

Biology Abstracts and Indexes

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In 1971 more than 230,000 research papers from at least 97 countries will be published in biology journals throughout the world. 140,000 of these papers will be represented by abstracts in *Biological Abstracts*; the remaining 90,000 will be cited in *Bioresearch Index*.

Biological Abstracts, the major publication of Biosciences Information Service (BIOSIS), is issued twice monthly. Each issue contains more than 5,000 abstracts, a table of contents, an editorial that helps to inform teachers and students of developments in the life sciences, and a list entitled "New Books and Periodicals Received." This list includes the title and author of a new publication, the name of the publisher, and the price of the publication.

Bioresearch Index, also issued by BIOSIS, is published monthly. It provides a list of biology journals and a complete bibliographic reference for each paper indexed in these journals. (These are references in addition to the abstracts appearing in *Biological Abstracts*.) In order to make a complete search of the literature, these publications should be used together.

The Four Indexes

Four indexes are provided for each issue of *Biological Abstracts* and *Bioresearch Index*. These indexes are:

1. "Biological Abstracts Subjects in Context"

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(BASIC), compiled from significant terms in the author's title. Additional words are added from the body of the original article by the editorial staff of BIOSIS, since a title does not always indicate the complete content of the paper. These words are arranged alphabetically, with modifiers on each side, to give some indication of what the article is about. The abstract number follows the entry.

2. Author index, alphabetically arranged. A number referring to the abstract of each author's work follows his name.

3. Biosystematic index, arranged according to the natural relationships of plants and animals; that is, taxonomically. The abstract number follows the entry. If, for example, a student were interested in golden-brown algae (Pyrrophyphyta) and had a specific field, such as limnology, in mind, he would consult the biosystematic index for "algae" and look thereunder for "limnology" and "Pyrrophyphyta." He might find the following:

Algae		
. . . .		
Pyrrophyphyta	Limnology	616

If he were interested in plant growth in the same taxon he might find:

Algae		
. . . .		
Pyrrophyphyta	Plant Growth	4718

4. "Computer Rearrangement of Subject Specialties" (CROSS) contains the numbers of all abstracts appearing in *Biological Abstracts*. The primary aim of CROSS is to coordinate (cross-relate) all abstracts in *BA* that are specifically or generally per-

tinant to a particular subject. A typical section of a page from CROSS is this:

0	1	2	3	4	5	6	9
<i>Ecology-Limnology</i>							
						576	
610	622					616	699
710				705			

The digits 0 to 9 inclusive are found at the top of each page of CROSS. The last digit of abstract 616 corresponds to the number 6 at the top of the page. All of these numbers refer to ecology and, more specifically, to limnology. The abstracts may or may not be of aid to the student; to know whether they would help him he would have to examine each abstract. Although this is time-consuming, it is preferable to having to search all abstracts in the field of ecology.

Another method by which CROSS may be used—indeed, a method perhaps more frequently used—is to compare subject headings and abstract numbers. Suppose, for example, that abstract 616 concerns plant physiology as well as ecology and limnology and that the student is interested in the physiology of golden-brown algae. In this case the student might begin his search in CROSS by looking under the subject heading “Ecology-Limnology” as well as “Plant Physiology”; and he would find a reference, at both places, to abstract 616. Either reference would give the student a good idea of the special pertinence, for him, of abstract 616.

The four indexes are bound in each copy of *Biological Abstracts* and *Bioresearch Index*. A free booklet, *Guide to the Indexes for Biological Abstracts and Bioresearch Index*, is obtainable from Biosciences Information Service, 2100 Arch St., Philadelphia, Pa. 19103.

Special Package for High Schools

One of the difficulties of having high school students make use of these publications is (in addition to the expense) the lack of easy availability: *Biological Abstracts* and *Bioresearch Index* typically are found in college and private-research libraries. Therefore BIOSIS has introduced *Curriculum Resource Materials* (CRM). This is a special subscription, primarily for high schools. It includes four issues of *Biological Abstracts*, four issues of BASIC, and two issues of *Bioresearch Index*. In addition, the subscriber receives 25 copies of the *Guide to the Indexes for Biological Abstracts and Bioresearch Index*. These materials provide a student with more than 20,000 abstracts and at least 15,000 citations. Many of these abstracts and citations are related directly to the revised edition (1970) of the BSCS publication *Interaction of Experiments and Ideas*, as well as to information covered in other second-year textbooks.

How can CRM be used by the high school student? Let us begin by becoming acquainted with a typical abstract, which looks like this:

16443. LARSON, L. A., and KYAGABA LWANGA. (Bot. Dep., Ohio Univ., Athens, Ohio, USA.) *The effect of prolonged seed soaking on seedlings growth of Pisum sativum*. CAN J BOT 47 (5): 707-709. 1969.—Pea seeds soaked in sterile water for 2 days at 20° C showed no adverse effects. If seeds are soaked longer seedling development is retarded, roots are shorter, and stem tissue deteriorates. Seeds soaked 2 and 3 days show a maximum rate of root growth in excess of the maximum growth rate exhibited by seeds soaked for 1 day. Increasing the soaking time tends to delay the utilization of stored food in the cotyledon.

What might this abstract suggest to the high school student? It might prompt him to investigate in the laboratory the effects of water on seedlings when the seeds are soaked for varying periods of time and at different temperatures. He might be led to consider such things as retardation of roots, length of roots, and condition of stem tissue.

Ideas for another kind of investigation can be gleaned from the following abstract:

11791. LAANE, MORTEN MOTZFELDT. (Inst. Gen. Mikrobiol . . Univ., Bergen, Norway.) *A simple staining method for nuclear studies in filamentous fungi*. Z WISS MIKROSK MIKROSK TECH 69 (1): 7-10. Illus. 1968 (recd. 1969). (Ger. and Fr. sum.)—A strip of clear tape is pressed against the mycelial surface, followed by immediate fixation of the tape with adherent hypae by immersion in Carnoy solution 3:1. Hydrolysis is carried out in a 5 N solution of HCl at 20° C, the tape is then rinsed in water and stained in acetic orceine. Nuclei and chromosomes appear as brilliant red areas, leaving the cytoplasm almost colorless. The method gave very satisfactory results in species of *Penicillium*, *Aspergillus* and *Neurospora*.—N.F.G.

If a student studying chromosomes were interested in staining them, this abstract would suggest a method and an organism he might use.

For either of these examples, *Bioresearch Index* is an additional source of information. By using the same four indexes as are used with *Biological Abstracts*, a student could discover a citation that would refer to his interest.

Another use of CRM is in learning to search the literature.

The student need not stop with a CRM abstract or citation: if he is interested in reading the complete research paper he may be able to obtain it from any one of a number of sources. The high school librarian can request information from an interlibrary loan department; from the state library; from a local college; or by writing to the John Crerar Library, 35 W. 33rd St., Chicago, Ill. 69616. (A small fee is charged for this service by the library.) Or the student's biology instructor can write directly to the author of the paper: his address is included with the abstract. (If the author lives abroad, the paper may be weeks in the mail.) When the paper is received it can be added to the school library.

CRM is also one of the most useful sources of information in an independent-study course; in fact, it can be the backbone of such a course.