

Work of the Discovery Committee

FIFTH COMMISSION OF THE R.R.S. *Discovery II*

THE Royal Research Ship *Discovery II* is again on the point of departure from London for the Antarctic: she is expected to sail from St. Katharine Dock on October 7 and will be away from England for twenty months. During this time she will be continuing the research on the distribution of whales, hydrology and plankton, the progress of which has been the subject of the recent report referred to in NATURE of September 25.

The first seven months (the southern summer) are to be spent in making a circumpolar cruise planned to provide data for comparison with those obtained on the winter circumpolar cruise of 1932 and with those of the survey of the southern part of the Pacific Ocean in 1934. A circumpolar cruise in summer was started in 1935-36, but this was not completed as it was necessary to revise the programme after a voyage had been made to the Ross Barrier to pick up the American airman Mr. Lincoln Ellsworth.

Leaving Cape Town in November, the ship will steam south-south-east as far as the edge of the pack-ice. On the way southwards a full station will be worked every day: this includes temperature measurements and collection of water samples from a series of 22-25 depths between the surface and the bottom, and the fishing of fine and coarse nets vertically and obliquely down to a depth of at least 1,000 metres.

When the ice-edge is reached, a course will be set towards the east, but tacks will be made north-east and south-east so that the conditions in the warmer water of the open sea to the north of the pack-ice can be examined as well as those at the ice-edge itself. While the vessel is to the southward of the Antarctic convergence—the boundary between antarctic and sub-antarctic conditions at the surface—a constant look-out will be kept for whales; estimations will be made of the relative numbers of Blue and Fin whales seen, and some comparison will then be made of the relative abundance of whales in the different sectors.

In Antarctic waters special nets will be fished for krill (the food of whales) and particular attention will be paid to the collection of young krill near the ice-edge. Where the ice conditions allow the ship to reach the continental shelf, there will also be more intensive work.

In order to complete the circumpolar voyage, the ship must steam northwards to Australia and

New Zealand to replenish her bunkers with oil fuel, and she is expected to be in Fremantle late in December and in Dunedin early in February. Further supplies of fuel will be taken from the Falkland Islands and South Georgia. On both northward and southward voyages the routine observations—at least one full station daily—will be continued; they will give sections across the Antarctic, sub-Antarctic, and sub-tropical zones, and comprehensive data for further research on the problems of the meridional circulations of water and plankton.

In the Atlantic Ocean four lines of stations will be worked across the cold current which flows towards the east from the northern part of the Weddell Sea, and observations will be made between 0° and 20° E. in the current that flows westward into the Weddell Sea along the fringe of the Antarctic continent. The purpose of these observations is to obtain a substantial sample of the krill population in the Weddell Sea current.

The ship is expected to complete the circumpolar voyage and to arrive back in Cape Town early in May 1938, and she will sail southwards again, in midwinter, about July 1.

The second half of the commission will be spent in the eastern part of the Atlantic Ocean and the western part of the Indian Ocean, and repeated lines of observations will be made along the meridians 0° and 20° E. The repeated cruises will only differ in so far as they are affected by the position of the ice-edge, and great care will be taken to preserve a uniform method of making all the observations so that comparisons of the results of successive cruises will be as valid as possible. The work will include observations on whales; measurement of temperature, salinity, nutrient salt and oxygen concentrations between the surface and the bottom; intensive plankton fishing—particularly for krill—down to a depth of at least 1,500 metres; and meteorological observations and bird counts. It is hoped to repeat the cruise—southwards along 0°, eastwards near the ice-edge, and northwards in 20° E.—at least seven times before April 1939, when the ship will return to England.

The director of research, Dr. N. A. Mackintosh, will accompany the ship during the first part of the work, and the scientific staff will include Mr. H. F. P. Herdman and Mr. A. J. Clowes as hydrologists, and Dr. T. J. Hart and Mr. J. A. Nicholson as zoologists. Lieut. L. C. Hill, R.N.R., is again in executive command.

At the recent Imperial Conference the possibility was mentioned of some form of co-operation between the Dominions in any form of economic or scientific activities which might be undertaken in the future in the Antarctic. In this connexion the governments of South Africa, Australia and New Zealand have been invited to nominate scientific or other workers to sail with the *Discovery II*, each for a section of the circumpolar cruise, in order to study the methods of research used by the Discovery Committee.

WHALE-MARKING VOYAGE OF THE R.R.S. *William Scoresby*

The Royal Research Ship *William Scoresby*, the Discovery Committee's smaller ship, which is now used mainly for whale-marking, has already sailed, the purpose of her early start being to search for

whales in sub-Antarctic waters before they have reached the Antarctic feeding-grounds. The route to be taken depends largely on the abundance and movements of whales. Fuel will be taken, however, at South Georgia in November, and it is probable that operations will then be extended eastwards towards Bouvet Island if ice conditions are suitable. In the second part of the season the ship will move to more westerly regions, near the South Shetland Islands and in the eastern part of the Pacific sector.

The *William Scoresby* sailed on September 16 and is expected to return about April 15, 1938. Mr. G. W. Rayner is in charge of the operations and Lieut. R. C. Freaker in executive command.

Some four thousand whales have now been marked and more than ninety marks have so far been returned.

Genetics and Taxonomy

VARIOUS articles and letters that have appeared in *NATURE* during the past few years suggest that workers in special branches of biology (particularly in cytology, ecology, and genetics) are showing an increasing interest in the impact of their discoveries on taxonomy, and that this interest is shared by their taxonomic colleagues. Papers and discussions at the annual meeting of the British Association may also frequently be accepted as an indication of what subjects are developing in scientific favour. At the recent meeting at Nottingham a morning was devoted by Section K (Botany) to "Genetics and Taxonomy", with a rather wider range in the papers and discussion than is suggested by this general title.

It would appear from Dr. W. B. Turrill's opening paper that plant taxonomy is to some extent at the cross-roads. The old orthodox (or 'alpha') taxonomy, based largely or entirely on morphology, has remarkable achievements to its credit and there is still much to be done by its traditional methods, especially in the floras of the botanically less explored parts of the world. On the other hand, the new methods, especially those with an experimental basis, are leading to the discovery of important characters or attributes, many essentially physiological, which show that the old classification needs improvement or even altering fundamentally if it is to be of the widest use. Cytogenetical investigations, while not the only lines of research which are making contributions to a new taxonomy, are of very considerable

value since they are throwing light upon the following problems which concern the taxonomist: the degree of plasticity of the genotype, the occurrence and constancy of correlation of characters, the occurrence and nature of sterility barriers, the evaluation of characters, the recognition of hybrids, and the phylogeny of species. Examples illustrating the influence of experimental investigations on taxonomic concept, with reference to the above problems, are furnished by the research at Kew and Potterne on species of *Ranunculus*, *Silene*, *Centaurea*, *Anthyllis*, *Plantago*, and other genera.

Not infrequently modern investigations support morphological classification, as Mr. W. J. C. Lawrence showed for the genus *Dahlia* and Dr. K. Blackburn for *Silene*. For an increasing number of genera, cyto-genetical and biochemical analyses enable rapid and precise comparisons to be made between species, thus providing the taxonomist with a further measure of the relationship and evolution of species. The work at the John Innes Horticultural Institute on *Streptocarpus* and *Delphinium* serves as an example.

In such a group of plants as the grasses, taxonomists have sometimes attached undue importance to easily observed but relatively inconstant characters. Dr. T. J. Jenkin suggested the desirability of close co-operation between the taxonomist and cytogeneticist in elucidating the history and behaviour of pasture grasses and thus preparing the way for a better general classification of these economically important plants than at present