

incorporating as many of the points used in the traverses as possible, this triangulation being ultimately reduced to the mean of the best base lines measured within the city. (2.) Traverses were made of all streets, the lines being kept, when practicable, about 20 links from the building frontages on the northern and eastern sides of the streets, so that the concrete blocks marking their extremities cleared the side drains. Measurements were made with steel tapes and straining gear, each chain being marked by a line on sheet lead let into boards; corrections were applied for temperature and reduction to the horizontal; angles were turned several times and mean values adopted; preference was given to the measurements where the work was rectangular. Offsets were taken from lines run parallel to the standard lines, on the sides of each street, close to the fences and buildings, the tape being kept in range by theodolite from end to end. The advantages resulting from the survey are:—(a.) Excellent plans, representing the buildings, fences, and other details of occupation, besides the bearings and lengths of traverse lines and the offsets therefrom. (b.) The accuracy and completeness of the survey and plans should frequently enable the public to ascertain the position of their properties without further survey; and if survey be necessary to get it done at a small fraction of the cost formerly involved, as surveyors will be enabled to make surveys with facility, and the Department can verify the work promptly and economically.

The accompanying tracing illustrates the style of mapping adopted for representing the survey, and I think it will be conceded that, taken as a whole, the work presents the essential features of accuracy, completeness, utility, with the further advantages of future saving of expense to the citizens by reason of the facility with which they can now have their properties surveyed. Surveyors need not be told that the standard lines will enable them to effect in a few hours what previously was an impossibility, even with days of labour, viz., the execution of a survey of a holding, referred to recognisable and indisputable permanent points.

Road Surveys.—Of the 76½ miles of road surveys, part were undertaken by Messrs. Annabell and Sicely, in the Wanganui and Rangitikei Districts, to secure public highways, under the powers conferred by "The Crown Grants Act, 1866." The Department has co-operated with the local governing bodies, when desired, in this important matter. It would be well if more attention were devoted by some of the County Councils and Road Boards to this question whilst time permits of action being taken. There are tracts of country in this district which are not sufficiently intersected by roads, although hundreds of acres of "road allowance" were included in the Crown grants of the estates for that purpose.

Miscellaneous.—The return appended hereto of "other work" furnishes particulars of the miscellaneous duties of the staff, such as, report on the Taonui swamp drainage; legalising Foxton-Otaki road; standard surveys of Wellington City and Bulltown; besides various surveys of boundaries required by the public.

Office.—Regarding the office duties, Mr. James McKenzie, the Chief Draughtsman, reports that notwithstanding the reductions made in the number of officers employed, satisfactory progress has been made, and that the draughtsmen were attentive and industrious in the performance of their duties. There are now 89 Crown grant and 32 land transfer record plans, 78 trigonometrical diagrams, 26 topographical and 247 block sheets, besides many general compilations. The trigonometrical plans are for the main part complete, the other plans comprises only new surveys and the surrounding old work. Mr. Mason, in charge of the land transfer, and Mr. Tronson of the Native Land Court branches, gave every attention to the wants of the public, and kept their mapping arrears within small limits. In reference to publishing the survey plans, I have to state that during the year the whole of the Hutt and Wairarapa East and West County lithographs were completed and revised, and forwarded to the head office for republication.

Future Operations.—The following proposed survey operations for the current year are submitted for your approval:—Mr. Dundas to extend triangulation over the Apiti and Hautapu Districts, and superintend the sectional surveys and road works on the Otamakapua and Pohangina Blocks; Mr. Foster to continue his sectional surveys in South Mauriceville; Mr. Llewellyn Smith to subdivide the country south of Eketahuna and Mangaone Blocks; Mr. Northcroft to extend his Puketoi triangulation northward and westward to embrace the Mangaone, Mangahao, and Makuri Districts; Mr. J. D. Climie has in hand 150,000 acres of triangulation in the Rimutaka and Pencarrow Districts, of which 90,000 acres would have been completed last year if the weather had not been so unfavourable. He has in hand arrears of sectional surveys, amounting to 8,000 acres; Mr. John Annabell to triangulate the Nukumarua District, complete the standard survey of Wanganui Town, sectionize West Tokomaru, and lay off and legalize roads; Mr. Sicely to finish Marton standard survey, Paraekaretu back boundary survey, exercise his warrant in legalizing roads, superintend clearing of Murimotu Road, and extend triangulation in the Tiriraukawa District; Mr. N. J. Tone has in hand the West Carterton and Manahawea sectional surveys. He might take up the subdivision of Crown lands north of Rangitumau trigonometrical station, and from time to time legalize certain roads required in the Wairarapa East and West Counties; Mr. G. Struthers, who is at present employed on sectional work in the Awhea District, can undertake the triangulation of the Haurangi and Kaiwaka Districts; Mr. C. W. H. Thompson to take up and complete the East Pohangina sectional surveys; Mr. A. E. Ashcroft is engaged in laying off roads in the Tinui District for the Highway Board. It is proposed to send him to Wanganui to co-operate with Mr. Annabell; Messrs. Greville and Crombie, if approved, will be detached to assist in the Forty-Mile Bush surveys; and Mr. Knowles is at present on sick leave of absence.

The areas which appear desirable to be surveyed under the different heads, are as follows:—Standard bearings, Upper Rangitikei and North-east Wanganui, 2,000 square miles; minor triangulation and topographical surveys, 430,000 acres; settlement survey, 43,000 acres; and road surveys, 50 miles.

In addition to the above, there are many miscellaneous surveys required which it seems unnecessary to particularise.

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Chief Surveyor.