

3. HYDATID DISEASE.

In my report of March, 1927, several points for research were put forward, viz. :—

(1) *The Nature of the Spicules in the Embryo and the Composition of the Hooklets in Scolices.*—Tests show that the spicules of the embryo are completely soluble in strong nitric acid. They are probably chitinous, certainly not siliceous. The hooklets of the scolices undergo partial solution and change of refraction in cold caustic potash (6 per cent.); they are completely soluble in hot caustic potash. They appear to have a double composition. The form of the hooks in the hexacanth embryo is similar to that of the hooklets of the scolices of many of the tape-worms. They have hitherto been depicted as linear spicules.

(2) *Method of Rupture of the Embryophore.*—The hexacanth embryo (or onchosphere) is enclosed in a stout capsule, the embryophore. As discharged in the fæces of the dog, the embryophore appears to be surrounded by an irregular glutinous coating. The mode of liberation of the embryo was examined by means of (a) natural and (b) artificial gastric juice on the warm stage of the microscope. It was found that the glutinous envelope swelled up into a globular mass surrounded by a membrane and containing highly refractile granules. The embryophore was found to be composed of radially-arranged rods. After twelve hours in gastric juice these could be easily separated from one another by slight pressure. They were found to be insoluble in strong nitric acid, which, however, stained them yellow, indicating a protein nature (? keratin). They are probably cemented together by a proteid which swells under the action of the gastric juice, and this may be the mode of liberation of the embryo.

4. POLLINATION OF GRASSES.

This has an important bearing on the occurrence of hay-fever. At the suggestion of Professor Hercus, I took up during the latter months of 1927 the microscopy of grass-pollens. By favour of the Agriculture Department I have already received complete lists of grasses flowering in the greater part of New Zealand throughout a period of eleven months. These I have card-indexed for reference, examining the grass-pollens microscopically, I found so much similarity among the dried pollens that it became desirable to make a study of fresh pollens. To do this it became necessary to be able to recognize the various grasses in the fields. The past season has, therefore, been devoted to making a collection of the native and introduced grasses, studying their distribution and prevalence in the district, and their times of pollination. Assistance has been derived from the works of Hilgendorf, Buchanan, and the local lists of the Dunedin Field Club. It is clear that the best method of assessing the distribution of grass-pollens is by means of pollen-plates exposed systematically throughout a period of twelve months, from one dead season to the next.

PART 2.—GOITRE INVESTIGATION.

By DR. SHORE, Medical Officer of Health.

Towards the end of 1927 a goitre investigation was commenced in the schools in and near Wellington City. A start was made with the schools located in the Hutt Valley. Each school was visited, and each child in attendance was examined to determine the presence or absence of goitre. The following standard was adopted: Any of those children in which careful palpation failed to reveal any thickening of the isthmus or any degree of enlargement of one or other of the lobes was counted as "goitre free." The classification of the goitrous children into incipient, small, medium, or large was attempted, but it is obvious that no two examiners would agree to classification. In this report, therefore, more stress is laid upon the presence or absence of goitre than on its classification as regards size. As this is only a progress report, no attempt will be made to draw deductions or arrive at conclusions. Any suggestions made may have to be altered on completion of the investigation.

HUTT VALLEY.

This area includes all the schools at Petone and Lower Hutt, and the schools at Epuni, Taita, Silverstream, Trentham, Upper Hutt, and Korokoro. All secondary and public schools and private schools were examined.

The total number of children examined was 4,417; of that, 1,423, or 32·2 per cent., were classified as having goitre. Classifying this total into sexes, we have: Males—Total, 2,254; having goitre, 712, or 31·5 per cent. Females—Total, 2,163; having goitre, 711, or 32·8 per cent. This difference between the sexes is not significant.

The following table gives the distribution of goitre cases as shown in the returns from each school :—

School.	Percentage of Goitre.		School.	Percentage of Goitre.	
	Males.	Females.		Males.	Females.
Petone West	42·7	43·6	St. Peter and St. Paul Convent, Lower Hutt	25·0	31·3
Petone Central	47·2	48·3	Epuni	37·1	..
Petone Convent	42·7	44·7	Taita	15·8	20·3
Hutt Park (now Wai- wetū)	21·3	26·7	Silverstream	29·3	21·8
Lower Hutt Central ..	30·2	28·4	Trentham	16·6	20·0
Lower Hutt Eastern ..	26·6	28·9	Upper Hutt	22·5	21·3
Lower Hutt High School ..	18·1	35·6	St. Joseph's Orphanage, Upper Hutt	23·3	21·2
Sacred Heart Convent, Lower Hutt	33·3	26·6	Korokoro	23·5	29·4