70, 2705–12; Hume, 3434–6; Llewellyn, 3007–12, 3017–23; McGhie, 3528, 3538. Table of Cases, App. VIII., p. xvii; App. IX., p. xvii.

Hospital, infirmary, and workhouse inmates:

Collis, App. I., p. iii; Black, 1466, 1470–2, 1475–82, 1755, 1783, 1826–44; Shufflebotham, 1716; Hume, 3364–3403, 3457–3504, App. IX., p. xvii.

Local incidence:

Nottingham and London; Black, 1482–6, 1499, 1500; Scottish and English lace factories; Collis, 1377–99; Young, 3967–4041.

Disease unknown in India and Japan, Shufflebotham, 1545–55; Black, 1818–19.

Among miners, *see* "Miners" below.

Various workers:

Collis, App. I., p. v; Jones, 1032–56, 1069–70, 1086; Black, 1430–40, 1755–76, 1826–44; Shufflebotham, 1583, 1592, 1593, 1689, 1704–18; Moir, 2695–99, 2705; Hume, 3363–82, 3403–4, 3490–504, 3426–29*a* and Tables in Appendix VI., p. xvii.

Particular occupations;

Lace workers; Miners, *see* below. Tinplate workers, Collis, App. I., p. viii; Granite dressers, Collis, App. I., p. viii. Railwaymen, Shufflebotham, 1597–1663, 1716; Moir, 2695–6, and *cf.* a lace worker's evidence, 969–71. Trammen; Shufflebotham, 1603–13, 1716; Carpenters; Arlidge, App. I., p. iv.; Gardeners, Paget, App. IV., p. xvi.; Dust tile makers, Shufflebotham, 1614–15, 1716. Ironworkers; McGhie, 3528. Soldiers, ex-soldiers, Shufflebotham, 1710–15. Professional polo players, Jones, 1034–40, 1109–14. Gymnasts, Moody, 2224–39. Drivers, McGhie, 3555. Shopkeepers; Moody, 2407–8. Sailors, Moir, 2697–99; Hume, 3490, 3499. Sailors and fishermen, Jones, 1038, 1087. Gamekeeper, 3538. Glassblowers, 128–140. Wire drawers, Dupuytren's Contraction common in, Paget, App. IV., p. xvi. Not observed in, Eatock, 218–22. Key-makers, Paget, App. IV., p. xvi. Lock and key makers. Cotton-twisters, Dupuytren's Contraction not observed in, Collis, 55; Eatock, 223. Washerwomen, Jones, 1069–70.

(3) Dupuytren's Contraction.

Lace workers:

See throughout the evidence of:

Home Office Inspectors:

Collis, 1–164; Eatock, 165–253. Their report, App. I., p. i. And as to Scotland, Collis, 1377–99.

Employers' witnesses:

Underwood and Smith, 391–538, 1283–1376; West, 1214–82; Black, 1400–1533, 1755–1854; Young (Scotland), 3967–4041.

Union Secretary, 539–681; Operatives and ex-operatives, 682–1007.

Shufflebotham, 1571–97. Hume, 3490.

Description of conditions, Collis and Eatock, App. I., p. v. Better in larger factories, Black, 1528.

Incidence of the disease among lace minders:

Collis and Eatock, App. I., p. vii.; Tables at pp. viii and xi. Collis (Scotland), 1377–99. Anderson and Willis (Nottingham), App. II., p. xv. Smith (Chard, Scotland), 467. Young (Scotland), 3967–4041.

Employers' evidence:

Smith, 397–415, and as to cases mentioned by Collis and Eatock, 1306–14; Underwood, 484–7, 516–30. And as to incidence among minders and other lace workers respectively, Underwood, 504–9; West, 1236–52, 1258–63, 1279–82. Their medical representative, Black, 1774–76, 1850, and as to ex-lace workers in workhouses, 1760–9.

Workmen's evidence:

Wardle, 563–4, 593–602, 677–81. Operatives. *See* throughout their evidence, 682–1007.

THE LEVERS:

Levers used more in the lace trade than in other trades, Eatock, 241–53.

Description, Collis and Eatock, App. I., p. v.

Types of: types of handles:

Collis and Eatock, App. I., p. v, ix, xi; Tables at p. x, xi, xiv; Eatock, 177–9; Smith, 429–35; Wardle, 548–50, 611, 668–76; An operative, 886–95; West, 1230–5; Smith, 1334–50; Underwood, 1364–74.

Position; Eatock, 181–2, 227–30.

Method of grasping:

Wardle, 585–91; Jones, 1206; Underwood, 1370–1, 1375–6; Black, 1802–3; Smith, 428–36, 459–65. Young, 3996–4000, 4035–4037.

Pull involved:

Collis and Eatock, App. I., p. ix, xi. Tables at pp. x, xi; Collis, 152; Eatock, 172–6. How ascertained: Collis, 151. Criticism of their conclusions: Smith, 1334–7. Less if machinery is properly tended and lubricated: Collis and Eatock, App. I., pp. vi, vii; Collis, 153; Eatock, 184–5; and in case of newer machines, Collis, 164; but not in all cases, Wardle, 637–9. An operative, 724. Scottish conditions, Collis, 467, 1388–9, 1396. Young, 3989–3995, 4014–4022. Nottingham conditions stationary. Operatives, 724, 798–800, 810–1, 972–5. Absence of incentive to care when inclusive rent is paid for power, Eatock, 198–206, and *c.f.* Smith, 426–7. Less pull required if levers are longer, Eatock, 183; Wardle, 668, 673–6; or if compound levers are used, Eatock, 187, 231–2; Wardle, 639, 669. An operative, 875–6. Heavy machinery blamed by men, Collis, 155. Operatives, 698–712.

STARTING WHEELS:

Collis and Eatock, App. I., pp. vi, ix, xi; Eatock, 188–91; Smith, 437–9. Do they account for bilateral cases, Eatock, 190–7. Do they account for typical site of callus or corn; Eatock, 189–97.

Miners:

See the evidence of: Shufflebotham, *e.g.*, 1618–32, 1857–65, &c.; Moody, 2211–2456; Moir, 2612–2734; Llewellyn, 3007–50; Hume, 3347–3504; McGhie, 3505–78; *c.f.* Arlidge, App. I., p. iv. Tables in App. VII., p. xvii.

Difference in local conditions, kinds of coal won, tools used, &c., Shufflebotham, 1620–9; Moody, 2258–74, 2376–87, 2434; Moir, 2630–3, 2692–4, 2714–5; Hume, 3390–7; Llewellyn, 3038–9; McGhie, 3513–58, 3578, and App.

Beathand. *See* "Analogous Conditions" above.

Risk of Dismissal of Sufferers:

Obstacles to their re-employment:

Collis, 89, 120, 150; Eatock, 216–7; Wardle, 564–8, 604–10, 623–30, 631–6, 641–7. Lace operatives, 755–7, 764–6, 866–9, 870–4, 919–22, 976–7, 1004–7; West, 1247–9, 1477–8; Shufflebotham, 1720–2.

Treatment:

Generally:

Moody, 2448–55; Moir, 2713.

Increased use of hand, Black, 1520, 1816–7.

Ionic medication, Moody, 2342, 2249–51, 2253–4.

The Bier treatment, Moody, 2343–6.

A simple form of passive congestion, Moody, 2344.

Hot water, Moody, 2347.

Hyper-extension of the affected fingers, Jones, 1089–1190, 1161–74, 1179–80, 1182–95, 1198; Shufflebotham, 1682–4; Moody, 2338.

Multiple incisions (referred to as "tenotomies" by Jones), Jones, 1175–80, 1091–5, 1182–92, 1198; Shufflebotham, 1677–85, 1725–30; Moody, 2348, 2453–56.

Amputation:

Collis, 114–8; Wardle, 560. Lace operatives, 713, 734–747, 821–50, 859–61, 877–8; Black, 1485; Shufflebotham, 1728–9; Moody, 2322–28, 2330, 2352, 2417, 2453–54.

Question of making the grant of compensation subject to undergoing operation, &c.: Jones, 1182–92, 1198; West, 1270–74; Shufflebotham, 1725–31; Moody, 2418–29, 2448–56.

Union's treatment of sufferers; Wardle, 573–77.

Applicability of National Insurance Act; Wardle, 657–666.

Burden of compensation:

On small employers, Eatock, 207–12. Times bad in Nottingham, Eatock, 212–4; Wardle, 618. Employers willing to bear burden if case made out, Eatock, 215; Underwood, 531; *cf.* Smith, 468.

Probability of claims:

West, 1253–6; Shufflebotham, 1722; Llewellyn, 3047–50. Young, 4027–33, 4038–41.

Question of liability of successive employers; West, 1253.

Onus of proof:

As regards lace workers:

Should be on the employer, Collis, 98–100; Jones, 1119–22.

On the workman, Black; 1513–18, 1820–5; Young, 4010–4013.

As regards other workers than lace workers:

Might be left on the men, Collis, 98–100; Shufflebotham, 1689–96.

In mining. Objection to throwing onus on employer; Llewellyn, 3042–7.

In any employment; should be on the worker, Moody, 2295–8.

(4) Writers' Cramp.

See the evidence of Shufflebotham, 2012–2102; Grünbaum, 2013–2210; Cuff Smart, 3742–3834; Sinclair, 4042–4242.

References to, Authorities, App. XX., p. xxviii.

Nature of the disease:

Disease in the central nervous system, the result of a weakening or breakdown of the cerebral controlling mechanism in consequence of strain upon muscles, Sinclair, 4056; Shufflebotham, 2053–6.

Possibly two types, in one of which the reaction of degeneration may be elicited in certain muscles, Grünbaum, 2134.

Occupational character, Shufflebotham, 2016, 2026; Grünbaum, 2209; Sinclair, 4188.

Development:

Period for development or incubation, Grünbaum, 2177–9, 2198; Sinclair, 4165.

Non-progressive nature of some cases, Sinclair, 4215–4223.

Others progress and even involve larger groups of muscles, Sinclair, 4197–99.

Symptoms:

Involuntary, violent, and painful contraction of muscles, Sinclair, 4054, and *cf.* 4203. Spasm, Shufflebotham, 2014. Pain, Shufflebotham, 2014–5; Grünbaum, 2155–60, 2183–6; Sinclair, 4056–71, 4096, 4108, 4219. Changes in reactions, Shufflebotham, 2015; Grünbaum, 2134, 2135, 2188–91, 2196–7, 2203–4. Or in irritability of nerves to muscles, Grünbaum, 2189–91. Numbness, weakness, and debility of muscles, paresis or paralysis, tremors, incoordination of movements, Shufflebotham, 2014–5.

Incapacitation:

Demonstrated by the symptoms, and *see e.g.*, Grünbaum, 2182, 2198; Sinclair, 4160; and *see* under "Treatment and Prospect of Recovery" below.

Factors in causation:

Generally, importance of the personal or constitutional factors, Cuff Smart, 3771–2; Sinclair, 4194–5.

Long hours, overwork, Shufflebotham, 2013, 2049–61; Grünbaum, 2134, 2166–8, 2202, 2140, 2163–5, 2183–5. Cuff Smart, 3773; Sinclair, 4057, 4125, 4175–4185, 4219. Especially in one-clerk offices. Shufflebotham, 2013, 2035; Grünbaum, 2166; Cuff Smart, 3816–7.

Work done privately or out of the usual employment, Shufflebotham, 2026, 2037; Grünbaum, 2192–3; Sinclair, 4189–92.

Heredity, Shufflebotham, 2016; Grünbaum, 2127.

Nervous temperament, Shufflebotham, 2016, 2050–52; Sinclair, 4062, 4124.

Emotional temperament, Grünbaum, 2136.

Anxiety, worry, &c., Shufflebotham, 2016, 2023.

Distress, shock, Grünbaum, 2136.

Rheumatism, Cuff Smart, 3775.

Neuritis, Cuff Smart, 3775, 3776.

Paralysis, Cuff Smart, 3777.

Alcoholism, Shufflebotham, 2016–24.

Smoking, Shufflebotham, 2016–24.

Weather, Cuff Smart, 3774.

Style of writing, Shufflebotham, 2016; Grünbaum, 2131–3, 2199*a*–2202; Cuff Smart, 3773; Sinclair, 4125, 4219.

Shape of penholder, amount of desk room, &c., Sinclair, 4125.

Writing figures; writing other than figures, Cuff Smart, 3774.

Incidence; prevalence:

SEX, Shufflebotham, 2016, 2041–5; Grünbaum, 2122–23, 2170. No cases in women in employ of Railway Companies or Clearing House, Cuff Smart, 3755–59. Some in the Post Office, Sinclair, App. XVII., p. xxvi.

AGE, Shufflebotham, 2024, 2044–8; Grünbaum, 2114–5, 2180–1; Sinclair, 4116, 4149, 4152. App. XVII., p. xxvi. Great variations in, Cuff Smart, 3812–5.

Incidence; prevalence—*continued.*

Persons only partly engaged in clerical work, cases in, Cuff Smart, 3760–67, 3771; Sinclair, 4175–80.

In small offices *cf.*, "Factors in Causation" above.

Shorthand writers, Shufflebotham, 2015; Grünbaum, 2122.

Newspaper reporters, Shufflebotham, 2012, 2033–4.

Commercial clerks, Shufflebotham, 2034.

Railway clerks and other railway employees, Cuff Smart, 3742–3834.

Post Office employees, Sinclair, 4042–4242.

Persons with telegraphists' cramp, incidence of writers' cramp among, Sinclair, 4074–78, 4115, 4143.

Generally; extent of prevalence, Shufflebotham, 2032–34; Grünbaum, 2210. Only 78 cases in 25 years among all the Railway Companies and the Clearing House, Cuff Smart 3747–9, 3753, 3768–70, 3793–94. No cases of discharge or superannuation in Clearing House, Cuff Smart, 3778–80. Only five cases of total incapacity in Railway Companies servants, Cuff Smart, 3798. 14 cases in 8,518 present employees of General Post Office; none superannuated for total incapacity, Sinclair, 4109–4121.

Analogous conditions:

GENERAL NAMES FOR:—

"Occupational Palsy," Shufflebotham, 2026–8–9. "Craft Palsies," "Occupation Neuroses," Grünbaum, 2112, 2137–9. "Occupational Cramps," Sinclair, 4044–4054.

PARTICULAR CRAMPS:—

Typewriters' or Typewriting Cramp, Shufflebotham, 2012, 2013, 2026, 2043; Grünbaum, 2170–76. Only one case traceable by Railway Companies and Clearing House, Cuff Smart, 3750–2.

Pianists' cramp, Shufflebotham, 2027–9; Grünbaum, 2108, 2173–6; more easily curable, Shufflebotham, 2030–1.

Cramp in seamstresses, cigarette makers, sawyers, milkers, tailor treadlers, glass blowers, and bricklayers, and aphonia or loss of voice in clergymen, public singers, and auctioneers, Sinclair, 4047–4052.

Violinists' cramp, Shufflebotham, 2027–8; Grünbaum, 2108.

Dancers' cramp, Grünbaum, 2106; Sinclair, 4047–52.

Tennis elbow, Grünbaum, 2109.

Telegraphists' cramp, Grünbaum, 2108; Sinclair, 4042–4242. Among railway telegraphists, Cuff Smart, 3804–10, 3825–8.

Argument in favour of scheduling writers' cramp from its analogy with telegraphists' cramp, Shufflebotham, 2016, 2026, 2053–60, 2070; Sinclair, 4044. Writers' cramp is of wider scope, Shufflebotham, 2070.

Hammerman's palsy, Grünbaum, 2109–11.

Similar Symptoms:

Local diseases, rheumatic affections, neuritis, and weakening of muscles from local causes might be confused with writers' cramp, Sinclair, 4123.

Case of neurasthenia offering many points of resemblance to writers' cramp, Sinclair, 4211–4214.

Similar symptoms in early disseminated sclerosis, Grünbaum, 2208.

Diagnosis:

By a process of exclusion, Shufflebotham, 2017–9.

How to exclude cases of mere nervous breakdown, Shufflebotham, 2051; or fatigue, Shufflebotham, 2075–6; and other cases where pain is alleged—one should wait for the objective symptoms, Sinclair, 4056–71, 4096–7, *i.e.*, repeat the examination, 4128–9. The incipient stage is really negligible, Sinclair, 4201–3.

Generally, Shufflebotham, 2070–84, 2101–2.

Should patient be required to produce to certifying surgeon medical certificates? Shufflebotham, 2072–6.

Referee should be a specialist, Sinclair, 4141–43, 4161–2, or make a very careful examination, 4186–7.

(4) Writers' Cramp.

Simulation or malingering:

Impossible, Shufflebotham, 2038–9.
Handwriting might be imitated but the simulation would be detected, Shufflebotham, 2080–4.
Effect of writers' cramp on handwriting, Shufflebotham, 2076–84; Sinclair, 4141–43, 4204–11.
See Grünbaum's evidence, 2145–62, 2183–6, especially 2145–47: "Malingering is possible in almost every "disease, and detection depends upon the ratio of "the knowledge of the disease possessed by the "investigator to that of the malingerer."
Risk of, Cuff Smart, 3794–6.
How to detect, Sinclair, 4056–71, 4096–4108, 4204–6.

Treatment:

Rest, or change of employment, Shufflebotham, 2020, Grünbaum, 2141–2, 2205–7; Sinclair, 4144–6, 4229–4235; Cuff Smart, 3778, 3780; rest useless in cases where there is visible cramp or spasm, Sinclair, 4145–48.
Use of other hand, Shufflebotham, 2023; cases cited by, Cuff Smart, 3778; and by Sinclair, 4122, 4152–5, 4160–4; not always possible, Sinclair, 4196–9.
Use of typewriter, &c., Shufflebotham, 2023; Grünbaum, 2206–7.
Use of larger pen, Cuff Smart, 3778.

Prospects of recovery:

None, when there is visible cramp, Sinclair, 4145–48. Not so great in writers' cramp as in cases when the occupation is more rhythmic, Shufflebotham, 2030–1; and *see* Shufflebotham, 2023; Grünbaum, 2194–5. Incapacity may last years, Shufflebotham, 2021–6, 2046–8, 2066; or for life, Cuff Smart, 3811, 3815, 3818; Sinclair, 4152, 4160.

How cases of the disease are or should be met:

Application of National Insurance Act Shufflebotham, 2063.
Superannuation said to be a sufficient remedy in case of Railways and Clearing House, Cuff Smart, 3778–93, but does not apply to young men, Cuff Smart, 3813, 3831–4.
Superannuation and compensation ought not both to be payable, Cuff Smart, 3799–3803, 3819–23.
Distribution of burden of compensation among successive employers, Shufflebotham, 2085–94; Grünbaum, 2199; Sinclair, 4166–4174.
? How fix *date* of causation, Shufflebotham, 2085–94.
? Limit period for which compensation is to be payable, Cuff Smart, 3815, 3818; Sinclair, 4152, 4160.
? Require review at the end of a year, Sinclair, 4149–50, 4156–7, 4225–28, 4236–42.
? On whom should be onus of proof, Sinclair, 4188–92.
The burden of compensation—Generally, Shufflebotham, 2069–70; Cuff Smart, 3811; Sinclair, 4151–2. In cases of nervous breakdown, &c., Shufflebotham, 2099–2100.

Possible effects of scheduling:

Incipient cases, risk of dismissal, Sinclair, 4143, 4183, and of difficulty in getting work, Sinclair, 4169–73 or of deleterious effect by way of strengthening subjective symptoms, &c., Sinclair, 4223–5.
Advanced cases receiving compensation—would they seek other employment, Shufflebotham, 2036; as to the advisability of a change of employment, *see* under "Treatment" above, and, as to safeguards by way of limitation or review of compensation, *see* the heading next preceding this.

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