A Multiple Card Abstract Retrieval System

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While a number of more or less automated information retrieval systems have been used with success in large industrial and government research establishments, it remains difficult for scientists in smaller laboratories to index their literature abstracts in such a way that they can easily identify and locate them. It is the purpose of this note to describe a simple, inexpensive system which has been found to be very effective in our laboratory of about twenty professional persons. It may prove equally useful, with suitable modifications, to individual researchers.

The abstractor's indexing problem is four-fold:

(1) To prepare a digest of a given document in such a way as to make it physically separable from notes on other references.
(2) To apply to the digest coded marks which bear a one-to-one relationship to preselected items of interest to him (or his readers).
(3) To provide practical means whereby the abstract may be retrieved, upon demand, according to each of the classifications encoded upon it.
(4) To provide simple means, if possible, whereby the information and the code marks may be altered at any time in order to bring the abstract up to date, to add or delete sorting classifications, *etc.*

In our system, multiple photocopies of each abstract are filed, each copy located physically according to its encoded "address," and retrieved by visual scanning through appropriate categories. This approach results in relatively bulky files which can, however, be tolerated easily in small to medium-sized systems (up to perhaps 15-20,000 entries). The user also benefits from his ability to scan entire groups of abstracts visually since he is able to "browse" for poorly encoded information; he can frequently pick up relationships between separately encoded items which would be missed by computer search.

This system has been in use in our laboratory since its inception by C. E. Herrick, Jr., some eight years ago. It was made possible by the advent of relatively inexpensive copying machines and diazo-sensitized filing cards manufactured by Ozalid. The original abstract is typed (or hand-written) on a translucent master form, and encoded according to an arbitrary code. The required number of photocopies is prepared on a standard Ozalid machine, and the librarian files as many of these as are indicated by the subject code. One extra set of copies is circulated to the staff to inform all members of what the others have learned. Additional copies are made on request, for the abstractor, as well as for other individual desk files. A minor drawback is that occasionally two or more persons have abstracted a given document—though not necessarily from the same point of view. We have experienced at most 2% redundancy of this sort. By confining the writing space on the master sheet to a pre-marked 3 × 5 inch area but making the sheet larger (*e.g.*, 4 × 5.5 in.), it is possible to copy the *identical* master onto cards which fit into existing 3 × 5 inch, 4 × 5.5 in., or 8.5 × 11 in. filing systems.

Our subject code is alphanumerical. Blank forms, offset-printed a few thousand at a time onto translucent paper, and pads of "first" and "second-page" sheets are furnished to all staff members who read technical journals and patents. (Double-coated diazo cards are commercially available for two-page abstracts.) After the first few years, abstracts began to pour in too fast for the typist to keep up with them, and it became necessary to switch to hand-written originals. Despite occasional difficulties in deciphering the handwriting of some members of the staff, the system works smoothly even without the services of a typist.

The expense of the entire operation is low. Aside from an Ozalid machine which is likely to be accessible in a nearby office or drafting room, the costs are confined to the master sheets and light sensitive cards, and to the secretary's and librarian's time for duplication and filing (about 6 hours per month for our system of 3000-odd abstract masters).

The new Abstracts of Photographic Science and Engineering Literature (publ. by Columbia Univ., ed. by H. Lester) is available in a special translucent loose-leaf edition, suitable for multiple-card indexing and reproduction.

It is a pleasure to acknowledge the contribution of our librarian, Mrs. Rosemary Frey, who is responsible for the successful operation of the system.

Indexing Physical Chemical Properties of Antibiotic Substances

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Chemical compounds usually are identified by comparing their physical and chemical properties with those of known ones. In the case of biologically active compounds such as antibiotics comparison of biological properties is also necessary. For such identification studies we need not only collected information but also facility of approach to the data from various angles.

The physical, chemical and biological properties of antibiotics have been subjects of numerous reviews. They have been studied as groups of different types of chemical compounds (amino acids and peptides, polyenes, polyacetylenes, *etc.*), as compounds active against different species of microorganisms, or through correlating chemical structure with biological activity. Several handbooks and