

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.

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## 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

exists. Problems of interspecific and intergeneric hybrids are the concern of both the cytogeneticist and the taxonomist, as is also the determination of phylogenetic relationships. The taxonomist has to evaluate the characters he uses, making some of generic, some of specific, and some of varietal value, and so on. In *Lolium*, genetical research shows that height has little value as an indicator of relationships and specific distinctness, since a plant two inches high may be a sib to a plant twenty inches high. In the genus *Dahlia*, corolla colour definitely characterizes two groups of species and the wide colour range shown by the garden *D. variabilis* is, in agreement with other evidence, a witness to its origin as a hybrid between species of the two groups. Such examples of recent research illustrate the help the taxonomist may expect from the biochemist and cytogeneticist in his attempts so to classify plants that the classification is not only widely useful but also indicates relationships.

In return for such help the taxonomist can assist his colleagues not only by identifying their original material on the basis of 'alpha' taxonomy, but also by indicating problems which are recognized as unsolved by the older methods. Prof. J. R. Matthews gave examples of closely allied species which were probably derived from a common ancestral stock but which have now a different geographical range. Cytogenetic research on such plants as *Ranunculus Flammula* and *R. reptans*, *Caltha palustris* and *C. radicans*, *Primula farinosa* and *P. scotica*, combined with other methods of investigation, might lead to the formulation of general views regarding the influence of isolation in speciation. Knowledge of the origin of the geographical race or subspecies may well give us a more complete knowledge of the origin of species.

The results of modern lines of work are beginning to influence taxonomic thought by making taxonomists consider the logical basis of their classification. There seems a general agreement that 'alpha' taxonomy (based essentially on morphology) should be maintained for the present. Subsidiary classifications, often based on a very limited and deliberately abstracted number of attributes are, however, essential for special purposes and especially for deductions from correlation of attributes. Such a classification as that of Turesson, which was ably advocated in the discussion by Dr. J. W. Gregor, has a considerable value both as a means of stating and comparing the results of eco-genetical research and as a guide in the practical application of such research to agriculture. Such special classifications, however, cannot replace a more general one, and exactly how far they can be combined with morphological criteria to lead to a practical and logically sound classification is a matter for continued experiment. As Dr. Turrill said: "by trials and errors this 'experimenting taxonomy' will enable, one hopes, orthodox relatively stabilized taxonomy to incorporate new data and so to advance, gradually and cautiously, from an alpha position towards a far-off omega perfection of the classification of all biological knowledge".

The formation of the Association for the Study of Systematics in Relation to General Biology (see NATURE, July 24, 1937, p. 163 and Aug. 7, 1937, p. 211) was cordially welcomed at several sectional meetings of the British Association. It has evidently awakened considerable interest amongst biologists and should do much to stimulate and co-ordinate research into the many problems of equal importance to taxonomists and their colleagues in other branches of biology.

## Obituary Notices

Prof. Albert Heim, For. Mem. R.S.

THE news of the death on August 31 at the age of eighty-eight years of the veteran geologist Albert Heim, though not unexpected, comes as a sad shock to many admirers. A very great man has gone, and a treasured connexion with the early days of Alpine structural interpretation has at last been broken. As a student, Heim came under the spell of Arnold Escher von der Linth, an open-air researcher, a great talker, but no writer. Heim loved the mountain side no less, but fortunately he was an artist, excelling with both pen and pencil; and in his early publications he preserved in truly glorious fashion Escher's discoveries, enriched by numberless observations of his own. Heim's technical skill was such that he

himself engraved the copper plates of many of the illustrations that adorn his text.

The great drama of Heim's scientific life had its origin in one of Escher's favourite ideas, the 'double fold' of the Glarus. In 1841 Escher argued for the existence of 'colossal overshoving' of older rocks to younger in the Canton of Glarus. He wanted to make the displacement involved as small as possible, and, as the cover of older rocks was discontinuous, he presently imagined that he could explain their situation by postulating two shoves from opposite directions, each with rather less than half the magnitude required if the shove were single. Heim adopted this theory in his classic "Untersuchungen über den Mechanismus der Gebirgsbildung", published in 1878;