

APPENDIX.

Dr. HECTOR, C.M.G., F.R.S., to the Hon. the MINISTER of MINES.

Notes on the Working of the Geological Department.

(MEMORANDUM.)

Colonial Museum, Wellington, 29th June, 1886.

The Hon. the Minister of Mines.

ON the 1st January last the Geological Department was removed from the control of the Hon. the Colonial Secretary, and placed under the Hon. the Minister of Mines.

Besides the prosecution of the geological survey of the colony, this branch undertakes the following public services: the Colonial Laboratory, the Colonial Museum, the publication of scientific works relating to the colony, the Meteorological and Weather Department, the Colonial Observatory for Mean Time, the Patent Office Library, the management of the New Zealand Institute, and the Colonial Botanic Garden. Reference will be made to all these branches in the annual departmental reports of the Director, which will be laid before the House as usual.

In connection with the geological survey, since the publication of the last reports a very large area of the colony has been examined. In the first place, the north-eastern district of the South Island, including the Kaikoura Mountains, has been surveyed with the most interesting results, disclosing indications of the possible existence of diamondiferous deposits in that district. From the Malvern Hills southward, and in Otago and Canterbury, the relations of the strata have been examined, with the view of ascertaining what steps should be taken towards opening up fresh coal-deposits, as those which have supplied the market for many years past are being gradually worked out. The failure of the Shag Point Coal-mine has been a serious loss to the colony; but it is satisfactory to find that workable coal-seams are likely to be found at a number of other places in the neighbourhood, and that the coal-formation covers a very extensive area, the coal-seams appearing to get thicker as they are followed to the eastward and into deeper ground. The result of the survey so far in this district is to encourage the prospect of obtaining useful results by boring to a depth not exceeding 400ft. or 500ft.; but the selection of the exact sites of such bore-holes will require to be decided on after mature consideration. In the North Island the survey of the coal-bearing country in the North Auckland District has been further continued, with the view of defining its limits and ascertaining the probable position of the seams, if present, with relation to the strata in the vicinity of Auckland. A very large area of the King country, extending from the Mokau to the source of the Rangitikei, has also been rapidly examined with very good results, fully confirming the existence of a large area of coal-bearing strata, in which six distinct seams were observed, varying in thickness from 2ft. to 8ft. These coal-seams lie at low angles, and rise into sound country easily accessible from the Wanganui River and its tributaries.

In addition to this work, special examinations and reports have been made by the department upon minerals of many other localities. Analyses have been made to the number of 411 during the year, making a total of 4,336 which are now on record in the Laboratory books. These analytical determinations were made in connection with the survey, for the public or the Government in connection with the administration of the various Acts, and for the Departments of Customs and Justice. The adjustment of all the standard weights and measures throughout the colony is also performed by the Laboratory.

The Colonial Museum, although a public institution, is primarily intended as a necessary adjunct to the Geological Survey Department, for without the careful preservation of the specimens upon which such survey-work is founded, no reliable basis can be obtained for the preparation of reports and maps. The additions to the Museum are therefore chiefly in the form of fossils and mineral specimens; and the accumulation of these to the number of several hundred thousand specimens, which are in packing-cases, has now crowded the Museum to such an extent that the work of the department is seriously impeded. This want of space also retards the publication of the results of the work done in that full and exhaustive manner which is required in order that the country may derive the fullest advantage from the investigations of the department.

The representation of this department at the Indian and Colonial Exhibition was made very complete; and, as may be judged of by the catalogue of exhibits which has already been laid before the House, it embraces a complete set of specimens illustrative of the geology of the country, and a valuable series of casts, geological maps and relief models, and sectional views. A special edition of the "Handbook of New Zealand" was also prepared, and several other important works will be found enumerated in reports in course of publication.

The Meteorological and Observatory branch includes four second-class meteorological observatories, and a large number of third-class stations, where the rainfall and state of the weather are recorded. I would suggest, as most important in the interests of the agricultural community, and also for the information of the Public Works Department, that the number of rainfall stations should be largely added to by issuing rain-gauge forms to all telegraph-stations and schools throughout the colony, as it is found that the rainfall is frequently very local, and it is only by multiplying the points of observation that anything like accurate results can be obtained. The Weather-reporting branch is of a twofold character—viz., the publication of the state of the weather all over Australia and New Zealand by a system that was determined by the intercolonial conference some years ago. The local weather for the different parts of New Zealand, with warnings of any expected change of importance, is also transmitted by telegraph at as frequent intervals throughout the day as may be required.