

#### TOWARD BETTER INFORMATION STORAGE AND RETRIEVAL

The recent establishment of a project to compile a 55-volume index for "Mycologia" has stimulated an overdue reappraisal of the traditional methods of information storage and retrieval employed in mycology. Participation in the preparation of such a comprehensive index has demonstrated to many of the volunteer indexers just how much labor is involved in providing easier access to the information contained in a single journal, and I believe it is safe to assume that few of them would wish to repeat the experience. The very fact that the project is being carried through shows that many people realize how necessary the index is.

If we consider that there are in existence about 25,000 scientific serial publications, and that this number is at present increasing at the rate of approximately 1,000 a year, then the true magnitude of the problem of information retrieval can be appreciated. It is obvious that no one today can hope to keep up with the current literature, let alone know what has gone before, in any but the most restricted of fields.

The chances that research will be unnecessarily duplicated, and that bibliographic studies will be incomplete, have never been higher than they are now; and if scientific information is allowed to continue in its present scattered and uncoordinated state, further deterioration may be confidently predicted, despite the valiant efforts of the abstracting journals.

The proliferating scientific papers, and the journals in which they appear, have severe limitations as mechanisms for information storage and retrieval, and their more general recognition as inefficient anachronisms cannot be long delayed. Fortunately, a logical successor exists in the form of the electronic data processing system, which is already active in many fields of biological endeavor. From the mycologist's point of view the compilation of the International Plant Index (IPIx), and BASIC, are among the most noteworthy applications. The IPIx is a specialized nomenclatural project. BASIC is more relevant to this discussion, but while its scope is broad, it cannot encompass detail, and is largely dependent on the inclusion of key words such as 'FUNGI' in the title of each paper indexed. Such projects, useful though they are, can be no more than stop-gaps, and the eventual demise of the majority of scientific periodicals can be predicted with some confidence.

The results of research will be submitted to a central information clearing house, which will consist of a great complex of computers with virtually limitless storage facilities. Widely scattered subsidiary equip-

ment, spatially separated from the central "brain" but electronically united with it, will form a "peripheral nervous system." Information on any chosen topic will be obtained from the central memory by any peripheral unit, which will present the data to the enquirer in printed form or as some kind of visual display.

Pleasant as this prospect is, and technically feasible as it may be, for mycologists it lies in the future. For the present, we are faced with the tedious but necessary job of indexing many volumes of "Mycologia." How can we ensure that there will be no necessity to invoke such a massive effort again, and at the same time facilitate the eventual introduction of more sophisticated forms of information storage and retrieval?

It would be a fairly simple matter for "Mycologia" and similar journals to introduce a scheme which would make the compilation of any future index a simple task.

**Each author could be required to prepare a complete card index to his own paper.**

I would suggest that the author is better equipped than anyone else, and certainly better equipped than current models of semantically oriented computer systems to cross-index all the information and implications in his own work. This might involve examination of the page proofs by the author; alternatively, the journal might be prepared to insert correct page numbers. In any case "Mycologia" would become virtually self-indexing, and the information on the cards could easily be transferred to punch cards for machine sorting and print-out, and eventually to magnetic tape, disc, or drum storage, considerably simplifying the introduction of an integrated system of electronic information storage and retrieval when this became a practical possibility.

Here is a chance for mycologists to be among the pioneers of a worthwhile development in the field of human communication. Will we accept the challenge?—W. BRYCE KENDRICK, Mycology Unit, Plant Research Institute, Canada Department of Agriculture, Ottawa, Ontario.