

HERBARIA

Data Processing

from a Correspondent

ELECTRONIC data processing (EDP) has hitherto been used in very few herbaria, mostly for comparatively small projects, and its scope in the larger herbaria, particularly in Europe where most are located, has been hardly considered. An international meeting at the Royal Botanic Gardens, Kew, from October 3-6, had as its purposes to explore areas where EDP can help in herbaria and associated collections, and to ensure that future developments in the larger European herbaria shall be as far as possible compatible and their results internationally available. The NATO Eco-Sciences Panel acted as sponsor.

After introductions by Professor J. Heslop-Harrison, representing Kew, Professor J. G. Hawkes, chairman of the organising committee of the meeting, and Dr A. Rannestad, representing NATO, the contributions on the first day were chiefly focused on the scope of EDP in herbaria.

J. P. M. Brenan (Kew) described the priorities for EDP in a principal international herbarium, given that staff and finance are limiting factors. R. Ross (British Museum (Natural History)) spoke on the relationship between herbarium records and others, recognising that most important herbaria are associated with ancillary collections or living collections or, in the case of museums, with collections belonging to other disciplines. D. M. Henderson (Royal Botanic Garden, Edinburgh) discussed the problems presented in adapting label data on specimens for EDP purposes. The importance of this aspect is apparent from one of the resolutions passed at the end of this meeting. A. Gomez-Pompa and J. A. Toledo (National University of Mexico) and A. V. Hall (University of Cape Town) described operational schemes in their collections; the Mexican scheme involves a computerised record of the flora of Veracruz.

The general theme of the second day was to consider various EDP systems currently in use to give delegates an opportunity of asking questions and making comparisons. S. G. Shelter (Smithsonian Institution, Washington) described the ambitious and far-reaching Flora North America project—a data bank which uses the GIS system. The general collections at the Smithsonian Institution are recorded by a general-purpose information system called SELGEM, which was described by J. F. Mello. D. J. Rogers (University of Colorado) expounded the well-known TAXIR system devised for taxonomic purposes. The principles of general-purpose filing systems as devised

by the Information Retrieval Group of the Museums Association (IRGMA) were described by J. L. Cutbill (University of Cambridge). This system is basic to the programme for computerising the geological collections at the Sedgwick Museum in Cambridge. S. W. and D. M. Greene (British Antarctic Survey, Birmingham) described the principles behind the computerising of some 30,000 herbarium specimens in the Botanical Section of the British Antarctic Survey. F. H. Perring (Biological Records Centre, Monks Wood) spoke on EDP operations at the centre and made the point that many data can be handled by non-computerised methods, particularly microfilm and microfiche.

Many herbaria are linked with botanic gardens, the computerisation of whose living collections presents, of course, parallel problems. R. A. Brown (American Horticultural Society) described the recording system used at the Plant Records Center where a standardised system has been developed for recording and reporting information on plants cultivated in the principal North American botanical gardens and arboreta. At present the data files contain more than 170,000 records. This theme was later developed by J. Cullen who described the operation of the living plant record system at the Royal Botanic Garden, Edinburgh.

EDP systems in herbaria thus have an interface with similar systems for living collections. With the probable future international development of genetic resource centres, this is likely to increase in importance. Other discussions included the important application of herbarium label data to computerised mapping of plant distributions as developed in the National Herbarium of Canada in Ottawa. A further example was provided by D. B. Williams (British Museum (Natural History)) who discussed the link often found in principal museums between botanical and zoological collections, and described some of the special problems of the latter.

During the conference, recommendations were invited from participants, which were edited by a drafting committee, and put to discussion and vote by the delegates on the last day. The following is a summary of the principal resolutions which were passed, all of them either unanimously or by a very large majority:

(1) Data banks for plant collections should have a common minimal-standard set of descriptors based primarily on label data.

(2) A working party is to be set up to advise European herbaria on the set of descriptors referred to under (1).

(3) Individual herbaria should cooperate with national organisations, and national organisations should be en-

couraged to work through the International Committee on Museums (ICOM) towards widely-acceptable international standards of documentation.

(4) A recommendation will be sent to the Organising Committee of the International Botanical Congress, to be held in Leningrad in 1976, that EDP in taxonomic collections should be discussed and that consideration should be given to setting up a permanent International Commission to coordinate this.

(5) The working party will also consider systems and the possibility of establishing a pilot project in Europe.

(6) The working party will consider and advise on steps to form an international type-register.

(7) Relevant bodies should be encouraged to approach the appropriate United Nations agencies, particularly UNESCO and UNEP, to obtain funds for data banks on a national and international scale.

CELL MEMBRANE

Mobility of Surface Sites

from a Correspondent

MEMBRANE fluidity is certainly one of the most pervasive themes to have emerged in cell biology in recent years. The casual reader will be forgiven for believing that many cell biologists nowadays spend a considerable part of their time moving proteins around a sea of membrane lipid in a delightful molecular version of childhood pursuits. The carbohydrate binding proteins, for example concanavalin A which binds specifically to glucose or mannose-containing structures, are favourite probes for studying the mobility of molecules in the plane of the membrane. It is now widely believed that cell agglutination by con A results somehow from reorganisation of the cell surface to increase the ability of con A receptor sites to move together to form clusters and in the extreme case to 'cap' at one pole of the cell.

Tagging con A molecules with fluorescein allows application of a simple visual technique to the most sophisticated biological problems. A particularly interesting example has been described by Inbar, Ben-Bassat, Fibach and Sachs (*Proc. natn. Acad. Sci., U.S.A.*, **70**, 2577; 1973) who have found that the ability of mouse myeloid leukaemic cells to differentiate into phagocyte cells is related apparently to the fluid state of the surface membrane. Earlier work by Sachs and his colleagues had shown that normal undifferentiated haematopoietic cells transform *in vitro* into mature differentiated macrophages and granulocytes. Devel-