25th September, 1920.

Dear Sir,

I very much regret that your letter of the 21st May last, relative to the reported appearance in Australia of a mysterious bee disease, was inadvertently overlooked, and consequently a reply was not forwarded. I may state at once that this Department is in an excellent position to get first hand knowledge of the outbreak in New South Wales of any disease such as referred to, as the Department has four inspectors, three of whom are constantly travelling throughout the State, inspecting apiaries. These officers have definite instructions to promptly report the first signs of any outbreak of this nature, so that the Department may take prompt measures for combating the trouble. In addition, in the Biologist's Branch of this Department there are facilities for scientific investigations of bee disease, and in order that the position may be placed fully before you a report has been obtained from that Branch, a copy of which, fully setting out the position, is forwarded herewith. After perusal of this report, I think you will agree that there is no justification for the antagonistic attitude which has lately been taken up in New Zealand against Australian bees, particularly by advertisement in the Public Press.

I should be pleased if you would give publicity to the attached report, as it is to the interest of New Zealand bee keepers, equally with Australian, that the interchange of queen bees between the two countries should remain undisturbed. So far as New South Wales is concerned, you can readily accept this Department's assurance that there is no need whatever to apprehend risk of introducing disease, and should an outbreak occur that would be likely to expose your bee importers to the risk of introducing infection you will be frankly and fully advised of the circumstances.

Yours faithfully,

Sgd.) GEORGE VALDER,

Under Secretary and Director.

The Director General,
Department of Agriculture,
P.O. Box 666,
WELLINGTON. N.Z.

REPORT OF ASSISTANT BIOLOGIST ON THE PRESENCE OR ABSENCE OF "ISLE OF WIGHT" DISEASE IN AUSTRALIA.

This enquiry has necessitated a complete review of all the literature available relating to Microsporidiosis in bees. The following facts seem pertinent to the matter of these papers:

1. "Isle of Wight" disease as it occurred in England was a very serious epidemic disorder. Zander said the same in Germany. Drs. Fantham and Porter, after a very thorough investigation in the published account of their researches in "Annals of Tropical Medicine and Parasitology Vol. VI No. 2, 1912, described the Protozoan parasite, Nosema apis, as the cause of the trouble. They found no uniform set of symptoms but some of the following were always present:- Distended abdomen, dysenteric discharges, falling from the alighting board, a sort of paralysis and dislocation of the wings, dwindling of the colony, loss of stinging power, stationary defaecation, fouling with excrement, some darkening of the wax; occasionally "dry dysentry." They stated very definitely that there were sometimes unreliable symptoms in diagnosis. One could not be sure of finding all symptoms. Nosema spores were constantly found in association. Some bees are immune or apparently so; adverse conditions such as wet, cold weather favour the advent of the disease. Some bees are immune but parasite carriers. Feeding with Nosema spores gave rise to the symptoms of the disease. No special precautions or technique seem to have been evolved to prevent any other possible casual agent of "Isle of Wight" disease being also fed in the experiments. It would be obviously difficult to do so. Bees might be affected with the young intra-cellular stages of the parasite and die without giving rise to adule Nosema spores.

2. Fantham and Porter's work was subject to criticism by J. Anderson and J. Rennie in Proc. Royal Physical Society, Edinburgh, Sept. 1916. These writers concluded that while Nosema was associated with the disease very often there was some other unknown and external factor involved; that the disease was probably infectious. They do not to me to appear to have evaluated the importance of Fantham and Porter's decision that bee s may be immune to the effects show no signs of Nosema spores and yet die from the of Nosema, or immune and carriers of Nosema, that a bee may parasitic invasion of Nsoema in its young stages (intrae cellular). They do not record microscopic work on sectio of the bee stomach free from all diseased bees; their search for Nosema in the cases in which they get negative results was apparently confined to search of gut contents for the spores. All the evidence they adduce against the Nosema theory is thus answered by the previous work of Fantham and Porter. The statement that "the presence of Nosema or its spores was only found in 84% of the diseased bees examined from Stornoway" is more in favour of Fantham and Porter's conclusions than against them.

3. In 1918 Joseph Tinsley made a report to the West of Scotland Agricultural College still casting doubt on the work of Drs. Fantham and Porter as to the relationship of Nosema to the epidemic "Isle of Wight" disease. He states that "Isle of Wight" disease is epidemic but is in doubt as to the Nosema theory of its cause. He brings forward no fresh evidence and what he is able to say regarding development of immune strains is in line with with the gradations of immunity observed by Fantham and Porter.

4. David Ellis in "Nature" 11/4/18, page 103 concludes that there may be two diseases. He des not establish this very satisfactorily.

5. Dr. G.F. White, the greatest American authority avoids the use of the term "Isle of Wight" disease. He is not satisfi as to the identity of American Nosema disease" with "Isle of Wight" disease. For the present the American bee-keepe should bear in mind that when Nosema disease is given as th diagnosis, a condition having the destructiveness described for the "Isle of Wight" disease is not meant. "Nosema disease is such a definite condition that its differentiation from the disorders should not be difficult ~~it is the only adult disease~~ that can be diagnosed positively at the present time by laboratory methods." The symptoms he gives are:- Weakness of the colony - small or large number affected, less in strength, gradual or sudden, workers suffer most, colour changes in stomach, milky when crushed, distention of stomach, loss of transparency; large infection of Nosema and diagnostic value.

6. Nosema infection occurs in:- Brazil, Canada, England, Germany, Switzerland, and 27 States of U.S.A.

7. Nosema apis occurs is Australia. It was recorded in Victori By Price and Beuhne in 1910 (Journal of Agriculture Victori 1910) The organism was found; the milky nature of the stomach contents shows that it had much in common with the American Nosema disease. Later observations show that it is the same organism - these were made chiefly in Victoria by Mr Laidlaw B.Sc. Biologist of Dept. of Agriculture (vide p. 492 Journal of Agriculture, Victoria 11.8.13).

In 1912 the Bureau of Microbiology examined bees affected with a disease which was called "Isle of Wight" disease and Nosema apis was found. The same difference with regard to symptoms were observed:-
Crawling about the ground outside the hive, inability to fly, weakening of the colony, dysentry, paralysis, Nosema present and absent, heavy infection and low infection (vide 3rd Report Govt. Bureau of Microbiology 1912, page 134, Dr. G.P. Darnell-Smith). In 1911 in connection with an out break described as "Malignant dysentery" the Bureau of Microbiology reported the presence of Nosema apis in bees; dead bees were found around the hive (vide "Agricultural Gazette" 1911 - 3rd January).

Fantham and Porter in their report quoted above note th presence of Nosema apis in Australia.

As recently as 1919 (in "Agricultural Gazette N.S.W." page 593) Mr Goodacre has written on "Spring dwindling" the symptoms therin recorded show characteristics identical wit the American Nosema disease and though not as malignant as the"Isle of Wight" disease which assumed epidemic proportions in England - not otherwise unlike it. The fact that Nosema was not searched for or not found does not convince unless the gut was examined for young stages. Nosema has been occasionally found in bees in N.S.W.

The following seems to be the inevitable conclusions from a survey of the literature and from the knowledge in possession of this Branch regarding the "Isle of Wight" disease in this State:-

1. Our bees are somewhat immune to Nosema disease under the good conditions prevailing here.

2. We do not appear to have suffered as severely as bee-keepers in England have from "Isle of Wight" disease." It seems very likely that Nosema disease and "Isle of Wight disease are identical; that bees can develop immunity to Nosema; that they lose it if exposed to adverse conditions; especiall if short of nectar and pollen and exposed to cold, wet conditions; that some strains are more immune than others; that some bees are immune to its effects but act as carriers; that "Spring dwindling" is often the result of Nosema invasion.

The Nosema disease of America has never been as malignant as in Europe, but is otherwise very like the "Isle of Wight" disease. Probably the American bee industry is on a better footing and the strains are stronger and more immune.

RECOMMENDATIONS:-

That the New Zealand Government be informed as a result of the inquiries made that -

1. Nosema apis is present in Australia in a mild degree only, also in England, America, Brazil, Canada, Germany, Switzerland.

2. That in Australia a very malignant epidemic disease does not result from the operations of Nosema apis.

3. That this appears to be due to the relative immunity and high quality of our breeding stock.

4. That there is no fair ground whatever for treating Australian breeders differently to English breeders. If importations are allowable from England, they should also be allowed from Australia.

5. That in the opinion of this Department no damage would be done to the bee industry in New Zealand by permitting the importation of Australian queens of good strains.

6. That is is most likely that Australian queens of good strains are just as well (if not better) suited to New Zealand requirements as English or American queens.

7. That is seems likely, if examinations of bees are made in New Zealand, that Nosema will be found to occur also in that country.

(Sgd.) Chas. O. Hamblin,
Asst. Biologist,
16/9/20.