

LITERATURE
OF
AGRICULTURAL
RESEARCH

by

J. RICHARD BLANCHARD

and

HARALD OSTVOLD

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UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES

PREFACE

The literature of agriculture and its related fields has grown tremendously in recent years. Agricultural experimentation and research have become major activities of almost every government and of thousands of commercial and nonprofit organizations. Hundreds of agencies, staffed by scientists and technicians, are pouring forth an increasing quantity of research results, issued in a confusing variety of forms and media. There are not only thousands of journals exclusively concerned with the literature of agriculture, but innumerable research reports and informative articles appear in serial publications and in bulletins not normally associated with agricultural topics. The problem of bibliographical control, of systematizing this superabundance of publications in such a way that facts can be obtained from them when called for, has become extremely complex.

This complexity arises from the inadequacy of control devices—bibliographies, indexes, and abstracting services—as well as from the quantity of publications. Such devices appear and disappear, overlap, skip years and whole subject areas, and omit the literature of entire countries and regions. It should be helpful, therefore, to take stock from time to time and to sum up descriptively these guides to information and literature. Such a summation may reveal weaknesses and gaps in the bibliographical machinery and thus provide a stimulus to improvement. It is hoped that the present work will be considered a step in this direction.

The literature has been arranged by broad subjects, the following headings having been selected as most likely to bring together related reference works: agriculture in general, plant sciences, animal sciences, physical sciences, food and nutrition, and social sciences. Within the subdivisions for sections, reference works have been arranged by the following categories: bibliographies of bibliographies and general works, abstracting journals, bibliographies and indexes, encyclopedias, dictionaries, directories, handbooks, yearbooks, history and biography, geography, abbreviations, periodical lists, societies and organizations, tables, and miscellaneous. Not all subjects have reference works in each of these categories, nor is it always clear whether a certain work should be classified as an encyclopedia, a dictionary, or a handbook. Where general encyclopedic works seem to be lacking, some of the outstanding textbooks have been cited as useful sources of background information. Annotations have been provided when the title does not fully explain the nature of the work.

Some subjects commonly associated with the curriculum of agricultural colleges have not been included. The various fields of home economics, for instance, such as clothing, decorative arts, family living, and home planning, depend on the extensive literature of such widely separated

subjects as sociology, fine arts, and psychology, and are not covered. Such fields as agricultural economics, rural sociology, and agricultural education, are covered only to the extent that it seemed practicable and possible to describe reference tools specifically written for them.

This is the first of a series of bibliographic guides sponsored by the University of California libraries and issued by the University of California Press. These guides, each of which will cover a specific subject, will be prepared in whole or in part by members of the library staffs. This work, which was started in the United States Dept. of Agriculture Library in 1948, represents more than eight years of sporadic labor by the two compilers. Practically every type of bibliographical and informational source has been used to find the references cited. Card catalogs and collections in the libraries of the Department of Agriculture, the University of Illinois, the University of California at Berkeley and at Davis, and the University of Minnesota were searched. Standard, current bibliographical tools, such as the Bibliography of agriculture, the Agricultural index, and Biological abstracts, were scanned to find useful works. In general, only the more valuable reference tools have been included, with the hope that they will guide the reader to further sources of information. Emphasis has naturally been placed on American publications, although an attempt has been made to list foreign works of first importance. Since directories are often issued irregularly, with many variations in title and method of publication, only the most recent volume examined has usually been cited. Exceptions to this rule have been made, however, in the few instances in which complete information about all issues of a directory was available. No attempt has been made to list all specialized bibliographies, statistical sources, and directories, simply because their numbers are overpowering and their use is often limited (see p. 8). More specific explanations of the selection policy will be found in the introductions to the different sections. Fortunately, it is generally recognized that a compilation of this type can rarely be complete. Suggestions and comments will, of course, be most gratefully received. Several recent titles, noted at the last minute, will be found in the Addendum, Section G.

Particular thanks are due Professor Ralph Shaw, formerly Director, U.S. Department of Agriculture Library; Mrs. Margaret Bryant, Head of that library's Bibliography Division; and Mr. Oliver Shipley of its Reference Section for much help and advice. Assistance has also been received from Mrs. Aileen Jaffa, Agricultural Reference Service, University of California, Berkeley; Miss Orpha Cummings, Librarian of the Giannini Foundation of the University of California; Mr. D. A. Brown, Librarian, College of Agriculture, University of Illinois; and Professor Emil Mrak of the University of California. Especial thanks are due Mrs. Carol Catlin for her careful work in preparing the manuscript.

The U.S. Department of Agriculture's Bibliographic style, a manual for use in the division of bibliography of the library (Bibliographical bulletin no. 16) has been used as a guide for bibliographical style. Words have been abbreviated according to the practice of the U.S. Department of Agriculture Library as set forth on pages 331-349 of its List of serials currently received in the Library of the United States Department of Agriculture. (Bibliographical bulletin no. 12.)

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LITERATURE OF AGRICULTURAL RESEARCH

SECTION A

AGRICULTURE: GENERAL

The reference works listed in this section are general compilations containing information relating to all branches of agriculture. Publications referring specifically to such subjects as soils and plant pathology are described in later sections. Since agriculture is an all-pervading and ubiquitous subject, it may also be necessary on occasion to use nonagricultural reference works such as the Encyclopedia Britannica and the Readers' guide to periodical literature. These and many other standard reference tools are carefully described in Constance M. Winchell's Guide to reference books (A8).

Bibliographies of Bibliographies

Although they do not attempt to describe all types of agricultural reference works, the publications noted below are helpful for the identification of separately published bibliographies. For the practicing agricultural librarian and research worker the specific compendiums of Frykholm (A3), Johnson (A6), and Schaeffer (A5) are of first importance. However, the comprehensive general work by Theodore Besterman (A1) and the Bibliographic index (A2) should not be overlooked. (See Section C, Addendum, for additional material.)

- A1 BESTERMAN, T. A world bibliography of bibliographies and of bibliographical catalogues, calendars, abstracts, digests, indexes, and the like. Ed. 3. Geneva, Societas Bibliographica, 1955. 4v. A monumental and uncritical list of separately published bibliographies. The author has strengthened his list of scientific and agricultural bibliographies in the third edition. Still incomplete for agriculture but nevertheless of the first importance.
- A2 BIBLIOGRAPHIC index; a cumulative bibliography of bibliographies. 1937- New York, Wilson, 1938-
Semiannual with annual and four-year cumulations. Lists alphabetically by subject separately published bibliographies and bibliographies issued in monographs and journals. Includes agricultural and scientific bibliographies in about 1,500 periodicals, including many in foreign languages.
- A3 FRYKHOLM, L. Översikt över lantbruksforskningens och dess hjälpvetenskapers viktigare bibliografiska hjälpmedel. In Kungl.

Lantbruksakademiens Tidskrift 87(1948):459-489.

----- Supplement. In Kungl. Lantbruksakademiens Tidskrift 90(1951):257-271.

A list of bibliographical reference works in agriculture prepared by the Librarian of the Royal Agricultural College Library in Uppsala, Sweden.

- A4 INDEX bibliographicus; directory of current periodical abstracts and bibliographies, comp. by Theodore Besterman. Ed. 3. (UNESCO Publication no. 863. IFD Publication no. 247.) Paris, UNESCO; The Hague, International Federation for Documentation, 1952. 2 v. In French and English. V. 1, "Science and technology," is a useful guide to agricultural abstracting publications. However, certain publications listed have very little reference value, and a few items listed have ceased publication.
- A5 INTERNATIONAL INSTITUTE of AGRICULTURE. Aperçu des bibliographies courantes concernant l'agriculture et les sciences connexes. A survey of current bibliographies on agriculture and allied subjects. (by Victor A. Schaeffer and others) Rome, 1937. 84 p.
- Supplement. Nouvelles sources bibliographiques agricoles. New agricultural bibliographical sources. [by Sigmund von Frauendorfer] Rome, 1943. 44 p.
- Text in English and French. A compilation based on material received currently in the Library of the Institute. Each reference is accompanied by a note describing the contents of the bibliography. Arranged alphabetically by country with subject and title indexes. Translated into German as Die schriftumsnachweise der landwirtschaftswissenschaft (Berlin, Parey, 1937), and Neue schriftumsnachweise aus dem gebiet der landwirtschaftswissenschaft und ihrer nebengebiete (Rome, 1943).
- A6 JOHNSON, A. Bibliografiske hjelpemidler på landbrukets fagområder. Oslo, Cammermeyers Boghandel, 1942. 61 p.
- A selected list of agricultural reference works prepared by the Librarian of the Norwegian Agricultural College.
- A6a LAUCHE, R. Internationales handbuch der bibliographien des landbaus. World bibliography on agricultural bibliographies. Braunschweig, Forschungsanstalt für Landwirtschaft. [In preparation, 1957.]
- When completed will be an important contribution to the bibliography of agriculture.
- A7 REUNIÓN TÉCNICA de BIBLIOTECARIOS AGRÍCOLAS de AMÉRICA LATINA, TURRIALBA, 1953. Informe final, compilado por Carlos Víctor Penna, Relator General. Turrialba, Costa Rica, Instituto Interamericano de Ciencias Agrícolas. 2 v.
- Contains material presented at a meeting of Latin American librarians in 1953. The following articles and lists are of general reference value: "Colección básica - biblioteca agropecuaria" (a list of basic agricultural works for use in South American libraries), v. 1; "Bibliotecas agrícolas; una bibliografía tentativa" (largely concerns North and South American libraries), by Marietta Daniels and Angelina Martínez, v. 2, p. 57-72; "Lista de revistas agrícolas latinoamericanas preliminar," by Angelina Martínez and Noël James, v. 2, p. 92-115; and "Documentación bibliográfica en el

campo de la agronomía y medicina veterinaria" (a brief survey of agricultural bibliography from an Argentine point of view), by Hans Gravenhorst, v. 2, p. 180-201.

- A8 WINCHELL, C.M. Guide to reference books. Ed. 7. Chicago, American Library Association, 1951. 645 p.
 ----- Supplement, 1950-1952. Chicago, American Library Association, 1954. 117 p.

The most useful general guide in English to reference works. Includes chapters on science and applied science which have sections on agriculture, forestry, home economics, and botany.

Abstracting Journals

The abstracting journal is one of the chief tools in scientific research. Agriculture is well served by such journals, although several important services have been discontinued in recent years. The most serious loss was suffered when the Experiment station record (A22) suspended publication in 1946. As a result, the United States now has no abstracting journal devoted exclusively to agriculture, although Biological abstracts (A11) is supplying coverage for the plant and animal sciences. Abstracts for such important subjects as agricultural economics, statistics, and home economics are either not available or are issued in widely scattered journals. Other countries have also suffered. In Germany, for example, Der Forschungsdienst (A13), which contained an extensive agricultural abstract section, ceased publication in 1944. However, Dr. Oswald Asten's well-designed Agrar-Bibliographie (A9) is making a valiant effort to cover German literature. Dr. von Frauendorfer's Das Schrifttum der Bodenkultur (A19) also provides a review of German and Austrian sources. The Landwirtschaftliches Zentralblatt (A15), started in 1955, should be of first importance. Perhaps the most useful agricultural abstracting services now being issued are those of the Commonwealth Agricultural Bureaux; these are described under the appropriate subjects in later sections of this work. (See Section G, Addendum, for additional material.)

- A9 AGRAR-BIBLIOGRAPHIE; eine zusammenstellung der literatur auf dem gesamtgebiete der land- forst- und ernährungswirtschaft sowie der grund- und hilfswissenschaften. Bd. 1/2- 1945/46- Hamburg, Agrarwerbung G.M.B.H., 1948(?) -

Issued monthly. Devoted largely to the literature of German agriculture. Important items are abstracted. Classified arrangement. Annual author and subject indexes. A detailed statement concerning scope and purpose of this work is in Heft 12, 1954, p. 314-316.

- A10 BERICHTE über die wissenschaftliche biologie. Referierendes organ der Deutschen Botanischen Gesellschaft. v. 1- 1926- Berlin, Springer, 1926-

Abt. A of Berichte über die gesamte Biologie. An international abstract journal for the biological sciences containing several sections of interest to agricultural science, such as: biochemistry, genetics, and applied botany. Comparable in several respects to Biological abstracts (A11).

Berichte über die gesamte Physiologie und experimentelle Pharmakologie, which is Abt. B of Berichte über die gesamte Biologie,

is also of interest to agriculturists since it contains sections on plant physiology, agricultural chemistry, food chemistry, colloid chemistry, etc.

- A11 **BIOLOGICAL** abstracts; a comprehensive abstracting and indexing journal of the world's literature in theoretical and applied biology, exclusive of clinical medicine . . . Published (beginning with the literature of 1926) under the auspices of the Union of American Biological Societies. v. 1- December 1926-Philadelphia, 1926-

In its departments dealing with theoretical and applied bacteriology and botany this journal represents a continuation of Abstracts of bacteriology (B158) and Botanical abstracts (B5). Also includes material formerly abstracted in the Experiment station record (A22). Twelve issues per year plus annual author and subject indexes. Since January, 1954, monthly author indexes have been issued. Since 1939 it has been issued in sections, some of which were discontinued in 1953. The sections are as follows: Sec. A, Abstracts of general biology, 1939- ; Sec. B, Abstracts of basic medical sciences (title varies), 1939- ; Sec. C, Abstracts of microbiology, immunology, public health, and parasitology, 1939- ; Sec. D, Abstracts of plant sciences, 1939- ; Sec. E, Abstracts of animal sciences, 1939- ; Sec. F, Abstracts of animal production and veterinary science, 1942-1953; Sec. G, Abstracts of food and nutrition research, 1943-1953; Sec. H, Abstracts of human biology, 1946-1953; Sec. J, Abstracts of cereal products, 1947-1953. Abstracts are prepared by specialists. An indispensable reference work for all workers in the biological sciences.

- A12 **DEUTSCHE landwirtschaftliche Rundschau**. v. 1-12, 1927-1935. Neudamm, 1927-1935.

A monthly general abstracting journal for agriculture. Continued by abstract section of Der Forschungsdienst (A13).

- A13 **DER FORSCHUNGSDIENST**: Organ der deutschen landbauwissenschaft, v. 1-17, 1936-1944. Neudamm, 1936-1944.

Contains an extensive abstract section for general agricultural subjects. Continues Deutsche landwirtschaftliche Rundschau (A12).

- A14 **L'INSTITUT NATIONAL de la RECHERCHE AGRONOMIQUE**. Series

A. Annales agronomique. v. 1- 1950- Paris, 1950- The "Documentation" section abstracts selected world periodical literature concerning soils, fertilizers, plant physiology and pathology, and related subjects. The "Bibliographie" section reviews books and the "Sommaire des periodiques" section lists the contents of journals published throughout the world. Useful as a guide to French and European material. Series B, Amélioration des plantes, Series C, Epiphyties, and Series E, Annales de technologie agricole also have documentation sections which may be of interest to the plant scientist.

- A15 **LANDWIRTSCHAFTLICHES Zentralblatt**. 1955- Berlin, Deutsche Akademie der Landwirtschaft, 1955-

A new agricultural abstracting journal, issued in 4 parts: Abt. 1, Landtechnik; Abt. 2, Pflanzliche produkte; Abt. 3, Tierzucht, Tierernährung; Abt. 4, Veterinärmedizin. Is said to contain abstracts from some 1,000 periodicals prepared by about 750 scientists.

- A16 NETHERLANDS. MINISTERIE van LANDBOUW, VISSERIJ en WOEDSELVOORZIENING. Landbouwdocumentatie. Jaarg. 4-1948- 's-Gravenhage, 1948-
A general weekly agricultural abstracting journal compiled by the Centrum voor Landbouwdocumentatie, Wageningen. Arrangement is according to the International decimal classification. Each issue also includes the "Bulletin-catalogus" of the Bibliotheek der Landbouwhoogeschool, Wageningen.
- A17 NORDISK jordbrugsforskning. Organ for nordiske jordbrugsforskere forening. [Scandinavian agricultural research. Organ for the Association of Scandinavian agricultural research workers.] Copenhagen and Stockholm, 1919-
The annual supplement, Förteckning över nordisk jordbrukslitteratur, is of reference value as a summary of Scandinavian agricultural literature. Has a classified arrangement with an author index.
- A18 REVUE internationale des industries agricoles. v. 1- June 1939- Paris, Commission internationale des Industries Agricoles, 1939-
Abstracts world literature concerning agricultural industries, with emphasis on food products. The lack of subject and author indexes decreases the reference value. The annual "Table des matieres" is too brief to be of much value.
- A19 DAS SCHRIFTUM der bodenkultur. Bibliographische mitteilungen aus dem gebiet der land- und forstwirtschaft und ihren nebengebieten. Jahrg. 1- 1948- Vienna, Fromme, 1948-
Issued quarterly. A bibliographical review journal for agriculture, forestry, and related subjects prepared in the Library of the Hochschule für Bodenkultur in Vienna. Lengthy abstracts of important works. Articles in foreign and Austrian journals and new books are listed according to subject.
- A20 SPAIN. MINISTERIO de AGRICULTURA. Boletín bibliográfico agrícola. no. 1- February 1948- Madrid, 1948-
Issued quarterly. Abstracts new books and lists journal articles and bulletins in a classified arrangement. Covers world literature with emphasis on material of interest to Spain. Apparently no indexes have been issued.
- A21 TURRIALBA, Suplemento bibliografico. v. 4- January-March 1954- Turrialba, Costa Rica, Instituto Interamericano de Ciencias Agrícola, 1954-
The Suplemento bibliografico de Turrialba begins with v. 4, no. 1 of Turrialba, which was started in 1950. It is published separately and contains the following sections: (a) "Bibliographical index of Latin American scientific agricultural journals." Indexes articles published in Latin American agricultural journals received by the institute. (b) "Abstracts." The abstracts are given on 12.5 by 7.5 cm. cards. For certain subjects, such as cocoa, coffee, and sugar, abstracts not only American publications but also those published in other parts of the world. Photoprints may be requested of the articles abstracted. (c) "List of acquisitions." Lists new works received by the Library of the institute.
- A22 U.S. OFFICE of EXPERIMENT STATIONS. Experiment station record. v. 1-95, September 1889-December 1946. Washington, 1890-1948. 95 v.
-----General index, v. 1-70, 1889-June 1934. Washington, 1903-1937. 6 v.

- Primarily an abstract record of American agricultural experiment station and U.S. Department of Agriculture research and of articles by station and department men in nonofficial journals. Important foreign publications were also abstracted. Covers certain publications, such as the annual reports of the stations, which are not indexed in the Agricultural index (A23). Tables of contents for each volume list station and U.S. Department of Agriculture publications abstracted. Abstracts of important articles are detailed and were written by specialists. Original titles for foreign publications are given with English translation in brackets. Yearly indexes are by author and subject. General indexes, covering five or more years, by subject only. Still useful as a guide to agricultural literature published during the period covered.

Bibliographies and Indexes

The United States has two excellent indexing services, the Agricultural index (A23) and the Bibliography of agriculture (A24). General printed indexes such as these are described here. Specialized subject bibliographies are listed in their proper sections. It should be pointed out, however, that the number of specialized bibliographies—specialized as to locality, time, or subject—is so great that it is not possible to list them all. Virtually every book and article on agriculture includes a bibliography of some value, occasionally of unique value. The only publication that has attempted to systematize the approach to bibliographies appended to articles and books is the Bibliographic index (A2). Publications primarily intended to be bibliographical (which may be inferior to similar bibliographies appended to books or articles) are less numerous, but there are a great many of them. They may best be located by specific subject through the Bibliographic index (A2) or under appropriate headings in the annual subject index of the Bibliography of agriculture (A24). The subject indexes of the Experiment Station Record (A22) were particularly effective as locating devices for both bibliographical publications and bibliographies appended to books and articles. It can usually be assumed that an article or monograph on a specific subject will include a bibliography on the subject, which in turn will point to other articles with bibliographies, and so on. (See Section G, Addendum, for additional material.)

- A23 AGRICULTURAL index;** a cumulative subject index to agricultural periodicals, books, and bulletins. v. 1- 1916- New York, Wilson, 1919-
Issued monthly (except September). Monthly issues are superseded by cumulative volumes. Alphabetical subject index to more than a hundred periodicals and to bulletins, books, and publications of agricultural departments, experiment stations, extension services, agricultural societies, and other agencies. All publications now indexed are in English, most foreign publications having been dropped in 1949. "Some recent book titles," a section of each monthly issue, is useful for book selection. An indispensable reference work for any library serving agricultural interests.
- A24 U.S. DEPARTMENT OF AGRICULTURE. LIBRARY. Bibliography of agriculture.** v. 1- July 1942- Washington, 1942-

Issued monthly. V. 1-2, issued in 6 sections: Agricultural economics and rural sociology, Agricultural engineering, Entomology, Plant science, Forestry, and Food processing and distribution. Beginning with v. 3, all sections were combined in a single publication and the scope of the bibliography broadened to cover the whole field of agriculture. Checklists of U.S. Department of Agriculture publications, state agricultural experiment station publications, and state agricultural extension service publications are provided. Classified by subject, indexed monthly by author and annually by author and subject. Subject and author indexes were provided semi-annually from 1943 to 1947. The most comprehensive single index to agricultural literature.

- A25 ARGENTINE REPUBLIC. MINISTERIO de AGRICULTURA y GANDERIA de la NACION. DEPARTAMENTO de BIBLIOTECAS. Boletín bibliográfico. 1934- Buenos Aires, 1934-

A classified list covering world agricultural literature.

- A26 CLAY, E.W., comp. List of available publications of the United States Department of Agriculture. (U.S.D.A. Misc. P. 60, rev.) 1951. 173 p.

Lists by subject all publications of the department that are available either for free distribution or by purchase from the Superintendent of Documents. Gives information on distribution of publications and describes the various series and periodicals. Includes a list of depository libraries. Frequently revised.

- A27 INTERNATIONAL INSTITUTE of AGRICULTURE. Bibliographie d'agriculture tropicale . . . Bibliography of tropical agriculture, 1931-1940. Rome, 1932-1942. 10 v.

Issued annually. Text in English and French. Covers primarily technical publications. References are annotated and classified by product. Indexed by author.

- A28 INTERNATIONAL INSTITUTE of AGRICULTURE. Decennial index of publications (1930-1939). Rome, 1942. 55 p.

Pt. 1 is a classified list of all monographs, yearbooks, and periodicals published during this period. Pt. 2 indexes by author and title articles published in the English edition of the International review of agriculture. Pt. 3 is a general alphabetical index. Also issued in a French edition.

- A29 INTERNATIONAL INSTITUTE of AGRICULTURE. Liste chronologique des publications éditées par l'Institut International d'Agriculture, non comprises dans la liste commerciale, et bibliographie de l'Institut depuis 1905. Rome, 1951. 19 p.

Pt. 1 lists statutes, conventions, periodicals, and other publications issued through 1939. Pt. 2 is a bibliography of official, semi-official, and private references on the origin and activities of the Institute.

- A30 INTERNATIONAL INSTITUTE of AGRICULTURE. LIBRARY. Catalogue systématique: Classified catalogue. Rome, European Regional Office, 1948. 2747 p.

----- Suppléments 1-4. Rome, 1949-1950.

Pt. I, Catalogue des livres; Pt. II, Catalogue des bulletins; Pt. III, Catalogue des séries. Pt. I is arranged by the Universal decimal classification. Subjects are given in French. Has an alphabetical index of subjects and one of authors (including main entries).