The Army Medical Library Research Project at the Welch Medical Library

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One of the most serious problems confronting science at the present time is the difficulty in keeping abreast of all the research that is being done and in bringing the published results into some workable order. If the results of research are buried or lost for some reason or other, the research, and the money spent on it, is entirely wasted. To prevent such a loss we need adequate guides to the vast amount of scientific literature and must make intelligent and effective use of them.

This problem of bibliographical control of the results of research is as serious in medicine as it is in the other fields of science. It is becoming increasingly difficult for our indexes and abstract journals to keep up with the growing number of medical publications and with articles of medical importance in other scientific journals. These difficulties will become greater in the future as more and more money is spent on research, and particularly if there is not commensurate support for our bibliographical facilities and for our scientific libraries.

It is not necessary to convince this group, the Honorary Consultants to the Army Medical Library, of the importance of medical libraries and of our bibliographical research tools. But there does not seem to be enough general recognition of the vital significance to research of libraries and bibliographical facilities. One is dismayed to see that there is little if any provision made for them in the Report of the President's Scientific Research Board or in the plans for a National Science Foundation. That this, though, is a matter of grave concern to many scientists, is evidenced by the Royal Society's Conference on Scientific Information, of which we have just heard.

The aspect of the problem which is our immediate concern today and which is particularly important to the Army Medical Library is that of the role of indexes in meeting the needs of the present and of the future. We are justly proud of the indexes we have in medicine but we should not be complacent. When Billings inaugurated the Index-Catalogue (1880) and the Index Medicus (1879) a great step forward had been taken. It is a tribute to his genius that we are still following the principles he laid down then. In the Quarterly Cumulative Index, founded by the American Medical Association in 1916, we had another valuable tool, and one incorporating the important feature of being cumulative. The amalgat-
mation of the *Index Medicus* and the *Quarterly Cumulative Index* in 1927 was a logical step, since it eliminated duplication and included the good features of both. More recently the Army Medical Library has provided us with another index, the weekly *Current List of Medical Literature*.

These three indexes, covering as they do varying periods of time, are each extremely useful and it would be foolhardy indeed to jeopardize their existence by too hasty decision as to ways of supplanting them or supplementing them. But the original model is seventy years old and there is need for re-evaluation of the whole problem. In the past there has often been talk of combining these indexing services, and you are familiar with the Committee that has been set up by the Surgeon-General to advise on this matter. In order to have answers to the many questions which will arise there is need for full-time research. There must be not only analysis of our present methods but also exploration of the possibility of utilizing new techniques.

I have long thought that there should be planned research on library and bibliographical problems. In 1946-47 the Welch Library was considering a program for the training of medical librarians and it was felt that teaching should be closely related to research. Among the various research activities considered at that time were some of the problems we are discussing today, notably the subject index and subject headings, and the possible use of machine methods in medical bibliography. The Army Medical Library and the Library of Congress were consulted as to the practical application of the results of such research and they both assured their interest and co-operation. The Director of the Army Medical Library, Colonel Joseph H. McNinch, was an expert on the use of machine methods in medical statistics and was aware of the possibilities of machines in other fields.

About a year ago the Army Medical Library asked the Welch Library if it would consider setting up a research project under contract with the Army, regardless of the fruition of the training program. The Johns Hopkins University decided to accede to this request, the project was formulated, and a contract drawn up.

It is intended at this time to give only a general picture of some of the questions we will be studying and of the plans for the attack on them. There are really three major aspects of the project, but these are more closely related than might appear. They are:

1—Evaluation and study of our present indexes.
2—The detailed study of subject headings.
3—Study of the possibility of using machine methods.
It must be realized that our present indexes are extremely valuable bibliographical aids and that while a search is being made for new methods, including machine methods, the improvement of these indexes in something like their present form must be a primary consideration. There is much we need to know about what is desired, or required, of indexes, how adequate they are and how they are used. We plan to question a large number of widely differing types of users of the indexes, research scientists, specialists, doctors in general practice, students and librarians, as to what they expect of such indexes, what use they make of them, how they use them, and their opinion of them. What we learn will influence us in reaching conclusions about what improvements might be made in our existing indexes and what is desired or can be expected from machine methods. The problem of the coverage by the indexes of the ever expanding field of medicine will be studied. In this connection and elsewhere the role of abstract journals and review journals will also be considered. In order to check on this coverage and also to test the validity and adequacy of the subject listing, selected groups of articles on specific subjects will be traced through the various indexes.

One of the great difficulties in using the present indexes is the lack of a standard terminology or of a standard approach. It is often difficult for the reader to find the subject heading under which he can be expected to find a given article. The various subject heading lists or indexes will be studied, individually, in a consolidated arrangement and in a converted classified arrangement. These studies should give some information as to the validity and completeness of the subject headings and should make it possible to take at least the first steps toward a standard alphabetical subject heading list, as far as that can be achieved in the face of changing terminology. The conversion to the classified arrangement would result in a classified index to the indexes themselves which should be of value to the users of them. The conversion to the classified arrangement is also an important step in working out a coding system for machine operations and an index to the code.

Simultaneously with the above studies, surveys will be made of the present use of various machine methods in scientific bibliographical work and the possible applications to medical bibliography. A great deal is now being done in that field and many of the principles being worked out will be applicable in some degree to medicine.

The use of machine methods may appear somewhat Utopian but one must look to the possibilities of the future. At present the machines are in a sense ahead of our ideas as to how they can be used and we must determine what we want them to do. Machines can probably be designed to do what we desire but it must be determined how well they do it and if it is
worth doing, in terms of cost, in terms of the needs of medical research, and in light of the operating policies of the Army Medical Library and of the various indexing services.

One of the most important features of machine operation is the working out of a coding system that will be complete enough and at the same time specific enough. Classified and alphabetical bases for coding will be studied and a tentative coding system developed. Using this coding system, pilot runs of controlled material will be set up on IBM equipment and the results compared with bibliographies prepared by careful direct analysis of the material. Further pilot runs will be made using other types of machine methods. From these studies it is hoped that some conclusions can be drawn as to the practicability of the use of machine methods in indexing services or as supplementary to them.

There are many problems to be solved before final decisions can be reached as to the best and most efficient means of bibliographical control of our vast medical literature. The aim of the research project is to supply some factual answers to these questions.