

ECONOMIC GEOLOGY.

The metalliferous deposits of the area are chiefly restricted to gold-silver quartz veins. These occur mainly in the flow and fragmental rocks of the First Period. The rocks enclosing the veins are always more or less altered from their original condition. This propylitic facies seems to have accompanied or perhaps preceded the formation of the original ore-deposits. In the detailed report now being written an effort will be made to show that such deposits as have economic value have been formed by the action of circulating meteoric waters upon lean primary deposits, and, further, that the distribution of the deposits of economic value is chiefly dependent upon the existing topography.

The veins occur in four groups :—

- (1.) Karangahake Group.
- (2.) Te Aroha Group.
- (3.) Owaharoa Group.
- (4.) Waitakohe Group.

The Karangahake area carries veins with a meridional strike and westward dip. They vary up to 16 ft. in width, and in general it may be said that the wider portions of the veins carry the higher values. The lodes of this area have been mined for many years, and some of them are still being successfully worked. In the Talisman Mine occurs a bonanza of sulphide ore that presents several features of great interest.

The Te Aroha area is traversed from end to end by a great siliceous lode, which varies up to 150 ft. in width. The strike of this "buck reef" is north and south, and the dip in general to the westward. Numerous lodes with a north-east-south-west strike and westerly dip cross this zone. It is these that carry the values. Another silicified zone striking N.E.-S.W. occurs on the western side of Te Aroha Mountain. It is crossed by siliceous lead and zinc lodes, which, however, are but an extreme phase of the ordinary gold-silver lode of the Hauraki Goldfields. Some of these lodes have been worked to a limited extent.

The lodes of the Owaharoa area are almost all without the limits of the Aroha Subdivision. They are fully treated of in Bulletin No. 15.

In the valley of the Waitakohe occurs a small area of propylitized and silicified volcanics of the Second Period. The values seem to be confined to a narrow shear-zone, and, so far, nothing of economic value has been found.

DR. J. ALLAN THOMSON, PALÆONTOLOGIST.

Dr. J. Allan Thomson, Palæontologist, reports as follows :—

Since my appointment on the 1st June, 1911, I have been almost continuously occupied with examination of the fossil collections. From the 5th February to the 29th March I was absent in the South Island, visiting the chief localities for Cretaceous fossils, reporting on a coal-indication at Cherwell Flats, Marlborough, and examining the fossil collections in the Otago and Canterbury Museums. I report as follows on my work during the period under review :—

OFFICE AND LABORATORY WORK.

Before attempting to determine and describe any parts of the fossil collections accumulated in Wellington it was necessary to gain an adequate idea of the nature and condition of the collection, the previous palæontological work that has to be taken into account, and the state of our stratigraphical knowledge of the localities from which the fossils were collected. This is necessary, because no single man could describe the whole of the collections in a lifetime, and it is desirable that the palæontological work attempted should have an immediate bearing on the broad questions of the geological history of New Zealand and on the economic problems which the Survey is constituted to solve.

This task, along with a considerable correspondence with palæontologists outside of New Zealand, occupied nearly the whole of my time until I left for the South Island in February. The results of this "spade-work" have been partly embodied in a bulletin now in the press, entitled "Materials for the Palæontology of New Zealand." The more important points may be briefly summarized here.

NATURE OF THE FOSSIL COLLECTIONS.

The collections now in the possession of the Geological Survey may be divided into three categories—(1) The type and show collections; (2) undescribed collections of the old Survey; (3) partly determined collections of the reorganized Survey.

(1.) *The Type and Show Collection.*—This includes the type specimens founded by Hutton, Hector, Tenison-Woods, T. W. Kirk, and J. W. Davis. Most of these specimens are exhibited in the show-cases of the Dominion Museum, but the conditions of mounting and labelling are far from satisfactory. Many of Hector's types are missing, but may yet be found packed away with the undescribed collections. The work of mounting and labelling these specimens is being carried on as fast as circumstances will allow. Mr. A. Hamilton, the Director of the Museum, has kindly put the services of the Museum printer at my disposal, so that permanent printed labels are being affixed to each specimen.

The accommodation in the Museum for the type collections is ample at present, but will be insufficient in a few years, as the type collections grow. As only a small proportion of the fossil species already known in New Zealand is represented by type specimens in the Survey collection, it will be necessary, for purposes of comparison, to add to the show collection good examples of the other species. I feel it my duty to urge that while plans for the rebuilding of the Museum are under consideration, better accommodation for the geological collections should be provided, and the permanent disposition of the type collections should be decided on.