67. Would you expect clover-cultivation to continue creating a sufficient and continuous supply of humus to make the soil fertile by the application of manure?—Up to a certain extent. The clover pasture will die out in time, and then the other grasses will come on, and when you subsequently top-dress you get the clovers back again in time. You cannot maintain clovers always.

68. The ground would get what is commonly called "clover-sick"?—Yes, you would expect that. Judging by experiments of other countries the land would not be able to support the growth of clovers that we get at present.

69. *Mr. MacDonald.*] In the paddocks you had three steers on 4 acres of land for thirteen months?—Twenty months.

70. This land with a top-dressing enabled you to keep three head of cattle in good condition for twenty months?—Yes.

71. *The Chairman.*] Is that the land you dressed with half a ton of basic slag?—No, with superphosphate.

72. *Hon. Sir J. Findlay.*] There is a well-recognized difference between scientific certitude and scientific opinion: your evidence to-day is on the basis of scientific certitude?—Yes.

73. Now, I want to ask you one or two questions on the basis of scientific opinion?—Yes.

74. You have seen some of the farms in the vicinity of Lichfield?—Yes.

75. There is one farm, you say, where you were told 3 cwt. of this chemical was used: had you any reason to doubt the accuracy of that statement?—Not at all. That farm was at Mamaku.

76. It was pumice land?—Yes.

77. Whose farm was it?—It belonged to J. W. Wrigley.

78. What was the area, so far as you recollect?—About 300 or 400 acres.

79. What results, so far as your observation went, did you see?—I did not see the land myself—I am speaking from hearsay—but I heard that they top-dressed it with about 3 cwt. of slag, and Mr. Wrigley's description of it was that it was marvellous in its results.

80. Have you any reason, therefore, to doubt that 3 cwt. of slag would achieve the results he has obtained?—No, I should think it highly probable it would.

81. Dr. Pomare put to you some questions on the assumption that you were to put half a ton of slag upon the land, and that you were to repeat that every seven years, so that in twenty-one years there would be three applications. I do not think that you expressed as a scientific fact that the application would be required every seven years?—Certainly not; I did not mean to imply for a moment that 10 cwt. of slag would be required every seven years.

82. First in point of quantity, and, secondly, in point of time?—That is so.

83. A lesser quantity might be sufficient for a much longer time?—Yes.

84. You know of no case where such a quantity as half a ton is used by any practical farmer?—No, not on pumice land.

85. I am not going to add to your reasons, because with scientific men I think it is wise to take their conclusions. I want your conclusion: Taking the nature of that pumice land, do you think it is capable of profitable cultivation treated as you have suggested?—Yes.

86. You were asked this by Mr. Guthrie last year (question 17, page 21): "In the event of fertilizing the soil and putting grass on it, do I understand that it would be permanent as long as the grass remained on it?" Your answer was, "I said the effect of the superphosphate would be permanent." You adhere to that still?—Yes. Superphosphate means any phosphate.

87. Question 12: "How many years would you expect its effect to last in the soil?" You answered, "It is impossible to say how long—practically for ever. So long as you keep the soil-covering the effect will be prolonged indefinitely." You reaffirm that to-day?—Yes. You change the nature of the country by adding the superphosphate. It will gradually diminish, but the effect will last indefinitely.

88. You were asked this question: "Having regard to the fact that the land requires manuring and a large amount of work to bring it into cultivation, do you not consider it is advisable to work it in small areas?" You answered, "It is certainly suitable for small areas—that is, cutting it up and planting live hedges and wind-shelters on it. That is the only way in which it can be worked." Do you adhere to that view?—Yes; I am of opinion that the land is more suitable for working in small areas than in large areas.

89. You are impressed with the possibilities of that land?—Yes.

90. Do you think it would be a good thing to afford access to this land for the purposes of cultivation?—Undoubtedly.

91. That is a pre-essential to the delivery of cheap manures *in situ?*—Yes, and to get the produce away.

92. Are you prepared to say the completion of that railway is essential to the cultivation of this large area?—I do not think I would go so far as that.

93. Do you think that with cheap access, a cheap method of bringing manures in and taking produce out, the land could be profitably farmed?—Yes; if put that way, I think so, certainly.

94. *Mr. Buchanan.*] There is one question I would like to put arising from Sir John's questions: Your answer with regard to the permanent effect of the application of phosphate was that it would last for ever?—The effects would last for ever. Of course, they would diminish; but so long as you keep that soil covered you have an improvement in it. It is bound to affect it for all time.

95. Farmers in the ordinary cultivation of their soil repeat the application of phosphate, say, every time they grow a crop of turnips?—Yes.

96. If the first application were followed by a permanent result, why, then, should it be necessary to make a second, third, and fourth application?—The turnip is entirely an artificial vegetable. It requires its food very close to the root, which is very small and limited in its