

## THE MAPPING OF OTAGO

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New Zealand was necessarily first approached from the sea, and the major concern of its European discoverers was to fix its position relative to the rest of the world—by establishing the latitude and longitude of major points of land or of the position of the ship when important observations were made. As time and circumstances allowed, details of the coast or of coastal trends were sketched in by eye and by observation of bearings. The important thing was to locate the coast, so that the next-comer would not bump into it ! The first maps of New Zealand were thus what we call charts—maps designed to guide the mariner. The maker of a chart concentrates on the accurate delineation of the coast and its dangers, recording only such inland objects as may be of assistance to the navigator or to the shipwrecked seaman.

The first delineation of Otago was thus made from the sea. Cook in 1770 records the trend of the coast, notes Cape Saunders (the eastward bulk of the peninsula, not the exact point we know to-day), but does not see Otago Harbour ; records some indentations one of which he calls Molineux's Bay but does not see or name the river we now call "Clutha"; looks through Foveaux Strait but does not record it firmly as a strait, because, having a scientific outlook he trusts logarithms more than he does his eyes and the eyes of his crew. On the west coast he gives only a rough indication of the entry to fiords, and records stylistically the great ridge of the Southern Alps. When he returned three years later he spent some time in Dusky Sound and charted its shores, further detail being filled in by Vancouver, twenty years later.

Between Vancouver in 1791 and the arrival of organised settlement in 1844-48, detail was added to the coast-line not by official action but by investigation and actual charting carried out by sealers, traders, whalers and passing visitors who reported to map-makers and to Government officials. Certain of these chart-makers, mostly unofficial, deserve special mention : O. F. Smith, the mysterious discoverer of Foveaux Strait; Ebenezer Bunker, probably the first man to sail through that strait; William Stewart who came hard on Bunker's heels ; Robert Williams in search of flax at Bluff ; W. L. Edwardson, a little known explorer of southern coasts; James Herd, who gave us the first known chart of Otago Harbour ; J. S. C. D. d'Urville, who but for an attack of gout might have changed the history of Dunedin.

O. F. Smith reached Australia early in 1803 a ship's officer in the employ of a New York firm whose captains were instructed to explore as well as to seek cargoes. While the expedition was busy sealing in Australian waters, Smith was detached, and by means unknown found his way in 1804 to what we call Port Pegasus at the southern extreme of Stewart Island. From there he went by whaleboat up the eastern coast, putting in at Lord's River, Port Adventure and Paterson Inlet. He ran across to Ruapuke, ventured some distance into the strait and recorded Bluff Hill as "The Mount". He returned to Sydney in 1806 and gave his chart with the news of the discovery to Governor P. G. King, who kept the information to himself. When King's successor, Bligh, was deposed, Major J. J. Foveaux took over his duties. It is presumed that he found Smith's chart and gave the information to some Sydney sealers in 1808. These men sailed at once for the new sealing grounds and returned in March-April, 1809. The first to arrive, Ebenezer Bunker in the "Pegasus", reported the existence of a "newly discovered strait called Foveaux Strait"; Bunker had sailed through the Strait and had made a chart of the northern coast of Stewart Island and a portion of the west ; but the whole is distorted beyond recognition, probably by reason of the compass aberration which occurs in the area. The "Pegasus" set out again for the area almost at once, under another captain (S. R. Chace) with William Stewart

as mate. Stewart made a detailed chart of "Southern Port", which we now call "Port Pegasus". His vessel circumnavigated the Island and Stewart probably made a chart, now lost. His map of Port Pegasus was published in the *Oriental Navigator* in 1816.

A Sydney trading concern sent an expedition to Foveaux Strait in 1813 to see if trade in flax could be developed. The party used Port William, Stewart Island, as a base, sailed across to Bluff, landed on the isthmus, went overland to the Makomoko and the New River estuary. One of the party, probably Robert Williams, made a map of their explorations. This is the first map giving information, however scanty, of the land behind the coast-line.

In 1823 the New South Wales Government sent W. L. Edwardson in the "Snapper" to southern New Zealand to examine the country and to foster trade, especially in flax. Edwardson charted every feature of importance and produced the first map attempting to give detail of the southern coast from Bluff westward. In addition he made large scale charts of Port William and of the Codfish Island roadstead. Not long after Edwardson's return to Sydney, a French exploring expedition under Duperrey arrived there in the "Coquille". With him there were three officers whose names were to be linked with early New Zealand—d'Urville, Berard, and de Blosseville. The latter met Edwardson and was given access to all his papers. The result was the publication of a full description of southern New Zealand with maps in "*Les Nouvelles Annales des Voyages*" in Paris in 1826.

In 1826 the vessels of the first "New Zealand Land Company", "Rosanna" and "Larnbton" put into Port Pegasus on their way northward, under the command of James Herd. He produced a map of the Port, but it owes its detail to William Stewart. Sailing up the coast, Herd then put in to Otago Harbour which he knew and charted as "Port Oxley". This first known chart of the Lower Harbour gives soundings and locates five Maori kainga.

An Admiralty chart of 1833 and a revision in 1840 contain all the detail recorded by Cook, Vancouver, Stewart, Edwardson and others. About this time, too, private English map-makers turned their attention to New Zealand in response to a growth of public interest. From 1834 until the publication of the Admiralty Chart of 1857, there was a long series of maps aiming to serve both navigator and landsman, all with good Otago detail, each differing from its predecessor by fresh additions of fact or of fancy. The names of James Wyld and John Arrowsmith stand out among these publishers and engravers of maps. The first of Wyld's maps is dated 1834 and carries the statement that it is from original surveys by Lieut. Thos. McDonnell, R.N.—a statement far from true, at least as far as the southern area is concerned.

After 1840 the establishment of the northern colonies brought about the beginnings of official contact with the south. In 1842 William Mein Smith, surveyor to the New Zealand Company came as far south as Stewart Island to report on the country. Unfortunately, however, his maps and comments were lost when his vessel was wrecked at Banks Peninsula. He was followed in 1843 by Edward Shortland, Assistant Protector of Aborigines, who came with Commissioner Godfrey to investigate various European claims to Maori land. When the sittings of the Claims Court were over, Shortland was free to examine the country. He went south to Stewart Island and Riverton, and after returning to Otakou went northward on foot from the Taieri to Banks Peninsula gathering information as he went. From chiefs Te Raki and Huruhuru he learned about the great lakes of the interior. They both drew or guided the drawing of maps of the Wanaka region, Huruhuru's in particular giving the names and stages on the travel route to the lakes and the times taken for the main sections. Shortland himself made a detailed map of the Waikouaiti Roadstead, and all this information was included in his map of the South Island from Banks Peninsula southward.

In 1844 surveyors of the New Zealand Company arrived to survey the Otago Block—Tuckett, Barnicoat, Davison, Kettle and others. Their work was at first confined to the lands to be occupied by the settlers, and to the survey of sections and rural districts. Official maps showing this information began to appear in 1847, though there are naturally

earlier MS copies. By the end of the decade there was a little more time for wider exploration, and there is a printed map of 1852 bearing Kettle's signature and showing the routes of exploration in 1851—from Lake Waihola to the sources of the Tuapeka and Mt. Valpy (Blue Mountains), and through the Strath-Taieri and down the Shag River to the coast.

After the sale of the Otago lands by the Maori it was necessary to survey the Native Reserves established under the terms of the Deed of Sale. Most of this work was carried out by Alfred Wills and Charles Kettle, and an almost complete series of MS maps is in your Museum. Most of the northern area was done by Wills, whose maps contain a fair amount of interesting information. Kettle surveyed in the south but his work, unlike that of Wills, is what might be called laconic, the barest delimitation of the area sufficing.

Another map of great interest, belonging to the New Zealand Company period, is one made by W. B. D. Mantell to illustrate his travels on foot in Otago in 1848, and in 1851-52 together with the route taken by Nairn and Pharazyn in "discovering" Lakes Manapouri and Te Anau in January, 1852. The map is important in that it shows these southern lakes under what are undoubtedly their real names : Manapouri is "Moturau", Monowai is "Manokiwai", the southern and northern Mavora lakes are "Manawapouri" and "Hikuraki" respectively. The other lakes not visited—Wakatipu, Hawera, Wanaka—are grossly misplaced on the map.

All this time the surveyors working on the coast were modifying and amplifying the vague shore-line recorded by James Cook; but with the spread of settlement and the growth of trade there was urgent need for an accurate delineation of the coast for both land and marine use. The Admiralty responded to the demand for such a survey, and from 1849 to 1851, the paddle steamer H.M.S. "Acheron" worked under the command of John Lort Stokes assisted by a staff of highly qualified scientists. The New Zealand Company obtained leave to have J. W. Hamilton join the "Acheron's" staff of draughtsmen at their expense. He did a great deal of land exploration during the survey, notably in the Wairau and Canterbury, and finally in Otago where he travelled overland from Riverton to the mouth of the Clutha and thence to Dunedin. His map of the area is accurate and full of information. The charts resulting from the work of the "Acheron" did not appear until 1857—and they remained in service with minor corrections until superseded in 1955 by the charts of the H.M.S. "Lachlan" survey ; also carried out by, the Admiralty.

The days of the New Zealand Company were drawing to a close. In 1853 the colony assumed responsibility for itself with a House of Representatives and a system of Provincial Governments. The Company had had its Chief Surveyor in each of its settlements, but these were now replaced by Provincial Chief Surveyors, ultimately nine in all, each of whom worked independently of the others according to his own methods and ability. The result of twenty years of provincial control was the creation of a series of more or less isolated surveys, some of which were carried out unscientifically and based on magnetic bearings only. Otago was fortunate in the choice of its first Chief Surveyor—John Turnbull Thomson—who established scientifically based trigonometrical surveys from the beginning and so made the Otago system the best in New Zealand. His first work was a reconnaissance of the whole area, assisted by Alex. Garvie and Robert Townsend. Thomson covered the southern portion in 1856, the northern and interior areas in 1857-58, while Garvie did the south-eastern districts in the same years. Further reconnaissance work was done in the western lake district by James McKerrow in 1862. The maps produced as a result of this reconnaissance are by no means rare to-day. MS copies exist and printed versions may be found in most libraries. The outstanding feature of the work of Thomson and his associates at this stage is the speed and relative accuracy with which large areas were covered. There is a characteristic story of a brush between Cargill and the down-right Thomson on this matter. Cargill had asked for an estimate of the cost of providing a survey of the utmost precision of the pastoral areas. Thomson replied with biting sarcasm that such work would require the most accurate survey techniques, the cutting of traverse lines, the following of every river,

stream and rivulet, and the setting up of permanent trigonometrical stations. In England where land was accessible, the normal cost of survey was 9d per acre; it taking into account the inaccessibility and the difficulty of the New Zealand surface, the cost were optimistically reckoned at only 3d per acre, then the cost would be £287,000 and the task would take 40 years ! If on the other hand his staff were increased twenty-fold, the work could be done in 2 years, though he did not think he was physically capable of standing the strain. However, with his present staff he could carry out a reconnaissance survey of the pastoral area for £1,500, the margin of error being possible between 25 and 40 acres in 1,000 acres—a minuteness which he thought would satisfy the reasonable requirements of the runholders !

Thomson's maps of the Otago areas covered by his rapid reconnaissance show that most of the names in use to-day were already established in 1856. Thomson, naturally, gave a number of names himself—Lindis, Grandview, Aspiring, Pisa, to select a few given to outstanding features. He penetrated some four miles beyond the head of Lake Pukaki and called the main stream running into the lake "Upper Waitaki Valley". The high peak to the west of Mt. Cook he named most appropriately "Mt. Stokes" (the name "Cook" having been given by Stokes himself). Julius Haast exploring the valley some five or six years later changed "Upper Waitaki" to "Tasman"—which matters little. But "Mt. Stokes" he changed to Mt. Sefton—which matters quite a deal in my opinion.

By the end of the Provincial period . (1876) most of Otago and Southland had been covered by accurate triangulation survey, except the mountain fastnesses to the west. With the abolition of the system of Provincial Government, J. T. Thomson became the first Surveyor General of New Zealand, faced with the task of co-ordinating and bringing under control the various provincial surveys, many of which were in a state of confusion. The story of his success in that task lies outside the scope of this brief paper. It is, however, worth noting that when he retired, his successor was James McKerrow who had worked under him in the Provincial days—such was the reputation achieved by Thomson and his team of Otago surveyors.