

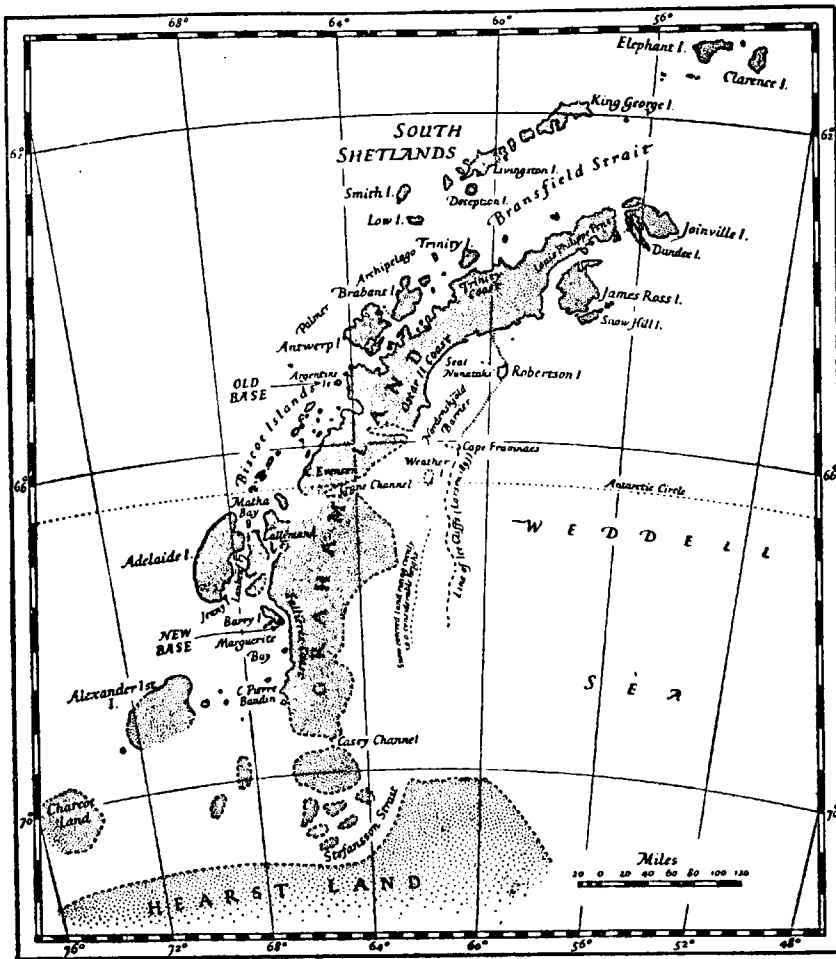
EXTRACTS AND REVIEWS

THE BRITISH GRAHAM LAND EXPEDITION

(Reproduced from *The Geographical Journal*, London, August 1936, page 165).

The following article on the scientific work accomplished by the British Graham Land Expedition has been compiled from a series of short reports on the first year's work brought back by the *Penola* on her return to the Falkland Islands in March 1936.

It will be recalled that, owing to trouble with the engines, the Expedition had to be



satisfied with winter quarters at the Argentine Islands on the Western side of Graham Land in lat. 65°15' S., about seven miles south of Dr. CHARCOT'S base in the *Pourquoi-Pas*?

in 1909-10, and much farther north than originally planned. Exploration work in the larger geographical sense was therefore restricted, since the coast opposite the base was inaccessible for the greater part of the year, the sea ice not being safe for sledge travel except for a few weeks during which an attempt was made to get to the South. The sledge expedition had to turn back from Cape Evensen in $66^{\circ}12'$ on account of the insecure sea ice.

The survey work therefore has been in part more local than was expected, but all the more detailed in consequence. A theodolite triangulation of the Argentine group was made and the detail completed to the scale of 1 : 100,000 with the plane table. The group extends for ten miles in an east to west direction and consists of a very large number of small islands. The group of three islands where the base was situated was mapped on a scale of 1 : 6,600 and Stella Creek, the anchorage, was hydrographically surveyed since it appears to afford excellent shelter for a vessel wintering in that latitude. On a smaller scale is the survey of the coast line of what may be called the mainland, made from the islands and from the air for eighty miles down to Cape Evensen. Along this stretch of coast, though there are many bays, the plateau is practically inaccessible, for it rises to a height of about 8000 feet within a few miles of the coast. Some of the islands off the shore themselves rise to over 2000 feet, while many mountain peaks of over 5000 feet overlook the bays. A determined attempt was made last summer to reach the plateau but was foiled by ice falls and avalanche slopes. A flight by HAMPTON and STEPHENSON from Barry Island, the new base in $68^{\circ}10'$ S., has recently been made in order to reconnoitre routes for extending this coastal survey from Cape Evensen southward to the new base.

Meteorology at the base was carried on by STEPHENSON and RILEY with a detail approximating to that of a first-class station. The meteorological instruments were set up close to the hut at a height of 110 feet above sea level, from which there was good visibility in all directions and freedom from local topographical influence. Visual observations were made five times a day and these were continued for eleven months without interruption, and the usual recording instruments were in commission for the same period. A brief résumé of the results shows that Mr. RYMILL's party had a colder winter in 1935 than Dr. CHARCOT had in 1909, and that one of the factors controlling local weather may be the position and extent of the main pack ice.

The geology and glaciology has been undertaken by W.L.S. FLEMING, who reports that the position of the base was unfortunate in that along most of the coast line there are few rock exposures. The interest of the geology is mainly petrological; all the outcrops visited consisted of plutonic and metamorphic types of rock. The geologist therefore spent much of his field work on the glaciological problems and has come across much evidence for a more widespread glaciation than at present. Soundings have shown that most of the bays are drowned glacial valleys, now submerged. In some of the bays also there are floating glacier tongues. The small ice caps of the larger of the Argentine Islands have received special attention, and careful measurements may give an explanation of their curious form. Several members of the Expedition have joined in making observations of the characteristics of the sea ice in that locality.

In the field of biology the circumstances of the base were such that a detailed investigation of the Antarctic seals was found to be the most fruitful line of research for Bertram, the chief biologist. The measurements taken of seals, together with a dissection of their bodies, have made it possible to define the growth rates accurately, especially in the cases of the Weddell and Crab-eater seals which are proved to reach their maximum size in their fourth and fifth years respectively. The work is being undertaken with the object of providing data for a sound judgment of the feasibility and permissible extent of any commercial exploitation of these seals. Local conditions were not very favourable to detailed plankton investigation but some work was undertaken. The range of botanical specimens on the Argentine Islands proved to be larger than was anticipated, and BERTRAM has made a comprehensive collection of lichens.

ROBERTS, as ornithologist, was always busy and his careful record of all birds seen is being made with the general purpose of plotting the distribution of the birds of the South Atlantic. A colony of Wilson Petrels was discovered near the base and a detailed study made of their life history. Many burrows were excavated so that the birds could be examined daily without disturbance, and the result is a thorough study of their habits from the time of their arrival at the colony until their northward migration. Stomach analyses were made to elucidate the food problem, and the ringing of individual birds soon after arrival also gave results of interest.

The hydrographical work by Lieutenant RYDER, the Captain of *Penola*, is the subject of a long and interesting report, too detailed for insertion in this note. It deals carefully with navigation amongst the islands and with the tides, of which a record for thirty-two consecutive weeks by automatic gauge was obtained. There are careful directions for entering Stella Creek with full notes about its suitability as an anchorage. It is interesting to note that open water reached Crulls Island, the outermost of the Argentine group, about fifteen miles from the mainland, as early as 26 September, although it was frequently beset by pack ice up to January.

For its second winter in the South the Expedition has a base on a group of six small islands in Marguerite Bay close to the Fallières coast of Dr. CHARCOT'S maps and about twenty miles north of a low barrier formation. Provided that no undue difficulty is experienced with the sea ice, the new headquarters should be an ideal base for the sledging expeditions to the south. If, as seems possible, the barrier formation can be used for these journeys, good distances should be made, and there seems no reason why the main outlines of the geography of the southern end of the Graham Land Peninsula or Archipelago should not be settled once for all during the next southern summer. Already the Expedition has seen from the air that Alexander I Island appears to be part of the mainland, and it is possible that RYMILL will make at least one sledge journey to establish that fact. At the same time his main journey, if conditions are favourable, will probably be towards the south-east to investigate Stefansson Strait and the coast of Hearst Land where it faces the Weddell Sea, if possible as far as Filchner's Barrier.

SEA SWELLS IN RELATION TO MOVEMENT AND INTENSITY OF TROPICAL STORMS.

(Extract from an article by I.R. TANNEHILL, MARINE DIVISION, WEATHER BUREAU, Washington, published in the *Monthly Weather Review*, Vol. 64, N° 7, Washington, July 1936, page 231).

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On the 18th of August 1935, a tropical storm appeared to the northeastward of Puerto Rico. It moved slowly northwestward, then recurved to the northeastward and passed a short distance to the northwest of Bermuda on the 23d. Owing to its relatively slow progressive movement and its location in the open ocean from the 20th to 22d, inclusive, this storm afforded an excellent opportunity for the study of sea swells. During these 3 days, ships' weather observations were secured by the Weather Bureau at intervals of 6 hours — at 0000, 0600, 1200, and 1800 G.M.T. Many of the reports contained observations of swells in the international code, giving character of the swells and the direction from which they were moving.

From these reports, 12 synoptic maps were prepared showing direction of wind and swell. These 12 maps were then combined to form the composite chart shown in attached figure. Each of the individual maps was oriented so that the line of progression of the storm center lay on the central meridian of the composite chart before transferring the observations. Thus the movement of wind and swell is shown in the figure in a 7° ocean square as related to a storm center with a progressive movement due northward.