

SCIENCE

VOL. LX

NOVEMBER 28, 1924

No. 1561

BIOLOGICAL ABSTRACTS

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SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKeen Cattell and published every Friday by

THE SCIENCE PRESS

Lancaster, Pa.

Garrison, N. Y.

New York City: Grand Central Terminal.

Annual Subscription, \$6.00. Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

Entered as second-class matter July 18, 1923, at the Post Office at Lancaster, Pa., under the Act of March 3, 1879.

On November 26 of last year the secretary of the Union of American Biological Societies submitted to American biologists individually the report of the Joint Publications Committee of the Union and of the Division of Biology and Agriculture of the National Research Council. This report¹ outlined a tentative plan for providing biologists with a comprehensive abstracting and indexing service. In sending this report the secretary made provision for an expression from biologists individually on the main issues involved—the plan itself and the individual support through subscriptions that it might expect if established. The secretary, Dr. I. F. Lewis, University of Virginia, has requested the Joint Publications Committee to study and report on the about 4,500 replies received. The following report is, therefore, submitted by the Joint Publications Committee.

Before reporting on the referendum, it will be well to recall briefly the events and considerations which led up to the proposal to develop a comprehensive biological abstracting service.

In 1921 a conference representing the American Society of Naturalists, American Society of Zoologists and Botanical Society of America considered the question of providing adequate organization facilities for geneticists, without at the same time adding to the already large number of independent biological societies and thereby increasing still more the difficulties of concerted effective effort in larger problems of importance to biologists generally. Following the suggestions of the conference, sections in genetics with common officers were created in the American Society of Zoologists and the Botanical Society of America. However, the conference recognized that with the inevitable continued diversification similar necessities would arise from time to time; also that important problems concerning biologists generally were already demanding attention. It was, therefore, suggested that representatives of the various national research biological societies discuss the advisability of establishing a union. The Division of Biology and Agriculture of the National Research Council was appealed to as a disinterested body to call a conference. Such a gathering was held at the Toronto meeting of the American Association for the Advancement of Science in 1921 and participated in by representatives of nearly a score of societies. Out of this meeting grew a second request to the National

¹ SCIENCE, September 28, 1923, pp. 236-239.

Research Council, this time to call essentially an adjourned meeting of the society representatives for more extended and detailed consideration of the union proposal. This second gathering occurred in Washington, April, 1922,² where action was taken resulting a year later in the official establishment of the Union of American Biological Societies, to which by formal action the following societies are now adhering (others have been invited to adhere):

American Association for the Advancement of Science—
Sections F, G, N and O

American Association of Anatomists
American Association of Economic Entomologists
American Dairy Science Association
American Genetic Association
American Physiological Society
American Phytopathological Society
American Society of Agronomy
American Society for Horticultural Science
American Society of Naturalists
American Society of Zoologists
Botanical Society of America
Ecological Society of America
Society of American Foresters
Society of American Bacteriologists
Entomological Society of America

Although at both the Toronto and Washington conferences consideration was given to a variety of important problems, there is little doubt that the possibility of greatly improved abstracting and indexing services in biology through strong united effort was largely responsible for the general sentiment favoring the establishment of a union. At the latter conference, a year in advance of the official consummation of the union, a Publications Committee was appointed with instructions to function jointly with a similar committee appointed almost simultaneously by the Division of Biology and Agriculture of the National Research Council. Subsequently, the American Association for the Advancement of Science acting on the invitation of the Union and the National Research Council, arranged for representation on the Joint Publications Committee.

At the organization meeting of the council of the Union in April, 1923, the Publications Committee made the report to which reference has already been made in the opening paragraph. It will be recalled that this report outlined a project for publishing a single comprehensive biological abstracting journal under the auspices of the Union of American Biological Societies and which looked forward to possible eventual uniform support from members of the societies comprising the Union on somewhat the basis on which all members of the American Chemical Society

automatically support *Chemical Abstracts* through their membership dues. The latter arrangement, as is well known, has been notably fruitful in providing chemists with enviable abstracting and indexing services at phenomenally low cost to the individual.

Although this report was approved by the council of the Union and by the Division of Biology and Agriculture of the National Research Council, it was felt that biologists individually had not had the opportunity of examining the proposal and of expressing themselves concerning it. Therefore, as already stated, it was sent by the secretary of the Union to about 6,700 American biologists individually, who, after examining the report, were invited to express themselves on the following two questions and to submit in addition suggestions or comments:

(1) Do you favor the project of publishing a single comprehensive biological abstracts journal?

(2) Without committing yourself finally, is it likely that you would support such a journal by subscription?

The nearly 4,500 replies received distribute themselves, in percentage, as follows:

	Question 1	Question 2
Yes	84.3 per cent.	55.99 per cent.
No	7.9 " "	18.8 " "
Probably		5.5 " "
Undecided	1.4 " "	
No vote	6.2 " "	5.2 " "
Through institution		2.9 " "
Total	99.8 per cent. ³	88.39 per cent. ³

By societies, these replies distribute themselves approximately as follows (owing to the extensive overlapping in membership between many of the societies the sum of the totals for the several societies exceeds the total number of individual replies received):

	Question 1		Question 2	
	Yes ⁴	No ⁴	Yes ⁴	No ⁴
American Society of Agronomy...	238	17	167	82
American Association of Anatomists	215	8	184	30
American Society of Animal Production	118	15	102	29
Society of American Bacteriologists	578	47	480	125
Botanical Society of America.....	519	53	449	131
American Dairy Science Association	99	11	101	32

³ Lack of space prevents printing the numerous additional categories resulting from votes qualified in one way or another; hence the total percentages here recorded are less than 100.

⁴ To conserve space, only affirmative and negative votes are tabulated.

² SCIENCE, September 29, 1922, pp. 359-361.

	Question 1		Question 2	
	Yes	No	Yes	No
Ecological Society of America.....	378	29	309	79
American Association of Economic Entomologists	342	32	268	96
American Entomological Society.....	266	31	308	83
American Physiological Society.....	162	24	126	61
American Society of Biological Chemists	121	24	89	56
American Society of Experimental Therapeutics	46	8	24	23
American Society of Experimental Pathology	17	3	12	18
Society of American Foresters	268	31	124	206
American Society for Horticultural Science	121	16	92	38
American Society of Mammalogists	238	27	171	89
American Society of Naturalists.....	255	22	207	54
American Phytopathological Society	309	42	278	62
American Society of Zoologists.....	281	9	269	19

In addition to this unexpectedly large response, the replies contained many interesting comments, suggestions and questions. A large number of these augment in one way or another the affirmative replies to one or both questions, besides offering many thoughtful suggestions. The remainder, which fall logically into groups, offer certain very natural and pertinent questions and criticisms. The committee regards it as essential to present those considerations about which the questions and criticisms chiefly center and which in nearly every case are also those to which the joint committee gave especial attention before formulating its report.

(1) *Concern for the existing abstracting services if a competing service is inaugurated.* The difficulties besetting many of the services in English have in a large measure furnished the stimulus for the committee's efforts; this is especially true inasmuch as the very existence of some is threatened. The committee is, therefore, glad of the opportunity to make it clear that there has been no thought of merely setting up a rival publication; the effort has been to find a more adequate and enduring basis for this important work, which in most cases the existing agencies are struggling to perform under very trying circumstances.

From the evidence at hand the committee concluded in its report that this basis for biology would most likely be furnished by a single, comprehensive, well-supported abstracting and indexing service. From what has been said, and—considering for the moment merely the American efforts—from the fact that many of the societies comprising the Union of American Biological Societies are already conducting or

cooperating in abstracting journals, it is evident that the establishment of a merely competitive service by the Union is inconceivable. If, on the other hand, the existing services should find the proposals of the Union sufficiently sound and practicable in providing more adequately and permanently for the work which they severally are doing, a voluntary cooperative merger of sufficient magnitude might result which would prepare the way for the inauguration of the more comprehensive service, provided always the necessary financial support to guarantee editorial excellence for at least a considerable period of years is assured, as stipulated in the committee's report. Although the committee is not authorized to speak for the bodies conducting existing abstracting services it may be mentioned that several of these have already expressed their willingness to effect a merger.

It is, of course, thoroughly recognized that some of the services in English, as in other languages, have objectives of such character, render such special or unique services or are by statute or other provisions so obligated that their independent continuance would not only be entirely justified but highly important. With these as well as with other agencies, irrespective of language, every effort should be made to arrange mutually helpful cooperative relations should the more inclusive service be inaugurated.

(2) *Separate journals for botany and zoology preferred* (using the terms in the broad sense of plant and animal science). The committee gave much attention to the development of separate services along the lines of this traditional division of biology. In such fields as taxonomy, morphology, anatomy, etc., such a division presented no marked difficulties, except in the Protista. However, serious difficulties were encountered in certain fields in which such a division would cleave through the very center of the subject, notably in genetics, cytology, evolution and other aspects of general biology; to an increasing degree this is true also for physiology, pathology, ecology, etc. On the whole, therefore, the division of biology into plant and animal did not commend itself to the committee.

(3) *Separate journals for the various more special fields preferred.* This alternative naturally suggested itself, especially after it appeared inadvisable to divide the field into plant and animal science. It is, of course, the procedure on which biologists have already embarked to a considerable extent, as evidenced by the scores of listing and abstracting journals or sections of journals which concern themselves with more or less restricted fields. The invaluable services which these services of narrower scope are performing led the committee to study also this proce-

ture as possibly furnishing a basis for working out plans to provide approximately all biology with adequate abstracting and indexing facilities. As was pointed out in the committee's report, three closely connected major practical difficulties presented themselves:

(a) In order that an abstract journal of narrow scope may meet the needs of its constituents it finds itself under the necessity of reaching extensively into neighboring fields. The result is a very extensive duplication with attendant increased costs.

(b) The special abstracting journals, because restricted to limited fields, can in most cases command but relatively limited numbers of subscribers with the result that even though the subscription rate be high it is usually considered fortunate if the income secured is sufficient to meet the costs of printing and distribution. In those relatively rare cases in which such income contributes anything to the editorial expenses, the amount is largely insufficient to provide at all adequately and continuously for the large amount of exacting abstracting, editorial and bibliographic and clerical work involved. The result is that

(c) all or nearly all the work attendant upon the production of such journals is on a volunteer basis. The committee recognizes fully the very great value of these volunteer services and that this basis provides certain advantages in esprit de corps, devoted services and often elevated standards which should be carefully preserved in any modification of present practice. But it is usually inevitable that the burden must be borne by those who can with difficulty and sacrifice give but limited attention to the tasks, since their responsibilities necessarily lie mainly in other directions. Under these circumstances it is not surprising that discontinuity has been rather characteristic of these services of narrower scope; also that usually it has been impossible for them even to approximate their objectives. Exception must here be made of a few services, especially in certain applied fields, which through special support have been able to render able service consecutively for longer periods of time. Thus, in looking the biological field over in general, it becomes obvious that adequate provision exists in only a very fragmentary way, and that frequently the services devoted to the less immediately applied aspects of biology have had greatest difficulty in maintaining themselves.

The alternative which in the judgment of the committee offers the best prospect for improvement is a single comprehensive service, not only because it would effect marked savings through avoidance of costly duplication and secure the well-recognized ad-

vantages to the subscriber of large editions, but also because efforts to secure adequate financial support to guarantee editorial excellence give greater promise of success if sponsored by the larger and responsible group of biologists which would be served by such an enterprise, a group which is already largely represented in the Union. The committee does not, however, favor the plan of a single comprehensive service solely on financial grounds. It seemed to offer also an excellent opportunity to insure the healthy interaction of the various aspects of biology without at the same time jeopardizing its usefulness in restricted fields. It is, of course, realized that equally important is the interaction of biology with aspects of the other major sciences, such as chemistry, physics, geology, psychology. But boundaries must on practical grounds be established, the approximate location naturally being influenced by the general scope adopted by services in the other major sciences. Obviously no lines can be drawn which will not prove inconvenient to some.

(4) *Only part of the contained material would be of interest to the individual.* Unless the scope is a very narrow one this observation from the scientist's point of view applies more or less to all literature aids. Generally approved groupings of materials in subject-matter sections accompanied by convenient tables of contents should provide, as elsewhere, the necessary facilities for consulting the current material of interest individually with the same ease as in the issues of journals of more restricted scope.

(5) *Publication would be too bulky.* In considering this aspect of the problem the committee early inquired into the experience of *Chemical Abstracts*, which issues annually approximately as many pages of abstracts and indexes as the committee estimates would be required for an equally complete service in biology. The committee did not find that the matter of bulk in this highly successful and valuable journal had ever emerged as a serious problem. The committee has further investigated printing papers and, as previously reported, finds available very satisfactory thin papers. There would be no difficulty in supplying an edition on such paper to those subscribers who might prefer it.

* * * *

Discussions have also been held in fifteen or twenty biological centers, where almost without exception the general plans of the Union met with practically unanimous favor.

* * * *

The executive committee of the Union thus felt it could with the approval of biologists generally proceed to the next step, namely, endeavor to secure the necessary financial support for at least a consid-

erable period of years to guarantee editorial excellence; it will be recalled that such provision is basic in the proposal. These endeavors, with the active support of the National Research Council, are under way.

Finally, with American interest and cooperation assured, efforts will be made to secure international participation, without which no complete service can be rendered.

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE PERMANENT SECRETARY'S ANNUAL REPORT

THE following paragraphs report on the most important matters that have had the attention of the permanent secretary's office during the year ending September 30, 1924.

PUBLICATIONS

Two special issues of SCIENCE (for January 25 and February 1, 1924) were devoted to brief reports of the last annual meeting, which was held in Cincinnati. A new edition of the booklet of information was published in the spring, and 25,000 copies of it have been sent to prospective members. A smaller booklet, on the organization of the association, was published and copies were sent to those interested in linguistic sciences.

Plans and arrangements have been completed for the preparation of the next volume of the Summarized Proceedings, which is to contain the new directory of members of the association. The volume is to be published next fall.

ORGANIZATION

Philological Sciences: The special committee on philological sciences (authorized at the last annual meeting) has been active throughout the year, and a program on linguistic sciences has been prepared for the fifth Washington meeting. The movement to organize these sciences in the association continues to arouse interest among philological workers.

Divisions and academies: The arrangements with the two divisions and with the local branch, as well as with the twelve affiliated academies of science, have been continued. The association has paid to these organizations the following amounts for the last four fiscal years:

	1921	1922	1923	1924
Pacific Division.....	\$1,007	\$1,126	\$1,133	\$1,339.00
Southwestern Division	131	149	224	242.00
Local Branch (State College, Pa.).....	—	27	29	30.50
Affiliated Academies.....	1,141	1,328	1,440	1,467.00
	\$2,279	\$2,630	\$2,826	\$3,078.50

It will be recalled that these payments are made as allowances to aid the work of these organizations. The divisions and the affiliated academies each receive one dollar a year for each of their members who pays dues in the association. The local branch receives similar allowances of fifty cents. Several academies of science have applied for affiliation, but no action has yet been taken on their applications, pending the decision of questions regarding the entire arrangement of affiliated academies. The finances of the association will not permit further considerable increase in the annual allowances to the affiliated academies unless the arrangement of affiliation may be made to result in more pronounced annual increases in association membership. It will be remembered that the current expenses of the association must be met from the annual dues contributed by members and that the portion of these contributions that is available for this use after purchasing the journal subscription is \$2 for each member in good standing. In the case of division and affiliated academy members half of the two-dollar balance is paid to the division or academy, leaving only \$1 for the account of current association expenses. In most instances the academies credit the dollar allowances received from the association to annual academy dues of their members, and the association allowance is consequently received by the academy in lieu of an equal fund that would otherwise be received by the academy from its association members if they were to pay academy dues. The academy allowance for