

publications such as *Index Kewensis*, *Fortschritte der Botanik* and *Excerpta Botanica* are international in coverage, although all suffer from incompleteness to some extent. World surveys of various plant groups are published: the *Pflanzenreich* monographs, *Die Natürlichen Pflanzenfamilien* (second edition in course of publication); and others are projected.

The foregoing is a brief sample of the kind of facilities which are at the disposal of plant taxonomists. Impressive though they are, they still leave room for improvement.

In the past 20–30 years, however, taxonomy has widened its frontiers, and has devoted much of its efforts to investigating the nature of variation within taxonomic groups, using the experimental garden and the methods of cytogenetics, and it is to cover these activities that the term 'biosystematics' is now used. Biosystematists are less concerned with the naming and description of taxa than with population genetics and evolution. Their data often cannot be accommodated in orthodox taxonomic categories and special terminologies have been proposed. Apart from some catalogues of chromosome numbers (Darlington and Wylie, Tischler, Löve and Löve, etc.) little attempt is made to systematize biosystematic data and most of them are dispersed in scientific journals throughout the world. Abstracting systems are likewise limited, and it is worth noting that perhaps the most useful is *Plant Breeding Abstracts*, prepared by an 'applied' institution, the Commonwealth Bureau at Cambridge.

Biosystematics is therefore in an interesting condition: it is a new discipline and has not yet had its methodology and results forced into a formalized straitjacket; yet the data already published are so numerous that attempts will have to be made to bring them together and make them generally available.

These and similar problems were discussed at joint meetings of Sections 2 and 9 at the last International Botanical Congress in Montreal in 1959. It was initially proposed that the International Union of Biological Sciences set up a committee to consider biosystematic terminology and related problems, and report back to the next Congress. As a result the International Association for Plant Taxonomy, which is the branch for plant taxonomy of the International Union, nominated a committee for biosystematic terminology (*Taxon*, 9, 88; 1960).

This committee met in Copenhagen in 1960 to discuss ways and means of collecting data; but it soon became obvious that there was a need for an organization to promote research and communication in biosystematics on an international basis. Following on discussions with the International Union for Plant Taxonomy, the International Organization of Biosystematists was founded with the following executive: A. Löve (Montreal) *president*; T. W. Böcher (Copenhagen), *vice-president*; V. H. Heywood (Liverpool), *secretary-general*; C. Favarger (Neuchâtel); W. Gajewski (Kraków); B. Lövkvist (Lund); H. Lewis (Los Angeles); H. Merxmüller (München); D. H. Valentine (Durham). Initially, the International Organization of Biosystematists will not be a fully independent organization but will require that its members be also members of the International Association for Plant Taxonomy. This arrangement will, it is hoped, be mutually beneficial.

Biosystematics is interpreted fairly broadly so as to cover such topics as geneecology, experimental taxonomy, cytotaxonomy, micro-evolutionary studies and speciation, not only in flowering plants but also in all other groups of the plant kingdom.

Much work relevant to biosystematics is carried out by autecologists, developmental physiologists and applied biologists such as foresters, pharmacologists and agronomists. The International Organization of Biosystematists hopes to provide a forum for all these workers in diverse fields and bring them into much closer contact than at present.

The initial activities of the organization were planned at a short meeting of the Executive Committee held at the Institut de Botanique, Université de Neuchâtel, at the invitation of Prof. C. Favarger (*Taxon*, December 1961). As a result of the discussions three schemes have been put in hand: (1) the establishment of a registration centre for the assembly and dissemination of biosystematic data; (2) the establishment of a system to facilitate the acquisition of plant material for biosystematic research; (3) the preparation of a biosystematic glossary.

An ever-expanding stream of biosystematic information is being published, and it is hoped that before it becomes a flood some efforts will have been made through the International Organization of Biosystematists to deal with it in the most useful manner possible.

TRAINING IN OCEANOGRAPHY

AS long ago as 1955, in order to start a marine sciences programme, Unesco established an International Advisory Committee with a membership from all parts of the world and a competence in all aspects of the subject.

The declared intention was to cultivate interest in the oceans, particularly in countries where, for various reasons, little activity in marine research had been possible or was being displayed. Once funds had become available, the wise decision was made to stage Unesco training courses in the marine sciences from time to time in regions backward in oceanography. If this were done, not only would the seeds be sown so to speak; the tutors would also be able to select the men most worthy of Unesco fellowships. The expected outcome would be that, with the pro-

gress of time, more and more regions would come to possess their own competent teachers.

Developments have been along these lines. Towards the end of 1958 the South Asia Science Co-operation Office of Unesco (Delhi) arranged a Refresher Course in Marine Biology at Bombay in concert with the Institute of Science of the University there.

A year later, a regional training course was held at the Institut Océanographique, Nha-Trang, in the Republic of Vietnam. This, under the sponsorship of the Unesco Science Co-operation Office for South-east Asia (Djakarta), was warmly welcomed and greatly helped by the host Government. The Nha-Trang course, which was attended by twenty-four trainees, lasted for about four months.

The latest Unesco activity of the kind has been a recent training course held in Morocco. Organized by the Middle-East Science Co-operation Office of Unesco (Cairo), acting through its enthusiastic and energetic director, Mr. Jan Smid, the course owed its origin to an official invitation extended by the Moroccan Government during the general conference of Unesco at Cairo in November 1960. Held in Casablanca during November 23–December 20, 1961, this course was the first Unesco activity of the kind to be staged in the region.

The twenty persons who attended it came from Kuwait, Lebanon, Libya, Egypt, Sudan, Syria, Tunisia, Turkey and Morocco. Half had English as their second language and half French. The director of the course was Dr. J. N. Carruthers of the British National Institute of Oceanography, and the tutor in marine biology was Dr. Raoul Serène, the former director of the Nhatrang Institute. The Moroccan Government displayed great interest in the course, which was publicly opened before a large concourse by the acting Minister of Education accompanied by other officials. Hospitality was on a generous scale, and the requisite transport facilities were provided. Great help was received from the resident French members of the Institute's staff, and the director, Monsieur F. Varlet, made the two small vessels belonging to the Station available for the purposes of the course whenever desired. The excellent aquarium was a great boon for instructional purposes, and the controlling authority, the Marine Marchande, arranged excellent visits to the sardine port of Safi and to the oyster lagoons at Oualidia. The Ministry of Education provided bus transport. A day was spent examining beach fauna and flora under the guidance of Mlle. Gantes, of Rabat University.

The tuition given ranged broadly over all the aspects of physical oceanography and marine biology likely to be most useful to students of degree standard, but every effort was made throughout to teach

things which the participants would, in turn, be able to teach in their own countries. To this end, demonstrations were made at sea of simple instruments of little cost and no difficulty with which the returning students would easily be able to furnish themselves in order to start some elementary oceanographical teaching of their own nationals. The aim of the course was not to convey massive instruction but to arouse interest enough in things which can be done with very modest resources, to give grounds for the hope that some attention would be paid to the marine sciences in the countries from which the students came. This seems to be by far the best target for such Unesco activities, and, to further the aim in question, a comprehensive suite of simple instruments and a wide selection of suitable hand-books and charts were taken out from Britain. In addition, a number of suitable instructional films of British and American origin were exhibited during the course.

As expected, the participants differed widely among themselves in respect both of academic background and personal interest, and it became clear that their chances of arousing interest in oceanographical matters in their own countries would differ also.

Throughout the course the instruction had to be kept flexible both in physical oceanography and marine biology. As discovered also on a previous occasion, it would be unwise and unprofitable to attempt to teach such a course in keeping with a fixed curriculum prepared in advance.

The views of the tutors after the course had finished are quite easily stated: if Unesco can continue to stage such training programmes aimed at producing interested young men and women who will be disciples of the marine sciences in their own countries, much of value will be achieved. If, on the other hand, such courses should ever trend towards ambitious university teaching, their value would be much less.

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NUCLEAR SCIENCE AND THE TRAINING OF YOUNG PEOPLE IN FRANCE

THE Syndicat National des Instituteurs, the Commissariat à l'Energie Atomique and the Institut Pédagogique National have taken the initiative during the past year to provide school-children in France with courses treating the nuclear sciences in as simple and attractive a form as possible at various scholastic levels.

Thus, since November 1959, thanks to the general secretary of the Syndicat des Instituteurs, M. Forestier, the Ecole Libératrice has undertaken the publication of leaflets dealing with the nuclear sciences. These leaflets, prepared by Prof. M. Seguy, professor in the College of General Education, supply teachers with pedagogic information which can be presented straight away to their pupils. To further this effort, some weeks ago MM. Seguy and Beaussier, head of the Service d'Orientation Professionnelle of Seine-et-Oise, took part in three school television programmes designed to familiarize children in the higher classes with the applications of nuclear energy. However, some thought had to be given to reaching older children, in the 15–17 age-group, as well as adults.

To fill a need for popularization which the national Press cannot adequately satisfy, the Institut Péda-

gogique National and the Commissariat à l'Energie Atomique have collaborated in organizing a serious audiovisual nuclear education programme. Thanks to the initiative and energy of M. Mesnier of the latter, and the teaching capabilities of M. Guillien of the former, a basic course followed by tests has been prepared and put into practice in less than six months. Eight lessons of 25 min. each, making up a course entitled "Initiation into Nuclear Physics", have been organized and filmed at the Institut National des Sciences et Techniques Nucléaires at Saclay, with the collaboration of a young professor, M. Cambou.

In this course, which ranges from the structure of matter to the running of a nuclear reactor, all the multiple resources of audiovisual methods, namely, diagrams, cartoons, outdoor films, laboratory experiments, have been used to complement the instruction given by the teacher.

These courses were shown on television each Friday during November and December at 6.30 p.m., an hour suitable for viewing either in the teaching establishments, particularly in the case of boarders, or in homes or factories after work. An accompanying