Listed are periodicals in the biological sciences, selected according to the following criteria: they are current publications, issued at least twice a year, covered by at least three of four major indexing and abstracting services, acquired currently by at least one of the three national libraries, comprise part of the collections of other major domestic libraries, and are devoted entirely or mainly to the publication of original research. Periodicals are arranged alphabetically by title, with the place and frequency of publication indicated. The list is introduced by a description of the procedures used to collate the list, and a list of information sources is included. (EB)
SELECTED CURRENT PRIMARY SERIAL PUBLICATIONS

in the

BIOLOGICAL SCIENCES

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Council on Biological Sciences Information

Working Document No. 1

Prepared by

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On March 10, 1967, the Council on Biological Sciences Information (COBS!) adopted a number of resolutions. One said that the Council "will survey and evaluate components of the existing information systems serving the biological sciences, assessing their effectiveness to their users." In working toward this objective, a feasibility study was to be made for a serials record center. For nearly ten years various individuals and organizations have noted the need for dependable data concerning the number of primary journals serving the biological sciences. Although a number of published lists are available, none is complete, nor does any one list distinguish between titles that are current and those that have been laid to rest or superseded by different titles.

All numbers connected with publications tend to be "soft" -- that is to say, they are too imprecise to stand up to critical examination, or are hedged about with so many qualifications that their significance remains doubtful. The lack of a firm base of information about scientific serials led to the recommendation that an accurate list of all primary publications in biology be drawn up, complete with all data necessary for information analysis and research. This would be not only for one-time publication, but for computer storage and continuous updating. Contrary to popular belief, such a definitive list does not exist at present. The lists which have been published by the National Library of Medicine, the National Agricultural Library, the Library of Congress, Biological Abstracts and Chemical Abstracts cannot be merged easily since they are in forms that are both conceptually different and computer incompatible. Preliminary work by the Council on Biological Sciences Information has shown that the degree of overlap between medical, agricultural, and biological listings is smaller than expected; that the labor of merging the lists is considerable but not overwhelming; and that predictions and decisions about total information in biological sciences must remain inspired guesswork until a definitive list is produced. Support for this COBS! activity has been from a National Science Foundation grant to the National Academy of Sciences.

This COBS! Working Document No. 1 presents a selected list to serve as a basis for further work. Material from the journals included can be found in three or more of the major abstracting and indexing services. A strenuous effort has been made to examine late 1969 issues of all the journals listed. As a result, one can assume that these journals are current; contain primary re-
search articles; are being abstracted, indexed, or contents listed in the major announcement services; and that one can expect copies to be available in major libraries in the United States, Canada and in national libraries elsewhere.

The absence of a journal from this list means that we have been unable to find evidence that it meets all of the desired criteria. In the course of examining the more than 31,000 titles obtained from four major listings, we find that it will be possible to prepare other lists of secondary services and reviews. A large number of titles of journals that have ceased publication or have little primary information in the biological sciences have been omitted from the present listing.

Details of the preparation of this list by Mrs. C. Grace Gurtowski are given in the Introduction. We hope that users will bring to our attention additional information that can be included in any subsequent listing.

Raymund L. Zwemer
February 20, 1970
Introduction

The printed periodical is an antique! George Washington wrote to Matthew Carey, June 25, 1788: "For myself, I entertain a high idea of the utility of periodical publications... I consider such easy vehicles of knowledge more happily calculated than any other, to preserve the liberty, stimulate the industry and meliorate the morals of an enlightened and free People." This is a sweeping statement and undoubtedly true in many respects. It supports the belief that periodical literature is and has been for many years the most important part of an international communications system for disseminating current information among scientists.

In this survey, periodicals fall into two categories. 1) Those devoted largely to the publication of original contributions in which are presented new theories or data are known as primary publications. These serve as a permanent record of, and establish priority for, the author's scientific observations or research results. They also give others a chance to confirm, challenge or discount the data presented. 2) Secondary periodical publications are those comprising the results of indexing, recording, retrieving and abstracting data published in the primary periodical. In this selection we are concerned with "preserving, stimulating and meliorating" primary periodical publications as they relate to biology in its broadest interpretation.

The irony of the situation, however, is that the more successful primary periodicals have become as archives of information, the less successful they are as a means of communication. As one scientist said, the motto today seems to be "Researcher, publish or perish," but as you "publish" more and more, the reader reads less and less. The following questions then come to mind: What is he reading or what does he have available for reading aside from the few periodicals to which he subscribes? What should he be reading? Is the creation of new journals really necessary; if so, why, and in what areas? Which journals might safely "perish"?

Working Document No. 1 entitled "Selected Current Primary Serial Publications in the Biological Sciences" is an initial step in providing answers to the above questions.

Background

Because no comprehensive and informative current "core" list of the substantive primary periodicals in the biological sciences existed, the Council on Biological Sciences Information (COBSI) deemed it highly desirable that such a bibliography be prepared and that the resultant list be compared with actual
coverage by alerting, indexing and abstracting services. This compilation could also be 1) useful in the preparation of secondary publications; 2) permit libraries (domestic and foreign) with limited funds to acquisition periodicals wisely and 3) give an evaluation of the "wheat" to be separated from the "chaff."

Approximately two years ago the Council on Biological Sciences Information requested that Dr. Zwemer and a member of his staff conduct a survey to determine the feasibility of preparing such a current bibliography. A preliminary report on this study elicited from the late Dr. Fred R. Cagle the comment that the emphasis should not be on the publication of a "core list" but rather on the establishment of a system that could provide 1) information in a variety of forms as needed or 2) a basis for others wishing to prepare such lists. A review of approximately 1500-2000 journal titles beginning with the letters 'C' and 'J' indicated that it would be opportune for COBSI to make a valuable bibliographic contribution in the field of biology by providing the basis for others to prepare the specialized bibliographies ("core" lists, for example), and utilizing computer technology to store, keep current, and provide data on demand. The Project was divided into the four steps outlined below.

Phase I - Collect, correlate and alphabetize all titles obtained from many and varied information sources (see Appendix A). This operation required "manual" labor since the sources are not compatible with respect to format.

Phase II - Verify titles and other available bibliographic information from copies of the journals. Since the ultimate goal was to utilize computer technology for keeping the list current and providing bibliographies for special interest groups, as much information as possible appropriate to machine coding and storing should be recorded.

Phase III - Convert bibliographic data for an electronic data system which could provide information in a variety of forms as needed. This phase would include keeping the compilation current.

Phase IV - A study of the current acquisitions of biological sciences periodicals in large, small and special libraries throughout the world.

It was recommended that Phase I of this program should be undertaken at the Federation of American Societies for Experimental Biology under the supervision of Dr. Zwemer.

Program Development

Each of the entries comprising items 1-4 of Appendix A were mounted on 5x8-inch cards. Correlating titles were interfiled for more than 31,000 cards. As a result of this initial operation it was determined that only 204 titles of journals publishing original research were common to all four lists. It must be realized
that many thousands of the entries were for secondary publications and ephemeral house organs.

From this preliminary effort it was decided that because of limits on time and funding of the project, the way to make the correlation of titles from bibliographies and major abstracting and indexing services meaningful would be to combine the completion of Phase I with the beginning of Phase II. Therefore, the serials comprising this Working Document No. 1 are:

1. Arranged alphabetically by title.

2. Published currently: (95% have been checked with a 1970 or a late 1969 issue of each title).

3. Issued (with very few exceptions) at least 2 and preferably 3 or more times a year.

4. Listed as being covered by at least three of four major indexing and abstracting services (Appendix A, No. 3, 4, 5 and 7). Those listed by only one or two of these should be examined in a subsequent study. A few new journals devoted almost entirely to original research have been included in the expectation that they soon will be widely covered.

5. Acquisitioned currently by at least one of the three national libraries (National Agricultural Library, National Library of Medicine or the Library of Congress).

6. Comprise part of the collections of other major domestic libraries.

7. Devoted entirely or in considerable part to the publication of original "research reports," "works," "articles," or "papers." If this statement seems confusing, the problem lies in the semantics. The above terms have been used, apparently, interchangeably in the various sets of instructions to authors (which sometimes require a Sherlock Holmes to locate in the journal).

Bibliographic data are presented in the following order:

1. Title - exactly as it appears or the title page (or cover if there is no title page) of the most recent issue available for review. Titles in Chinese, Japanese or Cyrillic alphabets have been transliterated into the Roman alphabet.

2. Subtitle - supplied when necessary for clarity or when it appears on the title page.

3. Place of publication - the name of the country, province or state follows the name of the city only when uncertainty might exist.
4. Frequency of publication - obtained from the latest issue available. The words used to describe frequency, e.g. "4 issues a year" instead of "quarterly", follow the phrasing used in the journal; if the name of the month did not appear on the journal one could only assume that it was quarterly, bimonthly, etc.

Observations and Comments

One of the biggest problems in compiling this type of bibliography is straightening out the semantics. What is a primary serial publication? What constitutes an original article? Why is the term journal different from the term serial or periodical, or are they used interchangeably with any measure of consistency? Since the Council on Biological Sciences Information has not defined in any of their publications the terms mentioned here, this author has attempted to provide definitions which might be followed in the preparation of a subsequent compilation of biological serials publications. These definitions are presented in Appendix B. In this list:

1. Biological sciences has been narrowed to exclude publications on the history of medicine and the practice of psychiatry, psychology, surgery, dentistry, animal husbandry, nursing, and anesthesiology.

2. The term periodical or journal should be applied to titles appearing in this compilation, rather than the more inclusive term serial because we have eliminated from this list annuals, monographic series, government bulletin and report series, state agricultural bulletin and report series, most proceedings of societies, congresses or conferences, state medical journals, review journals, and those serials entitled "advances, reports, bulletins, contributions, trudy, etc."

Although there was not sufficient time or money to analyze in detail the entries comprising this bibliography, which was indicated as Phase II, the compiler did make an effort to record some observations from the brief look at a current two or three issues of each publication.

1. While most of the original articles contained in a periodical may have been first-class, some were relatively short and not sufficiently documented.

2. Tables of contents, instructions to authors (often confusing), procedures for subscribing to journals, redactory information, names of editorial boards, etc., were often lost among a large amount of advertising copy, notices and other motley collections of material.

3. Foreign journals were often dated many months prior to their receipt by the library.
4. Without a more detailed analysis of the contents of these publications, it would be difficult to determine how much of the material was really concerned with first-class reporting of original research.

In a National Association of Science Writers Newsletter for 1968, there is an article by Dr. Irvin H. Page entitled "The Partial Truth Syndrome." From a cursory review of these publications we concur that because promotions, notoriety and status in your field seem to be gained largely by how much publicity one can obtain in a scientific publication, many authors publish what they call the results of original research, but what Dr. Page refers to as the partial truth syndrome. Of course he also adds that revealing the whole truth is no longer a simple matter for an author because the increasing number of authors has so cluttered the literature that ferreting out the original sources of discovery is time consuming.

A geographic analysis of this document indicates that there are included 190 titles published in the United States and 388 entries from foreign countries. If one of your favorite journals is not on this list or you feel that some titles which are included do not merit the wide coverage they are given, please tell us. This Working Document was prepared to elicit comment. Be sure, however, that the periodical you wish to add is devoted largely to original research and is not primarily a review journal. It is strongly recommended that arrangements be made to carry out Phases II and III of the program outlined on page iv. This effort will be worthwhile in providing a good basis for determining the substantive primary periodicals in the biological sciences.
APPENDIX A

Information Sources


This list, comprising 8,939 titles, is intended as a guide to substantial biomedical serials of which the National Library of Medicine holds at least one issue for 1950 or later. These serials were selected from a working tile of 18,500 titles represented in the Library's collections for this period.


This volume of titles and abbreviations only was prepared initially to persuade editors and publishers to adopt a uniform abbreviation system. The current edition now comprises over 5,800 titles of serials relating to medicine, pharmacy, dentistry and veterinary medicine.


BIOSIS' current list of serials, as of October 20, 1969, comprises 7,593 titles published in 97 different countries and territories. These titles include journal literature, annual institutional reports, review annuals, reports of periodically scheduled conferences, congresses and symposia and number unclassified reports of research supported or conducted by various U.S. government agencies. Abbreviations are based on the U.S.A. Standards Institute's Standards for Title Abbreviations.


This latest revision contains approximately 5,000 entries (titles only). The Bibliography of Agriculture is the monthly index to the serial literature of agriculture and the allied sciences which is received in the National Agricultural Library.

5. ACCESS; Key to the Source Literature of the Chemical Sciences, 1969 Edition. A publication of the Chemical Abstracts Service; published by the American Chemical Society, Columbus, Ohio.

This edition contains a total of 30,798 entries each with detailed bibliographic data and library holdings information. An analysis of this number indicates that only 10,399 entries represent currently published serials. There are also 9,333 cross references, 2,784 references to volumes of papers presented at technical meetings and 1,813 to monographs containing individual contributions of
APPENDIX A

chemical interest. The entries included reflect the serial and nonsorial publica-
tions abstracted by "Chemical Abstracts" since 1907, those covered by "Chem-
isches Zentralblatt" and its predecessors since 1830 and those cited in "Befl-
stein's Handbuch der Organischen Chemie" prior to 1907.

6. Periodicals Currently Received in the NIH Library, 1965. Public Health
Service Publication No. 1313. U.S. Department of Health, Education and Welfare,
March 1965.

This compilation of 2,578 periodicals (titles only) was to be revised and
released annually as a Public Health Service publication. However, it was later
decided to retain any revisions for intramural use only and, according to National
Institutes of Health library personnel, this rule is never broken.

Medicine.

There were 2,260 journals being processed (some selectively only) for
Medlars as of January 1968. A Committee on Selectivity of Literature for Medlars
continually evaluates old and new journals to ensure that they satisfy the Comm-
ittee's requirements for quality, coverage, comprehension and scope.
APPENDIX B

Definitions

1. **Biological sciences** - biology considered in the broadest sense of life sciences and including applied biology, agriculture and the practice of medicine and veterinary medicine.

2. **Serial** - a publication issued in successive parts, usually at regular intervals and, as a rule, intended to be continued indefinitely. Serials include periodicals, newspapers, annuals (reports, yearbooks, etc.) memoirs, proceedings, transactions of societies and may include monographic series and publishers' series.

3. **Periodical** - a serial issued in parts which are not monographic and which usually contain articles by several contributors. It generally has a distinctive title and the successive numbers or parts are intended to appear at stated or regular intervals (of more than one day but at least twice a year for the purposes of this study) and, as a rule, for an indefinite period.

4. **Journal** - used synonymously here with periodical although a daily publication such as a newspaper can be defined as a journal.

5. **Primary publication** - periodical, serial or other record devoted in a large part to publishing information on original research. The Council of Biology Editors have accepted the following definition: "An acceptable primary scientific publication must be the first disclosure containing sufficient information to enable peers (1) to assess observations, (2) to repeat experiments, and (3) to evaluate intellectual processes; moreover, it must be susceptible to sensory perception, essentially permanent, available to the scientific community without restriction, and available for regular screening by one or more of the major recognized secondary services (e.g., currently, Biological Abstracts, Chemical Abstracts, Index Medicus, Excerpta Medica, Bibliography of Agriculture, etc., in the United States and similar facilities in other countries."

6. **Substantive primary biological periodical** - devoted entirely to periodically published information on current original research in a field of biology.

7. **Secondary publication** - an alerting, indexing or abstracting serial publication which cites the contents of primary and other secondary publications.

8. **Core list** - for the purpose of this survey, a compilation of the substantive primary periodicals in the biological sciences.
SELECTED CURRENT PRIMARY SERIAL PUBLICATIONS in the BIOLOGICAL SCIENCES

Acarologia. Paris. 4 issues a year.

Acta Allergologica. Copenhagen. 8-12 issues a year.


Acta Cardiologica. Brussels. 6 issues a year.

Acta Chemica Scandinavica. Copenhagen. 10 issues a year.


Acta Clinica Belgica. Brussels. 6 issues a year.


Acta Dermato-Venereologica. Stockholm. 6 issues a year.

Acta Embryologae et Morphologiae Experimentalis. Palermo, Italy. 3 issues a year.


Acta Morphologica, Academiae Scientiarum Hungaricae. Budapest. 3-4 issues a year.

Acta Neurologica Scandinavica. Copenhagen. 5 issues a year.


Acta Obstetrica et Gynecologica Scandinavica. Lund, Sweden. 4 issues a year.


Acta Pharmacologia et Toxicologica. Copenhagen. 6 issues a year.


Acta Physiologica et Pharmacologica Neerlandica. Amsterdam. 2-3 issues a year.

Acta physiologica Scandinavica. Stockholm. 4 issues a volume; maximum of 3 volumes a year.


Acta Tropica; Zeitschrift für Tropenwissenschaften und Tropenmedizin; Revue des Sciences Tropicales et de Medicine Tropicale; Review of Tropical Science and Tropical Medicine. Basel. 4 issues a year.

Acta Veterinaria, Academiae Scientiarum Hungaricae. Budapest. 4 issues a year.

Acta Veterinaria Scandinavica. Copenhagen. 4 issues a year.


Agricultural and Biological Chemistry. Tokyo. Monthly.


Anatomischer Anzeiger; Zentralblatt für die Gesamte Wissenschaftliche Anatomie. Jena. 10 issues a year.


Angiology; the Journal of Vascular Diseases. New York. 11 issues a year.


Annales de Medecine Veterinaire. Brussels. 8 issues a year.


Annali di Microbiologia ed Enzimologia. Milan. 3-4 issues a year.


Annals of Botany. London. 4 issues a year.

Annals of the Entomological Society of America. College Park, Maryland. 6 issues a year.


Antonie van Leeuwenhoek; Journal of Microbiology and Serology. Amsterdam. About 3 issues a year.


Archiv für Experimentelle Veterinärmedizin. Leipzig. 6 issues a year.

Archiv für die Gesamte Virusforshung. Vienna. Irregularly.

Archiv für Hygiene und Bakteriologie. Munich. 6 issues a year.


Archives d'Anatomie Microscopique et de Morphologie Expérimentale. Paris. 4 issues a year.


Archives de Biologie. Liege. Quarterly.


Archives of Disease in Childhood. London. 6 issues a year.


Archives Internationales de Physiologie et de Biochemie. Liege. 5 issues a year.


Australian Journal of Biological Sciences. East Melbourne. 6 issues a year.


Avian Diseases. Amherst, Massachusetts. Quarterly.

Behaviour; an International Journal of Comparative Ethology. Leiden. 3-4 issues a year.


Biochemical and Biophysical Research Communications. New York. Semimonthly.


Biochimica et Biophysica Acta. Amsterdam. Weekly in 8 sections (Bioenergetics; Biomembranes; Enzymology; General Subjects; Lipids and Lipid Metabolism; Nucleic Acids and Protein Synthesis; Proteins Structure).


Biologia Plantarum. Prague. 6 issues a year.

Biologica; Trabajos del Instituto de Biologia 'Juan Noe' de la Facultad de Medicina de la Universidad de Chile. Santiago. Semianually.

The Biological Bulletin. Lancaster, Pennsylvania. 6 issues a year.


Boletín Chileno de Parasitología. Santiago. Quarterly.

Bollettino Della Societa Italiana de Biologia Sperimentale. Naples. Semimonthly.


British Heart Journal. London. 6 issues a year.


British Medical Bulletin. London. 3 issues a year.


British Poultry Science. Edinburgh. 4 issues a year.


Bulletin of Entomological Research. London. 4 issues a year.

Bulletin of Epizootic Diseases of Africa. Lagos, Nigeria. 4 issues a year.


California Fish and Game. Sacramento. Quarterly.


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<th>Title</th>
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<th>Frequency</th>
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<tr>
<td>Canadian Journal of Microbiology</td>
<td>Ottawa</td>
<td>Monthly</td>
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<tr>
<td>Canadian Journal of Public Health</td>
<td>Toronto</td>
<td>Monthly</td>
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<tr>
<td>Canadian Journal of Physiology and Pharmacology</td>
<td>Ottawa</td>
<td>Monthly</td>
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<td>Canadian Journal of Plant Science</td>
<td>Ottawa</td>
<td>Bimonthly</td>
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<td>Canadian Journal of Soil Science</td>
<td>Ottawa</td>
<td>3 issues a year</td>
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<tr>
<td>Canadian Journal of Zoology</td>
<td>Ottawa</td>
<td>Bimonthly</td>
</tr>
<tr>
<td>Canadian Veterinary Journal; la Revue Vétérinaire Canadienne</td>
<td>Ottawa</td>
<td>Monthly</td>
</tr>
<tr>
<td>Cancer</td>
<td>Philadelphia</td>
<td>Monthly</td>
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<tr>
<td>Cancer Research</td>
<td>Philadelphia</td>
<td>Monthly</td>
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<tr>
<td>Caryologia</td>
<td>Florence</td>
<td>4 issues a year</td>
</tr>
<tr>
<td>Cell and Tissue Kinetics</td>
<td>London</td>
<td>Quarterly</td>
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<tr>
<td>La Cellule; Recueil de Cytologie et d'Histologie</td>
<td>Louvain, Belgium</td>
<td>About 2 issues a year</td>
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<tr>
<td>Ceskoslovenska Epidemiologte, Mikrobiologte, Imunologte</td>
<td>Prague</td>
<td>Bimonthly</td>
</tr>
<tr>
<td>Chromosoma</td>
<td>Berlin</td>
<td>About 12 issues a year</td>
</tr>
<tr>
<td>Ciencia</td>
<td>Mexico City</td>
<td>Bimonthly</td>
</tr>
<tr>
<td>Ciencia e Investigacion</td>
<td>Buenos Aires</td>
<td>Monthly</td>
</tr>
<tr>
<td>Circulation; Journal of the American Heart Association</td>
<td>New York</td>
<td>Monthly</td>
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<tr>
<td>Circulation Research</td>
<td>New York</td>
<td>Monthly</td>
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<tr>
<td>Clinica Chimica Acta</td>
<td>Amsterdam</td>
<td>Monthly</td>
</tr>
<tr>
<td>Clinical and Experimental Immunology</td>
<td>Oxford</td>
<td>9 issues a year</td>
</tr>
<tr>
<td>Clinical Pharmacology and Therapeutics</td>
<td>St. Louis</td>
<td>Bimonthly</td>
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Cytologia; International Journal of Cytology. Tokyo. 4 issues a year.

Dansk Tidsskrift for Farmaci. Copenhagen. 10 issues a year.


Deutsche Tierärztliche Wochenschrift. Hanover. Semimonthly.

Developmental Biology; an International Journal. New York. 11 issues a year.


Doklady Akademii Nauk SSSR. Moscow. 36 issues a year.


Entomological News. Philadelphia. 10 issues a year.


Evolution. Lawrence, Kansas. Quarterly.

Experimental Agriculture. London. Quarterly.


Folia Biologica. Prague. 6 issues a year.

Folia Morphologica. Prague. 4 issues a year.


Genetica Berica. Madrid. 3-4 issues a year.


Growth. Philadelphia. 4 issues a year.


Haematologica. Pavia, Italy. 12 issues a year.

Helvetica Chimica Acta. Basel. 9 issues a year.

Helvetica Physiologica et Pharmacologica Acta. Basel. 4 issues a year.

Hereditas. Lund, Sweden. 6 issues a year.


Hydrobiologia. The Hague. 8 issues a year.


Indian Journal of Genetics and Plant Breeding. New Delhi. 3 issues a year.


Internationale Zeitschrift für Vitaminforschung. Bern. 4 issues a year.


Israel Journal of Zoology. Jerusalem. 4 issues a year.


The Journal of Cell Biology. Baltimore. 4 volumes a year; 3 issues a volume.


Journal of Clinical Pathology. London. 6 issues a year.


Journal of Hygiene, Epidemiology, Microbiology, and Immunology. Prague. 4 issues a year.


The Journal of Infectious Diseases. Chicago. 5 issues a year.


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Kobe Journal of Medical Sciences. Kobe, Japan. Quarterly.


Kurume Medical Journal. Kurume, Japan. 3-4 issues a year.

Laboratory Animal Care. Chicago. Bimonthly.


Microbiologia Española. Madrid. 4 issues a year.


Neoplasma; Journal of Experimental and Clinical Oncology. Bratislava. 6 issues a year.


Nuclear-Medizin; Isotope in Medizin und Biologie/Nuclear-Medicine; Isotopes in Medicine and Biology/Medicine Nucléaire; Isotopes en Medicine et Biologie. Stuttgart. 4 issues a year.


Physiological Zoology. Chicago. 4 issues a year.


Protoplasma. Vienna. About 4 issues a year.


Recueil de Medicine Veterinaire. Paris. 22 issues a year.


Revista de Biologia Tropical. San Jose, Costa Rica. 2 issues a year.


Scandinavian Journal of Infectious Diseases. Stockholm. 3 issues a year.


Texas Reports on Biology and Medicine. Galveston, Texas. 4 issues a year.

Thorax. London. 6 issues a year.


26


The Veterinary Record. London. Weekly.

Virchow's Archiv, Abteilung A, Pathologische Anatomie; Pathology. Berlin. 4 issues a volume.

Virchow's Archiv, Abteilung B, Zellpathologie; Cell Pathology. Berlin. 4 issues a volume.


Zeitschrift für Acker- und Pflanzenbau. Berlin. 8 issues a year.

Zeitschrift für Allgemeine Mikrobiologie; Morphologie, Physiologie und Ökologie der Mikroorganismen. Berlin. 5 issues a year.

Zeitschrift für Angewandte Entomologie. Berlin. 6-8 issues a year.


Zeitschrift für Krebsforschung. Berlin. 4-6 issues a year.


Zeitschrift für Mikroskopisch-Anatomische Forschung. Leipzig. 4 issues a year.


Zeitschrift für Pflanzenphysiologie. Stuttgart. 10 issues a year.

Zeitschrift für Pflanzenzüchtung. Berlin. 8 issues a year.

Zeitschrift für Tierzuchtung und Züchtungsbiologie; Journal of Animal Breeding and Genetics. Hamburg. 8-10 issues a year.

Zeitschrift für Tropenmedizin und Parasitologie. Stuttgart. 4 issues a year.

Zeitschrift für Wissenschaftliche Mikroskopie und Mikroskopische Technik. Stuttgart. 4 issues a year.

Zeitschrift für Zellforschung und Mikroskopische Anatomie. Berlin. 8 issues a year.


Zentralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene, Abteilung II. Jena. 8 issues a year.


Zentralblatt für Veterinärmedizin. Reihe B: Infektions und Invasionskrankheiten, Mikrobiologie (Bakteriologie, Virologie, Mykologie), Immunobiologie, Parasitologie, Tierhygiene, Lebensmittelhygiene, Pathologie der Infektionen und Parasitären Erkrankungen. Berlin. 8 issues a year.


Zoologica Poloniae; Archivum Societatis Zoologorum Poloniae. Wroclaw. 4 issues a year.


Zoologischer Anzeiger. Leipzig. 6 issues a year.