The above expenditure apportioned among the various district offices and Head Office is as set out below.

District.	Expenditure.	Percentage.
	£	
Head Office	26,030	15·3
North Auckland and South Auckland ..	42,430	24·9
Gisborne	6,356	3·7
Hawke's Bay	9,559	5·6
Taranaki	7,647	4·5
Wellington	21,326	12·5
Marlborough	5,514	3·2
Nelson	5,595	3·3
Westland	2,969	1·8
Canterbury	21,552	12·6
Otago	14,110	8·3
Southland	7,300	4·3
	170,388	100·0

Head Office expenditure is now the second largest in the above table, due to the increase in work carried out in the Photogrammetric and Cartographic Branches and to the fact that one field party has been engaged for the full year on topographical and trigonometrical surveys in the Rotorua, Taupo, Bay of Plenty areas.

HEAD OFFICE AND SPECIALIZED ACTIVITIES

1. Geodetic Triangulation

Observations for La Place longitudes at three stations in the South Island were made during the year. This work brought to a conclusion the field-work necessary for the geodetic triangulation survey of New Zealand, and during the year it has been possible to complete the main adjustments of the triangulation network and to establish and define a geodetic datum for New Zealand.

The defining of this datum titled "Geodetic Datum, 1949," will enable all surveys and maps in New Zealand to be correllated to a common datum, and this work will be put in hand as the need occurs and opportunity offers.

Prior to the completion of the adjustment of the first order geodetic triangulation, the geographical co-ordinates of trig. stations were expressed in terms of the initial of the meridional circuit in which they were situated. The values of these initial stations were based largely on local determinations of geographical positions, and the relative positions of different meridional circuits were not known with any certainty.

In conjunction with the geodetic triangulation, astronomical observations for latitude, longitude, and azimuth were made at over 70 of the stations, and the results of as many as possible of these were utilized in order to determine the new datum as accurately as possible.

The figure of the earth used for the computation of geodetic positions is the International Spheroid, recommended at the Madrid meeting of the International Geodetic and Geophysical Union in 1924. The fundamental elements of this spheroid are :—

Major semi-axis .. .. $a = 6{,}378{,}388$ metres.
Compression .. .. $(a-b)/a = 1/297$.

The "Geodetic Datum, 1949" is defined by the following elements :—

Papatahi Trig. Station :—
Latitude, 41° 19′ 08″·9000 S.
Longitude, 175° 02′ 51″·0000 E.

Geodetic azimuth, Papatahi to Kapiti No. 2, 347° 55′ 02″·500.