

### Radio Astronomical and Satellite Studies of the Atmosphere

Proceedings of the Corfu Summer School, 17-29 June, 1962. Edited by Jules Aarons. (Sponsored by the Scientific Affairs Division, North Atlantic Treaty Organization.) Pp. viii + 561. (Amsterdam: North-Holland Publishing Company, 1963.) 108s.

THE purpose of the summer school in Corfu, of which this large book is the *Proceedings*, was to bring together workers investigating the ionosphere by radio techniques other than the conventional ionosonde.

In general these consist of ground-based observations of radio waves that have passed through most or all of the ionosphere. These may be natural, as in scintillation and absorption investigations of radiation from small-diameter radio sources and the galactic background, or artificial. In this category comes the investigation of radar reflexions from the Moon or the *Echo I* satellite, and what was perhaps the main interest of many participants, the passive reception of transmissions from artificial satellites.

Some of these participants were observers from several European countries who form a group supported by the Scientific Affairs Division of the North Atlantic Treaty Organization; simultaneous radio observations of satellite passes from stations ranging from Kiruna to Athens allow examination of the ionosphere over a wide region by Faraday rotation and scintillation methods. Results from this co-operative work were not, however, available at the time of the school, so the papers collected here are surveys of the fields mentioned, together with accounts of present individual work. Most of this has since been published elsewhere, so the book must be regarded as a selective collection of widely scattered related papers rather than as an original contribution to the field. As such, it will be useful to workers engaged in such activities, and will give radio physicists in general a picture of a rapidly growing branch of their subject.

The satellite observations described were all made of the transmissions from vehicles not intended for ionospheric investigation. Their comparative success shows what rich rewards will be reaped from world-wide observations of future satellites designed for the purpose. Such work has much to commend it to the poorer countries of the world. Observations made with simple, inexpensive apparatus are of value by virtue of the geographical position of the observer, and can be centrally processed. On the other hand, the understanding in detail of the interaction of radio waves with the ionosphere presents endless problems to the theoretician. J. H. THOMSON

### Chemotaxonomie der Pflanzen

Band 2. Monocotyledoneae. Von Prof. R. Hegnauer. Pp. 540. (Stuttgart und Basel: Birkhäuser Verlag, 1963.) 98 Sw. francs.

THE aim of *Chemotaxonomie der Pflanzen* is to provide a critical survey of the chemistry of plants and to use it for their classification. Volume 2 deals with one class of the Angiosperms, the Monocotyledons. Taking account of their chemistry, they are divided into forty-eight families which conform partly to the classification of Wettstein and partly to that of Hutchinson (pp. 22-23). The literature has been considered up to the end of 1962. As systematic and phylogenetic problems of the Monocotyledons have been less intensively investigated than those of other classes, it was expected that a survey of their chemical properties would greatly contribute to their classification. However, this was possible only in a few cases because of the limitation in the present knowledge of phytochemistry.

A great variety of chemical data are provided and the formulae given as the different families are discussed, of which only a few can be mentioned. For the Agavaceae, which accumulate saponins, structure and chemical and biological properties of the steroid saponins are de-

scribed. This family includes the Agaveae the manifold economic importance of which as sources of fibres, of cleaning materials, and of national drinks are mentioned (p. 37). Haemolytic actions, high concentrations of ascorbic acid up to 1.5 per cent, and the presence of amino-acids of unknown structure are noted (p. 42).

The Alstroemeriaceae differ from the Agavaceae by a lack of saponins and from the Amaryllidaceae by the absence of alkaloids (p. 53). The latter contain nearly a hundred apparently biogenetically related basic compounds (p. 56). Some of these have been used as arrow poisons, others as laxatives, emetics, anticholinesterases and antimalarials, and as remedies against leprosy and tumours. Irritant and caustic properties are present in the family Araceae (p. 77), which also contains considerable amounts of cyanogenic compounds (p. 81). The Gramineae, to which belong the most important sources of foodstuffs such as wheat, rice, corn and sugar cane, also provide alcoholic drinks, volatile oils, and building materials such as straw. In addition to proteins, carbohydrates, lipoids and vitamins, they contain a great variety of chemicals including alkaloids (p. 161 ff.). Some young plants in this family produce substances which are inhibitors of microbes. They are identified as benzoxazolinone and one of its derivatives (p. 181).

Many facts of great medical interest are mentioned in this volume; for example, the sickness caused in white sheep in Norway by *Narthecium ossifragum*. The illness, called 'alveden', is due to a saponin which causes liver damage and results in photosensitivity of the organism (p. 284). To the family of Liliaceae belong also the Scilloideae, the cardiotoxic effects of which are discussed (p. 330 ff.) and the Convallarieae with their glycosides and saponins (p. 339 ff.). The volatile oils present in the Zingiberaceae have also been widely used in medicine (p. 456).

The book is of greatest interest to every worker in the fields of plant physiology, pharmacology and related subjects. L. WISLICKI

### The Amazing World of Insects

A Photographic Introduction. By Arend T. Bandsma and Robin T. Brandt. Pp. x + 46 + 133 plates. (London: George Allen and Unwin, Ltd., 1963.) 42s. net.

THIS well-produced book contains 116 black and white and 17 colour photographs which, by their superb quality, good definition and high magnification, emphasize the peculiarities of the appearance of insects. Pictures of a spider, a centipede and of *Peripatus* are included for good measure.

The life-like attitudes of the majority of the subjects support the authors' claim that all the insects were fully alive when photographed; but there are exceptions where I am convinced that the pictures are of dead insects suitably posed on a convenient background. For example, Plate 107 shows an ichneumon fly with the wings in a position which is only transitory in life, and the antennae rolled at their ends as commonly found in dry corpses, and the wasp in Plate 111 also looks suspiciously devoid of any normal contact between its tarsi and the substratum.

The captions of the photographs are not in technical language and are sometimes quite incorrect. The four figures of 'wasps' include a bee and a beautiful yellow and black ichneumon fly, both of which are given their correct generic names. This suggests that the authors were misled by the possibly mimetic resemblance of the ichneumon to a wasp.

These errors, the sensational title and the light text show that the book is not written for the serious student. However, the illustrations are so good that some of them may be helpful in the teaching of elementary entomology. For this purpose the content of origin of the subjects would have been of interest, but this information is often lacking. G. C. VARLEY