

GENERAL SCIENCE

Plan Automated Libraries

A central computer library system to make available to scientists on demand any material from the ever-increasing stores of scientific data has been proposed—By Watson Davis

► AN EXTENSIVE SYSTEM for making available the published scientific literature of the world to research scientists was proposed to the University of Pittsburgh's Library Automation Conference in Pittsburgh by Dr. Stafford Warren, Special Assistant to President Lyndon B. Johnson.

The new plan for the creation of a national network of automated libraries is being considered by the Office of Science and Technology in the White House.

Dr. Warren, who is Special Assistant to the President for Mental Retardation, has explored for more than a year the library resources, policies, programs and needs of scientific information because of the technical explosion and the inability of libraries to keep up with the flow of new scientific papers. His proposal for the "National Library of Science System and Network" would include all the material, here and abroad, contained in published scientific journals.

Eventually libraries and specialized information centers, some of which already exist, would utilize and exchange computer tapes, microfilm devices and other methods of storing information which would allow each of them to answer inquiries from research laboratories and scientists.

The principal center for the system and network would be located at the National Library of Medicine, Bethesda, Md., which has already shown the potential of mechanized information methods through creating an index of medicine printed by computer.

Dr. Warren estimated that the number of scientists and engineers affected is approximately 1.4 million and that this number will double in the next 10 years. Specialists spend about one quarter of their time seeking useful information from the published literature, he declared. Published scientific and technical periodicals number more than 50,000 and contain upwards of a million articles a year. This volume is increasing about 10% to 15% each year.

Finding the literature difficult of access in the particular field in which he specializes, that of mental retardation, a project that was a particular interest of the late President Kennedy, Dr. Warren extended his inquiries into the field of scientific and technical information. The President's Panel on Mental Retardation encouraged the extension of the inquiries to the general field of science, and Dr. Warren has presented the detailed tentative plan to the research librarians of the nation.

In principle it is proposed to create a computer-based pool of tapes and micro form which are contributed by the Federal and other libraries or contractors from their own or assigned holdings in the scientific literature.

Once the contributions are in proper form,

the total holding would be replicated into the seven or more regional centers, from which a sub-net is formed for distribution to university libraries and other users in amounts required and requested for their purposes.

"For a beginning, the published scientific journal literature would be the initial vehicle," Dr. Warren said. "It is the open literature where the truth can be defended or attacked. It is a specific, compact and discrete segment of the literature readily demonstrated to anyone and particularly to Congress. It is the part of the literature most used by scholars and advanced students."

Most large professional groups already have standing committees working on a glossary or thesaurus in their field. This fact offers an opportunity for coordination and the establishment of compatibility of standards. National conferences are needed to work out agreements on standards.

An additional specialist group will have to be created, Dr. Warren foresees, to carry out the new service in the libraries of the country. The educational program to train these personnel must be created in existing

or new schools of library science on an urgent basis. He believes that such a program should include additional offerings in English (semantics) and philosophy (logic) as well as in programming and electronics; thus leading to the strengthening of the faculties in university departments not likely to gain research and educational support from other granting agencies.

Pilot studies and research in methodology are required. Fortunately the whole theory of computer techniques permits great flexibility so that conversion from one system to another is possible during the trial period of the first two years or even later.

MEDLARS (Medical Literature Analysis and Retrieval System) of the National Library of Medicine has shown great potential in the first computer print out of the Index Medicus. While it should be considered experimental it has proven the feasibility of these first steps, namely to handle the citations of the medical-biological literature which it contains.

As the art becomes more sophisticated it is believed that shortly abstracts and facsimile could be handled efficiently as well. Books, manuscripts and other types of communication can be dealt with separately and at a late date.

The cost of the plan is estimated as \$10 million for the first year, and approximately an average of \$60 million annually for the next five years.

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Too Much Information on Science Grants Protested

► "TOO MUCH FREEDOM of information" is putting a burden on some research institutions.

Organizations that have obtained grants from such grant-making agencies of the Federal Government as the National Institutes of Health and the National Science Foundation have been directed by the Federal Council for Science and Technology, the top organization of controlling science in Government, to release successful proposals to the press and to any inquiring individual as well.

"This order imposes an undue burden on the agencies involved and should be re-examined," Dr. Dael Wolfe, executive officer of the American Association for the Advancement of Science, says in an editorial in *Science*, 144:1091, 1964.

In one case, a university representative copied a successful application for a grant, and then essentially filed a duplicate arguing that it should be implemented because it obviously met the same standards as the original successful proposal. In another case, a manufacturer inspected 500 proposals, requiring the National Science Foundation to supply office space and clerical help for a week.

"The public interest will be better served if the agencies can concentrate on deciding which grants should be made in the future instead of on answering miscellaneous questions about the ones that have already been made," Dr. Wolfe suggests.

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Equations written on a Victor Electrowriter by a professor lecturing from Oak Ridge, Tenn., travel 200 miles by telephone lines to be instantly reproduced on a second Electrowriter at Georgia Institute of Technology, Atlanta. Dr. C. J. Roberts relays the pictures of the moving pen to students by closed circuit TV camera.