

	£	s.	d.
Salary paid Assistants ... ..	3,779	1	4
Return passage money allowed Mr. Wood ... ..	70	0	0
Instruments ... ..	12	17	6
Typical specimens ... ..	46	8	5
Equipment of survey parties ... ..	1,614	6	8
Wages of labourers ... ..	611	11	11
Extra hands and Museum ... ..	258	15	5
Interest and exchange on drafts sent to London ... ..	41	16	2
Cartage, fuel, furniture, travelling expenses, &c. ... ..	352	2	5
Buildings ... ..	1,287	5	4
West Coast expedition; fitting out "Matilda Hayes" and provisioning party ... ..	2,071	13	6
Relief to West Coast party ... ..	371	11	8
	13,890	17	0

ALFRED F. OSWIN,  
Sub-Treasurer.

Provincial Treasury, Dunedin, 18th August, 1870.

#### No. 4.

##### MEMORANDUM concerning the Geological Survey of Otago.

I LEFT England, having engaged one assistant, Mr. Charles Wood, in January, 1862, and reached Otago in April, from which date the survey commenced, and continued for three years, until 30th March, 1865. Mr. Wood, who was selected by the authorities at the School of Mines to relieve me of the chemical and physical analyses, and the description, &c., of specimens, so as to allow me more time for field work, arrived in June, 1862, but in bad health. After a few months leave of absence in Victoria he again attempted his work, but broke down; and in December, 1862, had to leave for Melbourne, where he was employed in the Government Laboratory, for a few months, until his death. Deprived of Mr. Wood's services, I had at first to engage assistants in the Colony and teach them their work, in some cases, I regret to say, at a fruitless loss of time and money. I was at last fortunate in getting a zealous, practical naturalist in Mr. Buchanan, who was engaged as draftsman in April, 1863, and who was of great assistance as a collector.

Mr. Skey, also, by assiduous application, soon became extremely useful in the Laboratory, and relieved me of work in that branch. Mr. Gore, as clerk and meteorologist, completed my staff in Otago, and the same gentlemen have been transferred to the General Government service.

The distribution of the work over the three years of the survey was as follows:—

1862.—During May, June, and July, examined the gold fields then known, and the Eastern District of the Province from the Mataura to Oamaru, and as far into the interior as the Dunstan Gorge. The first results of this examination were communicated to the Government in the form of sections illustrative of the structure and distribution of the formations in the eastern part of the Province, especially as bearing on the value and nature of the auriferous and brown coal deposits; and also in a memorandum pointing out the manner of the distribution of the auriferous drifts, and warning the miners against misdirecting their efforts by associating those drifts with the existing drainage systems.

In September and October I examined the districts in the neighbourhood of the Wanaka and Wakatipu Lakes, and communicated a short report of my journey.

1863.—During January, February, and March, the mountains between the Wakatipu and Wanaka Lakes, the West Coast at Jackson's Bay, and the Greenstone Pass, were examined, and the general results made public.

From April to the end of the year I was engaged in the South and West Districts, and on the West Coast of the Province, of which expedition a report was published. During the same period the districts I had examined during the previous year were again visited by Mr. Hackett, for the purpose of collecting full sets of specimens according to the classification I had adopted.

1864.—March, April, and May were devoted to the further examination of the Eastern Districts, and in revisiting the gold fields. In June and July, visited the other Provinces of New Zealand as Commissioner for the Exhibition, with the sanction of the Provincial Government.

August, September, and part of October were spent in a boat expedition, in the course of which I examined the South-east District of the Province, between the Molyneux and the Mataura Rivers. During the remainder of the year I was principally occupied for the Exhibition, which was opened in 1865, and for the first time I was enabled to arrange the extensive collections in every branch of natural history which had been accumulated during the progress of the survey. These collections, numbering over 5,000 specimens, were fully arranged and displayed in the Exhibition, with illustrative maps, diagrams, and sections, and with descriptive information.

The results of the technical examinations of the various useful minerals and other substances, and an abstract of all that had been ascertained respecting the value of the economic products of the Provinces, was published in the Jurors' Reports, and Appendix thereto, the preparation of which occupied much of my time during the last three months in Otago.

From so much time having been spent in the field, and from want of accommodation, the arrangement and study of the collections, on which alone reports having practical value can be founded, had fallen into arrear; and, since leaving Otago, I have felt it best, for the interest of the Colony, that I should continue further field investigations before committing myself to final conclusions.

I have now examined, though only in a cursory manner, nearly every part of the Colony, and the results, in the form of a complete catalogue of the Museum, together with a general geological map, with explanations, are now in the press. I do not, however, consider that any part of the Colony has