

Volume X. contains 78 articles besides several short notices which appear in the Proceedings, 23 plates, and 629 pages of letter-press.

The following is a comparison of the sections of the work, with last year's volume :—

| | 1878. | 1877. |
|----------------------|-----------|------------|
| Miscellaneous | 190 pages | 316 pages. |
| Zoology | 154 ,, | 173 ,, |
| Botany | 78 ,, | 61 ,, |
| Chemistry | 36 ,, | 7 ,, |
| Geology | 48 ,, | 42 ,, |
| Proceedings | 63 ,, | 62 ,, |
| Appendix | 60 ,, | 63 ,, |
| | 629 ,, | 724 ,, |

The number of Volumes of Transactions now on hand, is as follows :—

Volume I., 2nd edition, 448; Volume II., none; Volume III., 10; Volume IV., 8; Volume V., 74; Volume VI., 80; Volume VII., 169; Volume VIII., 36; Volume IX., 177; Volume X., 30.

The appended statement of accounts shows a balance to the credit of the Board of £37 1s. 10d.

The annual reports of the various departments attached to the Institute, are also appended, together with a list of the additions to the Library.

JAMES HECTOR, Manager.

Approved by the Board, 4th September, 1878.

W. B. D. MANTELL, Chairman.

MUSEUM.

The number of names entered in the Visitors' book at the Museum during the past year has been 15,000.

Since the 7th July the Museum has been opened to the public for two hours on Sunday afternoons, and the large attendance, varying from 300 to 800 persons, indicates that there are many who are glad to take advantage of the opportunity thus afforded for examining the collections.

There have been 9,880 specimens added to the collections during the past year; 7,519 of which are mineral and fossil specimens obtained during the geological survey of the colony which is in progress, and 195 specimens deposited on loan.

Herbarium.—The collections in this department have received only inconsiderable additions, and the arrangements for the thorough preservation of the dried plants are quite insufficient. It has, therefore, been considered inadvisable to unpack the large herbarium of foreign plants until

proper cabinets have been provided for their reception, so that this special gift from the Trustees of the British Museum, which numbers 28,000 species of plants for reference, is still inaccessible to students.

Natural History Collections.—The detailed study and classification of the collection is rapidly advancing, and arrangements have been made with the Education Department to secure the services of a wood engraver, so that the illustrations for the new editions of the Natural History Catalogues, which are now out of print, may be obtained in a form that will admit of their being also used for the illustration of elementary text-books for the use of schools.

Mammalia.—The classification of the New Zealand Cetacea has undergone revision, and the results, so far as they relate to the larger forms, have been published in the Transactions of the Institute ("On the Whales of the New Zealand Seas," by Dr. Hector. Vol. X., p. 331).

The most important addition to the collection of this section has been a fine skeleton of the Whale-killer (*Orca pacifica*), presented by the Royal Society of Tasmania.

Birds.—The principal additions to the collection of birds during the year, was obtained by exchange from the private Museum of Mr. Macleay, F.L.S., at Sydney.

Fishes.—Very extensive additions have been made to the alcoholic collections in this department, 360 specimens having been received, including a typical collection of the Australian sea and river fishes; a small collection of Polynesian fish made by Lord Hervey Phipps; and a series of the fishes of the Atlantic Coast of the United States, contributed by the Smithsonian Institute.

The collection of New Zealand fishes has been greatly extended and improved by the substitution of fresh preparations.

Invertebrata.—The additions in this section number 887, and consist chiefly of Australian Crustacea, Echinodermata, and Mollusca, and a large series of preparations of the New Zealand Mollusca to facilitate the study of the soft parts of the animals.

Mention has also to be made of a valuable collection of New Zealand Insects, 37 in number, collected and presented by the Rev. Father Sauzeau, of Blenheim.

Ethnological.—The only important addition has been a collection of the weapons of the Isle of Paris (New Caledonia) natives, the most interesting of which are sling-stones made of steatite, which are projected from a sling made of cloth spun from the hair of the flying fox.

Minerals.—In addition to the various mineral and rock specimens obtained by the Geological Survey, a very valuable series, numbering 400

specimens, illustrating the geology of Canada, from Mr. A. R. C. Selwyn, F.R.S., the Director of the Geological Survey of the Province, have been added, and a few ores of interest, collected in Cornwall, have been received from Mr. J. D. Enys, F.G.S.

The collection of New Zealand minerals and ores has been re-arranged and catalogued, and the volcanic and metamorphic rocks are now undergoing a more thorough chemical and microscopical examination than they have hitherto received, while, at the same time, duplicate specimens are being selected for exchange.

Palæontology.—The most important collection of foreign fossils added to the Museum during the past year, is a series illustrating the carboniferous rocks of New South Wales and Tasmania, obtained by the Director during a visit to Australia. This series has proved of great service in comparing the equivalent formations in New Zealand.

Geological Survey Collections.—These have been very ample and important in their bearing on the geology of the Islands, and especially in relation to the Lower Mesozoic rocks, which have, until now, been very imperfectly understood.

The chief field-work of the year was the detailed survey of the Hokanui range in Southland, which has, for many years, been known to present the most typical development of the formations from Jurassic to Permian.

The results obtained are fully detailed in the Geological Reports for the year, but it may be stated here, that the above formations form a stratigraphical sequence, but were divided into 76 well-defined beds, the outcrops of which were traced and studied in section, over an area of 32 square miles.

The fossils, which number over 5,000 specimens, were collected from twenty-five distinct horizons, and form a very large and important addition to the palæontological data now in the Museum, which are only partially arranged and worked out:—

The total thickness of the strata represented in the sections is 21,000 feet, viz. :—

| | | | | | | | |
|--------------------------|-----|-----|-----|-----|-----|-----|-------|
| Upper Oolite | ... | ... | ... | ... | ... | ... | 3,500 |
| Middle Oolite | ... | ... | ... | ... | ... | ... | 850 |
| Lower Oolite | ... | ... | ... | ... | ... | ... | 2,200 |
| Lias and Rhætic | ... | ... | ... | ... | ... | ... | 2,000 |
| Permian Triassic | ... | ... | ... | ... | ... | ... | 6,400 |
| Permian Carboniferous... | ... | ... | ... | ... | ... | ... | 6,150 |

The most remarkable feature is the great development of our Infra-Triassic Marine formation, characterized by a great profusion of Brachiopoda, several of these forms being generically distinct from any hitherto described, while there is a total absence of any true Spirifera. It is thus

rendered probable that we have in the New Zealand area, developments of Lower Mesozoic strata, representing gaps in the record elsewhere.

A further examination of the Mount Potts *Spirifer* beds, during the past year, has afforded a large number of fossils and proved the existence of three marked horizons in that locality,—the Upper Plant beds; the *Spirifer* beds (although no true *Spirifer* is present) corresponding to the Lower Triassic of the Hokanui section; and at the base, beds containing *Glossopteris*, which is a characteristic fossil of the New South Wales Coal Fields.

A thickness of 2,000 feet separates the *Glossopteris* from the *Spirifer* beds. From the bone beds associated with the latter, a good series of the Saurian bones was also collected, some of the vertebral centra having enormous proportions, being 18 inches in diameter, and $3\frac{1}{2}$ inches in length. Besides vertebræ, rib and limb bones were also obtained, and what appear to have been dermal plates; but the large blocks in which these interesting remains are embedded are not yet worked out sufficiently.

A further discovery of great interest, is the determination by Mr. McKay of the age of the Maitai calcareous slates near Nelson. These underlie unconformably the whole of the beds that are developed in the Hokanui section, and contain the true *Spirifer bisulcatus* and *Productus punctatus* of the Middle Coal-measures of New South Wales.

The discovery of Graptolites in the strata of the Collingwood district during the past year, is also an important advance in New Zealand palæontology.

In Upper Mesozoic formations, the most interesting novelty is the discovery by Mr. Cox of an extension of the West Coast Coal-measures towards the limit of Te Anau lake, while the heavy bedded grits and conglomerates enter into the structure of lofty mountain ranges.

The additions to the tertiary fossils have chiefly been from the East Coast of Wellington, while the evidence of the relative position of the Greensands and Chalk marls to the Miocene strata of the Taipos and the Pliocene Tertiaries of the Wairarapa, have received support by ample collections.

The New Zealand Fossils now accumulated in the course of the Geological Survey, represent collections from 450 different localities, and comprise about 6,200 trays, which have been thoroughly classified, and 1,200 specific types withdrawn into a separate collection for publication. A large number of types have been figured and their publication will be proceeded with as rapidly as the other work of the Department will permit.

Publications.—The volume of Geological Reports for the past year, is now in the press and will contain the progress reports of the Survey, and in addition descriptions and figures of the most important of the Lower Mesozoic fossils.