be strengthened to satisfactorily keep pace with the map-production of the draughtsman in the Department.

Further particulars of the draughting-work are contained in the report by Mr. H. E. Walshe, Chief Draughtsman, appended hereto.

Explorations in Fiordland.—Representations were made by the Otago Expansion League and the Tourist Department for the need of further explorations in Fiordland, particularly in the quadrilateral between Sutherland Sound, the Arthur River, Milford Sound, and the Tasman Sea, in which sulphur springs and several beautiful valleys have been reported to exist. The Government having approved of the work being undertaken, Mr. T. W. Preston was detailed to spend a season examining this country and to survey the Tutoko and Cleddau Rivers with a view of locating a feasible return track from Milford Sound to Lake Wakatipu. An interesting report (and a map of the country) by Mr. Preston will be published in Volume I of the Records.

Further surveys are required of the valleys at the heads of several of the Sounds, particularly the country between Caswell and George Sounds, which is visited by sportsmen on deer-hunting expeditions, who have reported that the topography is misleading.

Scientific Expedition to the Chatham Islands.—The Otago Institute, in co-operation with the Philosophical Institute of Canterbury, organized a scientific expedition to the Chatham Islands last January, and invited officers of the Department to assist in determining more accurate values of the latitiude and longitude of the wireless station on the island, and a reobservation of the magnetic elements at the stations of the original survey occupied in 1907. Messrs. H. F. Skey, B.Sc., Director of the Magnetic Observatory, and H. E. Walshe, surveyor, of the Head Office staff, were detailed to undertake this work. The Government Astronomer, Dr. C. E. Adams, kindly supplied a chronograph in connection with the longitude-determination. Captain Hooper, Nautical Adviser, Marine Department, also assisted the expedition by supplying two chronometers.

Messrs. Skey and Walshe arrived at the island on the 1st February, and during the following five weeks took complete observations for declination, horizontal force, and dip at eight of the stations formerly observed and at one new station. Observations were taken for latitude and longitude at a pier near the wireless station. For these a 7 in. Troughton and Simms micrometer transit was used in the meridian and also on the colatitude circle. Wireless time-signals from Hector Observatory (ordinary) and Bordeaux (rhythmic) were picked up clearly. The resulting position shows that the island on our maps is placed nearly three miles out of position, the new determination placing it 13 seconds of time nearer New Zealand. Cloudy skies greatly interfered with the time observations, no perfectly clear night being experienced. A full report by the observers will be published later in the Records of the Survey.

Publication of Professional Paper No. 1.—A second edition of Professional Paper No. 1, "Directions for testing Traverse Bearing by Observations on Circumpolar Stars with a 5 in. Theodolite," by Thomas Humphries, F.R.A.S., together with the paper "On the Determination of Time, Latitude, and Azimuth with an 8 in. Theodolite," by C. W. Adams, have been prepared for publication as one volume with the above title, and is in the press.

Records of the Survey of New Zealand.—The activities of the scientific work of the Department, in connection with precise triangulation and levelling, tidal survey, magnetic and seismological work, topographical and standard surveys, &c., are extending to such an extent that a detailed account of them is becoming too voluminous for this report. A detailed account of the above-mentioned operations for the year are, with your approval, published separately under the above title.

Desiderata.—There is a pressing need for a suitable site to compare the tapes used by the staff and private surveyors with the Imperial standard band, and to erect and house the comparator and standard bar in a locality where it is unlikely that it will be disturbed by the extension of existing buildings or the erection of new ones. The importance of the preservation of the standard of length, on which all title-deeds in the country depend, is so great that expenditure for this purpose of erecting the necessary building should be authorized before any other scientific work is undertaken by the Government.

Magnetic Survey.—A repeat survey of the magnetic work is also desirable, and should be undertaken at an early date. The results of the magnetic work are now in demand by aviators, mariners, and surveyors. Formerly the variations of the compass or the declination was the only magnetic element n constant practical use. Now a knowledge of the dip of the needle or its inclination to the horizontal plane is required by the aviator.

Seismological Observations.—The recent advances in seismological science necessitate more modern instruments in this country, particularly the class of seismographs which are in use for recording earthquakes at short distances from the observatory.

Staff.—Full details of the personnel of the staff, both field and office, are given in the report by the Under-Secretary for Lands. In conclusion, I am pleased to bring under your notice and to place on record the appreciation by the various Chief Surveyors of the manner in which their officers have carried out their duties during the year, and I desire to convey my thanks to the whole of the Survey staff for their good work.

Table 1.—Return of Field-work executed by Head Office Staff from 1st April, 1923, to 31st March, 1924.

Land District.	Standard Surveys.				Geodetic Triangulation.				Other Work.
	Completed.		In Progress.		Completed.		In Progress.		
	Miles.	Cost.	Miles.	Cost.	Square Miles.	Cost.	Square Miles.	Cost.	Cost
		£ s. d.		£ s. d.		£ s. d.		£ s. d.	£ s. d.
North Auckland ..	..	..	14	677 12 1	..	..	..	..	669 6 0
Auckland ..	..	..	..	..	} ..	..	7,200	2,422 10 1	..
Gisborne ..	48	4,287 7 0	..	..					
Taranaki ..	..	..	..	210 11 11	..	..	..	..	..