To the Chairman: The present price of casein is £80 per ton. This year we have not sold any, but we know the market is down. There are two other factories in New Zealand—at Frankton Junction and at Dargaville. We hold the patent rights, but anybody can use them.

To Dr. A. K. Newman: Our output of casein will be 550 tons. Frankton, I think, will reach 100 tons, but next year it will have a great deal more. The Dargaville factory will not put out more than 50 tons. In 1913 the world's consumption of casein was 17,000 tons. These are the latest figures I have. Since then the flying-machine industry has taken large quantities. It is used as a varnish for the wings, as it does not crack with variation of temperature. New uses are being found for it every day. To my knowledge it is now used in 150 different industries. It is used in the manufacture of artificial leather, artificial silk, buttons, handles to knives, billiard-balls, and other things. It is used, too, in the electrical industry. It is a non-conductor of electricity and is non-inflammable. It can take the place of celluloids. It is likely that the demand for casein will be an ever-growing one. I will furnish the Committee with a list of the manufactures in which it is used, as far as I know them.

The Chairman: In Wellington Mr. Cuddie said, "We have an officer who gives practically all his time to this industry."

Witness: I understand he alludes to Mr. Pedersen; but that officer looks after not only the casein industry, but also pasteurizing, instructing in buttermaking, and so on. Mr. Pedersen got the knowledge that was imparted to us by the chemist who came from Australia. Subsequently he was sent by the Government to Denmark and Germany, where he found that the method we had acquired was really the best one, and since his return he has given instruction from time to time in the making of casein to factory-managers. He has never done us any good, however.

To the Chairman: The New Zealand Casein Company have been manufacturing buttermilk casein for the past three years. The Department in Wellington say that an officer of the Department has discovered how to make casein from buttermilk. It is not likely, however, that the Department will get a patent, as their method is an infringement of ours. We get on well with all the officers of the Department except Mr. Pope. The industry is a successful one, and we are doing well. We think, however, that the question of a bonus might be brought up again. We have been unfairly treated, and we hope to get some of it, considering the money we have expended on our experiments. We hope to develop a large industry by manufacturing goods from casein. For one thing, I think that concrete as a building-material will be largely used, and only casein paint can be successfully used on concrete. It is in a matter of that kind that we would like to get expert advice from the Department in order to assist us, and then, when we have advanced a certain distance, we would like some protection.

W. P. HESKETT examined.

The two best-known deposits of iron-ore in New Zealand are the brown hæmatite in the Collingwood district and the magnetic ironsand of the Taranaki Province. I will take the Parapara iron-ore first, and I think a pertinent question may here be asked: Would this iron-ore be used if situated in Europe or America? And the reply is undoubtedly Yes. Perhaps a comparison of some of the European ores with that of Parapara may be instructive, and it will be shown that some of the Spanish ores (hundreds of thousands of tons are imported annually into Britain from Bilbao, Spain) are practically of the same quality as the Parapara ore. [Comparative statement of analysis of ores quoted.] It has been stated by previous witnesses before this Committee that the phosphorus in this ore is rather high—namely, 0·13 to 0·15 per cent.; but since the advent of the basic process pig iron containing up to 3 per cent. of phosphorus is daily used in the Bessemer converter. It would be necessary when using pig iron for the manufacture of steel from the Parapara ores to use the basic process, preferably the Siemens open-hearth method. In conversation with Mr. Delprat at Broken Hill in 1913 he informed me that they intended using the basic process at Newcastle, as they were on the danger-zone of phosphorus for the acid process—namely, 0·09. As to coke, it is absolutely necessary to have coal that is low in sulphur in manufacturing coke for the smelting of iron ores when the object is making steel. In this respect New Zealand is happily situated, as we have coal as low in sulphur as in any part of the world—namely, those of Paparoa, Liverpool State, at Greymouth, and the Granity duff coal, at Westport; and as the sulphur from the coke is nearly all taken up by the iron the reason is obvious. The distance between the coalfields and the iron-ore is much less than in many countries. For instance, iron-ore is taken from the head of Spencer Gulf, South Australia, to Newcastle, New South Wales, about 1,250 miles; from Bilbao, in Spain, to Great Britain, over 1,000 miles; from Lake Superior to Pennsylvania, United States, 1,000 miles; whilst the distance from Greymouth to Collingwood is about 100 miles. Coal previous to the war was carried from Newcastle, New South Wales, to Melbourne, about 500 miles; then carted to Brunswick, a suburb, three miles; manufactured into coke, and distributed to the foundries in Melbourne at 35s. per ton; so I think I am safe in assuming that coke can be manufactured at Parapara or Taranaki at the same price. Limestone is, I understand, alongside the ore; whilst at Newcastle they ship it from Tasmania, which is a considerable item when we consider that it takes on the average 5 cwt. of limestone to the ton of pig iron. I estimate the cost of producing pig iron at Parapara at present prices and freights at £4 18s. 6d. per ton. We will now take the Taranaki ironsand. The difficulty in treating this ore in its natural state in the blast furnace is due to its extreme fineness; and it is absolutely necessary before putting it into the furnace to prepare the ore into briquettes or lumps of a consistency that will stand the crushing weight and constant friction of travelling from the top of the furnace to the smelting-zone without disintegration; otherwise it will be either blown out of the top of the furnace by the pressure of the blast or filter down to the bottom of the furnace and close up the hearth. The sand can be