

## INFORMATION

**Easing the Search**

from a Correspondent

THE principal theme of the second international conference on mechanized information storage and retrieval systems, held on September 2-5, was the problem of estimating the cost-effectiveness of information systems, especially of computerized systems. But recent developments in the United Kingdom, the United States and Europe were also described.

In his opening review of progress, Lord Ironside stressed the need for a wider awareness of the advantages that efficient information systems could bring to the user and the growing demand for information specialists well trained in computer techniques.

H. F. Dammers (Shell Research Ltd) reviewed the economics of the information services now operating, but with continuous development, at Woodstock Agricultural Research Centre. He demonstrated how cost estimates of the user-time search could shift the cost appraisal of the system in favour of computerization. His emphasis on the need to establish well defined long term objectives and to keep them clearly in view at all stages of development was reiterated by all other speakers planning large scale systems. A. Merta (Central Office of Scientific, Technical and Economic Information, Prague) and his colleague K. Cigler gave a comprehensive but realistic account of the detailed analysis and planning of the computerized national information system being developed for Czechoslovakia. And W. Holst (Norwegian Industries Development Association), discussing the planning and economics of a cooperative information system for the industries of Scandinavia, concluded that "the information problem is not solved by hurriedly spending a million pounds".

Several speakers described techniques of measuring the costs of various operations in information systems, or of comparing the costs of alternative operations. R. H. Orr and C. K. Schultz (Institute for Advancement of Medical Communication, Philadelphia) and D. W. King (Westat Research, Inc.) favoured computer simulation or tests on experimental sets of documents and the detailed micro-analysis that can be accurately performed when all elements are known and all variables can be controlled. But others, especially those concerned with systems already operating, looked for macro, or large scale, measures. C. W. Cleverdon (Cranfield Aeronautical College) proposed a measure of cost-effectiveness which allows for the cost to the user of getting non-relevant citations and provided tables based on typical retrieval performance curves. B. C. Brookes (University College, London), questioning whether user cost can be accounted for by micro-accounting techniques, provided a model of a three-stage hierarchical library system in which cost-effectiveness was derived from the overall statistical behaviour of its rational users. It became evident that micro-analysis was helpful in developing new systems but that systems already operating would have to depend chiefly on macro-measures.

The conference was sharply divided by the issue of whether searching was more economical and effective when based on controlled vocabulary or on free-text search. A proponent of the free-text searching, A. K. Kent (University of Nottingham), who outlined the planning and proposed developments of the UK

Chemical Information System, was followed by A. Rolling (European Community, Luxembourg), a proponent of the controlled vocabulary, who described the compilation of thesauri for Euratom and other proposed European Community systems. Other papers demonstrated that a whole range of degrees of control of vocabulary have been adopted for operational systems and that the choice was independent of subject matter (systems concerned with subjects ranging from chemistry to law were described) but dependent on the number of natural languages involved in the system. When English was the language of both users and of the principal sources, free-text searching seemed more practicable than when a multiplicity of languages demanded exact translation of the search terms.

Other papers indicated a continuing concern, as intense as ever, with the development and testing of computer techniques for improving the efficiency of information systems, and for bringing the user more directly into interaction with the system. G. Salton (Cornell University), H. Borko (University of California) and B. M. Fry (University of Indiana) provoked lively discussions on these matters. However, the chief issue, that of cost-effectiveness, remained unsolved. With timely reservations about the risk of "saturating" users with information expressed by D. G. Rowlands (Unilever Research Laboratory, Sharnbrook), the most efficient dissemination of information was accepted to be highly desirable. But no means of quantifying the assumed advantage of having the additional information was established.

## CHEMISTRY

**High Polymers**

from a Correspondent

WHEN the fifteenth Canadian High Polymer Forum was held at Queen's University, Kingston, Ontario, on September 3-5, A. Chapiro (CNRS, Bellvue, France), speaking about recent developments in radiation polymerization, reviewed the elementary processes that occur when ionizing radiation interacts with matter. He pointed out that free radical polymerizations usually result when monomers are irradiated, but that ionic polymerizations can occur in very dry systems at low temperatures. Very rapid polymerizations are obtained when monomer-solvent glasses are irradiated. This effect is not understood completely, but the heat of polymerization seems to soften the glass in the vicinity of the growing chain, thereby providing adequate mobility to the system.

Chapiro also reported studies on solid state copolymerizations. He obtains mixtures of homopolymers and block type copolymers by irradiating crystallized monomer mixtures. The copolymers are derived from the eutectic portion of the mixtures, which is believed to be a mixture of microcrystals of the two monomers. Apparently a polymer chain initiated in one microcrystal can propagate across an intercrystal boundary and then continue to grow in the second microcrystal, the result being a block copolymer. Chapiro also reported that irradiation of concentrated (more than 40 per cent by weight) acrylic acid solutions leads to a highly syndiotactic polymer at temperatures up to 70° C. He suggested that the presence of acid dimers