

mental work and research, and the organization of the staff to carry it out, has been the subject of many consultations, and has taken my attention from the laboratory work. The student assistants who were trained at Weraroa have now all been provided for.

INDUSTRIAL RESEARCH.

A number of samples of tanning-barks have been collected and analysed. Articles on indigenous tans and vegetable dyestuffs were published in the Department's *Journal* for June and July, 1918, and in the *Journal of Science and Technology* for September and November, 1918. These articles have excited much interest, and the fact that brilliant and other useful colours can be obtained from a New Zealand shrub has been successfully demonstrated. Articles dyed by these colours have been publicly exhibited. The chemistry of the colouring compounds which have been isolated from the bark of the plants of the genus *Coprosma*, however, remains to be worked out.

The production of lanoline, potash, and other by-products from wool has been inquired into, and the leading firms dealing in wool have been circularized in connection with methods for saving by-products. A report and recommendation have been furnished to the Director-General on the matter.

By request a suggestive report was prepared and submitted showing the direction in which new industries might be expected to develop in New Zealand. Many of these industries, it was pointed out, were dependent on the supply of cheap power for their success. The inauguration of a national water-power scheme would do much to supply the incentive to capitalists to establish new industries.

MISCELLANEOUS SAMPLES.

Among the miscellaneous samples which have an interest was a specimen of dolomite limestone (J/657) from a seam at Tuku, Chatham Islands, which contained 55 per cent. of calcic carbonate and 39 per cent. of magnesian carbonate. As there has been some inquiry lately for dolomite in connection with iron-furnaces this occurrence at the Chathams may have some value.

The Japanese radish which had been cultivated at the Weraroa Farm was analysed, but specimens were found to have a very low dry-matter content, as follows :—

Root No.	Weight of Root.	Dry Matter. Per Cent.
K/109. 1	11 lb. 2 oz.	5.2
2	10 lb. 2 oz.	5.0
3	7 lb. 4 oz.	4.6
4	6 lb. 12 oz.	5.1
5	5 lb.	4.8

These results compare very unfavourably with turnips or mangolds, assuming that the feeding-value is proportional to the dry-matter content.

BIOLOGY SECTION.

REPORT OF THE BIOLOGIST.

Central Development Farm, Weraroa, 18th July, 1919.

The Director-General.

I HEREWITH submit my annual report for the year ended 31st March, 1919.

A. H. COCKAYNE, Biologist.

GENERAL.

The work of the year 1918-19 was considerably handicapped by the depletion of my staff due to military requirements. The majority of the work carried out was therefore mainly of a routine nature, there being few opportunities to carry on anything of a definite investigational character. There are many problems in applied botany and applied agricultural zoology having a most intimate bearing on agricultural development in New Zealand. In order, however, to carry any of these out to a definite conclusion they must be made the main work of trained investigators. It may be argued that much of the work required to be done can be carried out experimentally on the experimental farms and demonstration areas, but this assumption is wholly fallacious. Nearly the whole of the educational work of these farms and farm areas must of necessity be on demonstrational lines, rather than being directed towards the finding-out of the fundamental scientific truths that are involved in the elucidation of many of our agricultural problems.