



Education

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IT WAS IN A RHETORICAL EXPRESSION of hope and aspiration that the Continental Congress declared in the Northwest Ordinance of 1787:

Religion, morality, and knowledge, being necessary to good government and the happiness of mankind, schools and the means of education shall forever be encouraged.¹

One hundred and eighty years later great efforts are being made to narrow the gap between reality and the implications of rhetoric. The United States is now fully committed to a policy of education "which places it first in all our plans and hopes."² It is now widely accepted that the future of the nation—the democratic system of government, the productive economy, and military preparedness—depends upon education. National concern is not limited to the graded system of elementary schools, secondary schools, and colleges, but embraces the lifelong education of each individual. Further, since the peoples of the world have been thrust into a state of mutual social, economic, and cultural interdependence by improvement in communication, and by the accelerating scientific-technical revolution, the United States now shares in the moral responsibility for furthering universal education to help all of mankind rid itself of the slavery of ignorance.³ These national purposes are reflected in the rapidly growing programs of teaching and learning, burgeoning research projects, and the concomitant creation of published and unpublished documents and reports, records, books, and periodicals.

To limit the rationale for bibliographical control to a narrow concept of national interest is not in keeping with reality. To live, man

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must concern himself with the common welfare of mankind, which now must include the education of mankind. As economy and efficiency require that man must learn from the experience of others, those concerned with education of any kind in any country must examine the practices in those countries which resemble their own, as well as those which differ from theirs. Those concerned must have quick and easy access to man's memory and experience embodied in the widest range of documentation. These needs impel government officials, professors of education, students, librarians, military and school training officers, education departments of commercial and manufacturing firms, and vast numbers of teachers, principals, and superintendents to seek for wisdom to govern policy and action. It is against the needs of these people that the quality of bibliographical control—the bibliography—in the field of education can be evaluated.

The most recent (1964) general review of the literature of education may be found in Carl M. White's *Sources of Information in the Social Sciences*.⁴ White's purpose was to deal with the literature "on a plan commensurate with the breadth of interests of library literature specialists in the social sciences,"⁵ as well as others whose interests are of comparable range. William W. Brickman, who wrote the essay on educational bibliography in White's book, lists with descriptive notes the introductory works, as well as a select list of publications on educational history, educational psychology and measurement, educational sociology, comparative education, general methods of teaching, special methods of teaching, educational administration and supervision, elementary education, secondary education, higher education, teacher education, adult education, education of the talented, and criticism of American education. Brickman closes his essay with a statement on reference works and serial publications which is extended by a listing of the various forms of literature pertaining to education such as guides, reviews, abstracts, bibliographies, dictionaries, encyclopedias, directories, etc. Brickman will be recalled as the author of the *Guide to Research in Educational History*,⁶ a work whose usefulness transcends the stated purpose of convincing faculty and students "that the study of educational history according to recognized principles and practices of scientific historical research is a far more exciting process than concentration upon mere textbooks materials . . ."⁷ This older work contains lists of general works, bibliographies, periodicals, and source collections.

Prior to White's study, a pioneer and standard work was Carter

Alexander and Arvid J. Burke's *How to Locate Educational Information and Data*.⁸ This was first published in 1935 as a textbook combined with workbook to help students and faculty learn how to use the library at teacher training institutions. After four editions, the last in 1958, it is now out of date. A new book by Dr. Burke, who was Professor Alexander's research assistant in 1935, is scheduled for publication in 1967. The title will be *Documentation in Education* with "a considerable reorganization of content and some introduction to new media and what may be available before the next edition appears."⁹ Dr. Burke notes that "it is amazing how many changes have occurred since 1955—about three-fourths of the book will be new."¹⁰

In context with the Alexander and Burke study is Louis Shores' *Basic Reference Sources*,¹¹ designed as a textbook for a library school reference course. Shores perfunctorily lumps education with psychology. Shores's work (1954) is now dated but still has value if only because it calls to mind the Monroe and Shores *Bibliographies and Summaries in Education*,¹² which is a catalog of more than four thousand annotated bibliographies extending over the period from 1910 through July, 1935.

The monumental work in the realm of bibliography, Theodore Besterman's *World Bibliography*,¹³ is monumental for the field of education, too. The entries under Education are divided into thirty-two categories starting with bibliographies, encyclopedias and history, followed by countries of the world, levels and special areas in education and the teaching of special subjects, such as accident prevention, architecture, international relations, medicine, and technology.

More modest in plan, and designed to help the graduate student, is Ruth E. Seeger's *Using Library Resources in Educational Research*.¹⁴ The text briefly describes one hundred and seven basic titles of which 80 percent are in education, the remainder in general and cognate fields.

A more direct approach to the literature of education may be found in the specialized subject guides and the various classes of reference works such as handbooks, encyclopedias, directories, and yearbooks. The following pages contain characteristic and distinctive examples; they do not pretend to give a comprehensive listing.

The *Encyclopedia of Educational Research*¹⁵ is arranged alphabetically under broad headings. The material was collected on the basis of a set of rubrics which derived from the editor's views of education and the role of research in education. The first category defined

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in the Preface recognized that education has to do with human beings and with attempts to modify skills, abilities, concepts and attitudes. The relevant articles cover human development, learning, the social milieu, and special groups (the handicapped, the gifted, etc.) and draw on disciplines outside of education, such as anthropology, sociology, and psychology. A second category considers the relation of education to the social, political and economic influences, and attitudes which characterize contemporary culture. Two more large categories deal with the historical and the philosophical aspects of education. The remaining divisions include administration, curriculum, counseling, instruction, evaluation, and research. Scattered through the articles are bold-faced numbers referring to selected bibliographies at the end of sections. Articles are signed. Their dates reveal that material was accepted from July 1957 through September 1958. Because of editorial insistence on the importance of the historical and philosophical points of view, the three editions of this encyclopedia are successfully used as successors to Monroe's *Cyclopedia of Education* (1911-1913),¹⁶ except for the articles on local and state school systems, and the statistical, biographical and international information which Monroe supplied. The Monroe classic, now more than fifty years old and based on the individual contributions of more than a thousand scholars, still remains useful for many reference purposes.

Nathaniel L. Gage's *Handbook of Research on Teaching*,¹⁷ which is addressed to graduate and advanced undergraduate students preparing themselves for research on teaching, may be considered a companion work to the *Encyclopedia of Educational Research*. The editors feel that in recent decades of the half century since research on teaching began, "such research has lost touch with the behavioral sciences" and failed to provide psychology, sociology, and anthropology with "return stimulation"¹⁸ as it had in its earlier period. The *Handbook* was planned to remedy this condition. Bibliographies appear at the end of each part. A name and subject index is appended.

The major purpose of *The Review of Educational Research*¹⁹ is to update the *Encyclopedia of Educational Research*. Each of the five issues per year identifies, summarizes, and critically analyzes research studies in a broad area of education. Research literature is ordinarily summarized in three-year cycles, although some topics have been treated regularly but less frequently and others have been introduced at irregular intervals. Areas covered in the last few years are: adult education; curriculum planning and development; educational and

psychological testing; educational organization, administration, and finance; educational programs: adolescence; early and middle childhood; later adolescence; educational research in countries other than the United States; exceptional children; growth, development, and learning; guidance, counseling, and personnel services; higher education; human relations in education; instructional materials; language arts and fine arts; mental and physical health; methodology of education research; natural sciences and mathematics; philosophical and social framework of education; statistical methodology; teacher personnel; twenty-five years of educational research; and vocational, technical, and practical arts education. Each article includes an authoritative bibliography.

As for directories, in the five years since the first *Research Centers Directory*²⁰ appeared, the number of centers has increased from 1,200 in the 1960 edition to 3,200 in the current edition. Education is included as one of the social sciences. For each center the directory supplies full name, address, director's name, telephone number, and founding date. This is followed by a description of its relationship to a larger organization, if any, size of staff, and volume of research funds (in dollars) in recent years. It should be noted that governmental research agencies are not included. Entries conclude with an account of the principal fields of research handled by the center and by a list of its publications, both monographic and serial.

Starting in May, 1965, *New Research Centers*²¹ appeared. It was felt to be necessary "because of the dynamic and constantly changing nature of research in universities, colleges, technological institutes, professional schools and other nonprofit research organizations."²² It appears quarterly and contains descriptive information concerning newly established research centers and those which for lack of sufficient information were not included in the main directory, plus new information on centers already listed. Entries in *New Research Centers* will be included in the next edition of the parent publication.

Similar information, but for state and federal governmental bodies as well as for private and academic institutions, will be found in the *Directory of Information Resources in the United States: Social Sciences*,²³ issued in October, 1965, by the U.S. National Referral Center for Science and Technology. It is not as complete as its science and engineering companion volume. The foreword explains that many important information activities in the social sciences are as yet unlisted, either because they have not been identified or because responses to

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the Center's inquiries were incomplete. The hope and the intention of perfecting the Center's coverage in the social sciences are expressed.

Volume 1 of the *Encyclopedia of Associations*²⁴ arranges the national associations of the United States under eighteen broad categories of which "Educational and Cultural Organizations" is one. For each association the description includes a statement of its activities and publications. Beginning with Number 1 for December, 1964, Volume 3, entitled "New Associations" began publication. This will include newly-formed organizations and associations which, for one reason or another, were omitted from the main volume. "New Associations" will appear periodically and each new issue will contain a cumulated index to all previous issues. In addition, the Gale Reader Service Bureau will continue to answer subscribers' requests for information about organizations not listed in the basic volumes or in the supplements.

The *Yearbook of International Organizations*²⁵ starts quite naturally with the United Nations. This yearbook proceeds to list organizations in the European community, then inter-governmental organizations in other parts of the world, then international non-governmental organizations by subject, of which "Education, Youth" is one. A final section covers national organizations in a consultative status with the United Nations. The description of each organization includes a listing of publications.

Originally issued as a U.S. Office of Education *Bulletin* and formerly called the *Educational Directory*, the *Education Directory*²⁶ is probably the most used of all American directories in the field. It is now issued in five parts: (1) State Governments; (2) Public School Systems; (3) Higher Education; (4) Education Associations; (5) Federal Government. These are now issued separately and may be purchased individually. Most important of all is the regularity with which it is issued. For each section several levels of personnel are given. Commissioners, superintendents, directors and supervisors are given for state personnel. Presidents, deans, registrars, bursars, and often librarians are given for higher education.

Issued as one of the *Bulletins* each year, the *Digest of Educational Statistics*²⁷ is the modern successor to the *Biennial Survey of Education*. It contains information on a variety of subjects within the broad field of educational statistics, including schools and colleges, enrollments, teachers, graduates, educational attainment, finances, Federal programs in the field of education, libraries, international education,

and research and development. It is divided into five chapters: (1) Elementary and Secondary Education; (2) Higher Education; (3) All Levels of Education; (4) Federal Programs of Education; and, (5) Miscellaneous Statistics Related to American Education. To be included, data must be nationwide and of current interest and value.

The modern education worker needs statistics from a variety of fields in addition to those in education. *Statistical Sources*,²⁸ which arranges sources of current statistical data by subjects, starting with "Abrasives" and ending with "Zoology—Degrees Conferred," will guide the educator through the maze of governmental, organizational, regional, local, monographic and periodical statistical sources in perhaps five hundred different areas, including education.

The introduction to UNESCO's *Statistical Yearbook*²⁹ makes clear why this compilation contains figures on population, education, libraries, museums, books, newspapers, periodicals, films and television but not on science and technology. Education statistics include enrollment by level and type of education and public expenditures for education, country by country. Figures for past years are given as available. Number of institutions and size of teaching staffs, with indication as to the number of female teachers, are also given. Expenditures for education are divided into capital and recurring costs and are compared with the national income of the country.

Arthur W. Foshay, the editor of *The Rand McNally Handbook of Education*³⁰ calls his book "an experiment." His hypothesis is that by supplying the principal facts about United States education together with basic facts about education in the three countries with which we most often compare ourselves he will supply information needed in discussions of educational matters, facilitate decision making, and construct a basis upon which an authoritative and orderly organization of the field of education can be developed.

The "facts" include the organization and administration of federal, state, and local school systems; curriculum organization in general, as well as in seventeen subject fields; and a section on supporting services and programs, such as the library, adult education, guidance, extra-curricular, vocational and work programs. Part 3 is titled "Education in England, France, and the U.S.S.R." Each section is followed by a selected, often annotated, bibliography.

The editors of *Who's Who in American Education*³¹ take justified pride in having kept their editions coming with regularity ever since 1929. A note in the preface to the 21st edition commented that it has

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proved increasingly difficult to list all worthy educators in one volume. As partial solution, the same company has published six editions of *Presidents and Deans of American Colleges and Universities*³² and five editions of *Leaders in American Science*.³³ For this reason, *Who's Who in American Education* omits scientists and gives only cross-references for most college presidents and college deans. This *Who's Who* is distinctive in that it prints pictures of many of its subjects. It also records standard biographical information and includes a list of publications for each educator listed.

Workers in education also need information on persons new to the field and of potential significance. Since many of these newcomers begin publishing articles as soon as they finish their doctoral dissertations, it was possible, until the middle of 1961 (when personal author entries were deleted), to locate them through the *Education Index*.³⁴ The biographical notes which magazines often gave about their contributors were, up to that time, extremely valuable.

However, workers in education today are often concerned about the advances in a particular area rather than about the work of a single man. The day of the one indispensable authority in almost any field is a thing of the past. This means that subject directories to the activities of groups, such as the Gale Research Company publications, the U.S. Office of Education's *Education Directory*, and similar publications, become increasingly valuable.

Probably the most important single guide to the literature of education is the *Education Index* which first appeared on January 1, 1929. It is so important a bibliographical aid that Professor Carter Alexander referred, with some hyperbole, to its founding date as being comparable to the birth of Christ for the Christian era.³⁵ It vastly simplified the task of locating references to an educational problem. During the course of its existence, however, its coverage—and utility—have been altered from time to time. The needs of those who seek educational information have changed even more radically. The *Education Index* is now a cumulative subject index to a selected list of educational periodicals, proceedings, and yearbooks. It does include U.S. Office of Education *Bulletins* and *Circulars*, Vocational Division *Bulletins*, as well as several other categories of government publications. Although irreplaceable, the usefulness of the *Education Index* has been much adulterated by the decisions of July 1, 1961 to (1) drop personal author indexing, (2) drop listing of book reviews, and (3) drop from the preliminary pages of its unbound issues the "Checklist of Publi-

cations of Institutions, Associations, Foundations, etc." and the lists of new courses of study, textbooks, etc. More recently it has come under sharp criticism for its weak coverage of international education. As Donn V. Hart remarks, "For all the 'new direction' of comparative education, and the apparent importance of this traditional research tool of education, the *Education Index* does not index any educational journals published in Latin America, Africa, or Asia."³⁶ (Hart's italics.) The *Education Index* must now be looked upon simply as a guide to a selected list of periodicals, books, and documents. For example, Volume 14 for July, 1963-June, 1964, covers 205 periodicals, whereas the issue of *America's Education Press*³⁷ for that year lists 5,000 current educational periodicals from 100 different countries and territories.

In 1963 the *State Education Journal Index*³⁸ was created in an effort to cover one group of significant titles not included in the *Education Index*. The *State Education Journal Index* appears to be the effort of one man to bridge a bibliographical gap.

The *British Education Index*, 1961- ,³⁹ is a cooperative labor of love by librarians of Institutes of Education. It covers fifty-nine journals, including the *West African Journal of Education*. There is some duplication of work already done by the *Education Index*.

To supplement these special indexes the searcher is quickly led to the *Social Sciences and Humanities Index*,⁴⁰ (formerly *International Index to Periodicals . . . Devoted Chiefly to Humanities and Science*, 1916-1964) and the *Psychological Abstracts*,⁴¹ and the whole range of index literature marked by the waste of several indexes covering the same title.

The value of the publications emanating from the United States Office of Education as well as from other agencies of the Federal government is obvious. Despite the fact that the Office of Education is issuing a list of its publications as one of its *Bulletins*, anyone interested in keeping up to date on publications of the Federal government must use the *Monthly Catalog*.⁴² There are several reasons for this: (1) the *Monthly Catalog* now has an index with each issue as well as a cumulative annual index; (2) it supplies complete information on the document, including the series title and number, which information is currently lacking from the Office of Education publications lists, and (3) it includes all available Federal documents, more and more of which are proving of interest to educators.

The appearance of the Jennings Wood listing of non-GPO imprints⁴³

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reveals another gap in the retrieval picture. Readers of Clifton Brock's article, "The Quiet Crisis in Government Publishing,"⁴⁴ will remember that 55 percent of these non-GPO titles are never reported to the Superintendent of Documents and therefore neither listed in the *Monthly Catalog* nor sent to depository libraries.

The surest source of state publications is still the Library of Congress' *Monthly Checklist*⁴⁵ since it supplies, in one place, the most complete list of these publications plus the possibility of deducing from recent departmental activities where a needed kind of information might be available.

The lesson would appear to be that educators can no longer, with safety, rely on anything less than the official, complete listing of any kind of government document, and that even then they may fail because for one reason or another the item needed was never recorded.

An exceedingly useful but frequently overlooked approach to both information and bibliography in a great range of subjects and at all levels of learning is the handbook of the million-member National Education Association. The *NEA Handbook*,⁴⁶ published annually, lists types and titles of publications from the fifty publishing departments and units of the Association. It also includes a brief reference to the publications of the World Confederation of Organizations of the Teaching Profession. Both the NEA⁴⁷ and UNESCO⁴⁸ also bring out lists of their own publications arranged under the names of divisions responsible for their production and with alphabetical indexes. In this context, we cannot resist mentioning the publications list issued by the Teachers College Press.⁴⁹

Among the major concerns of educators in recent years have been the fields of international education and audio-visual education. For audio-visual education, the merits of which are supported by both technology and educational psychology, the major bibliographies have been published since 1950. This subject is dealt with in the *Education Index*, but more particularly in subject bibliographies such as the excellent *Audio-Visual Communication Review*,⁵⁰ and such works as Hoban and Van Ormer's *Instructional Film Research, 1918-1950*,⁵¹ Kumata's *Inventory of Instructional Television Research*,⁵² Larson and Runden's *Bibliography of Research in Audio-Visual Education and Mass Media*⁵³ which covers 1930-1950, and McClusky's *A-V Bibliography*.⁵⁴

Paperback books must also be listed among the new media of education and communication even though they are in the traditional

book form. They are accounted new because innovations in the technology of production and distribution have brought this kind of book into being, in an expendable form which is selling at the rate of more than 300,000,000 copies each year, with more than 35,000 titles in print. The accessibility and variety of the paperback challenges the traditional textbook and anthology and makes available an educational tool which allows a flexible curriculum and a pedagogical method more closely than ever geared to the needs of the individual. The problems and potential of using the paperback have been closely examined at a conference, "The Role of Paperback Books in Education," held in 1965 at Teachers College, Columbia University.⁵⁵ In addition to the substantial Bowker Bibliographies, a rash of special bibliographies addressed to various grade levels and subject areas have appeared to provide access to this book form.⁵⁶

Because of the nature of his concern with the teaching-learning process, the educator is forced to deal with the whole range of communication media, print as well as non-print, books as well as films, filmstrips, discs, tapes or any other form produced by modern technology and the graphic arts. All are tools of communication, each with a particular use, and the educator needs bibliographical help for all. To cite only one area, evaluative lists of audio-visual materials intended for use in education are much needed. Imperfect as they may be, the standard sources are still indispensable. They are so well known as to need no more than a mention here: the *Educational Film Guide*,⁵⁷ the *Filmstrip Guide*,⁵⁸ the *Film Evaluation Guide*,⁵⁹ and the several publications of the Educators Progress Service.⁶⁰ A recent attempt to unify the listing of many different kinds of audio-visual devices proved unsuccessful. So far as the recent bibliographical efforts are concerned, it is interesting to note that a beginning is being made to foster international information and cooperation. UNESCO's *Selected List of Catalogues for Short Films and Filmstrips*⁶¹ is an example. This annotated bibliography includes in Part 1 catalogs of international and national production, that is, catalogs which attempt to list all films and filmstrips available in a country. Part 2 lists sources of these materials other than those already given in Part 1, and Part 3 is a list of film and filmstrip catalogs for particular subjects. These include Psychology, Education, Mental Health, Art, Music, and many more. Sources, addresses, prices and frequency of issue are supplied along with a full annotation.

As for international education the first cooperative attempt to pro-

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duce an international guide to the literature of education is represented in the *International Guide to Educational Documentation 1955-1960*,⁶² prepared by UNESCO in collaboration with the International Bureau of Education in Geneva. This work also lists agencies and institutions for each reference. The editors note that "Few individual countries have in fact succeeded in dealing satisfactorily with their own production of documents in the vast field of education."⁶³ Quantitatively, the *International Guide* covers ninety-five countries and territories of the world, out of a total of some two hundred educational systems. A subsequent volume is planned for publication in 1966 or 1967. The bibliographical gap is in some measure filled by the quarterly *Bulletin*⁶⁴ of the International Bureau of Education which also publishes the *Annual Educational Bibliography*.⁶⁵

A supplementary approach to the literature of international education may be found in the UNESCO *World Survey of Education*⁶⁶ which is the major systematic study of education in all parts of the world. Volume 1 of the *World Survey* deals with all the various aspects of education, from kindergarten to university, as well as with informal adult education, in the more than two hundred distinct educational systems in the world. Each chapter concludes with a bibliography prepared by educational specialists within a particular country or by knowledgeable experts on a particular educational system. Volume 2 is devoted more particularly to primary schools studied within the general context of their respective national educational systems, and is similarly equipped with bibliographies for each chapter. Volume 3 provides a detailed analysis of secondary education for young people between the ages of twelve and eighteen years—with appropriate bibliographical apparatus. Volume 4 has two hundred sections covering each national educational system as a whole, the development of higher education, university institutions, institutions providing higher professional and technical training, teacher training institutions, and trends and problems with a consolidated major bibliographical section. UNESCO is now planning a new series of publications which will take into account recent educational change. The first volume will deal with educational policy; and treat particularly legislation and administration. It will undoubtedly include a bibliographical section. Of interest for the same subject area is the UNESCO publication on educational planning.⁶⁷

Another international agency concerned with a specialized area, the International Labour Office, has published a bibliography which

abstracts books, journals, and articles on technical and vocational education for many countries.⁶⁸

Of the older but still useful bibliographies of international education, the more comprehensive are the annotated, annual lists compiled by Kathryn G. Heath for 1956 and 1957.⁶⁹ Walter C. Eells's⁷⁰ 5,700-item list of American theses on education outside the United States and on the education of foreigners within the United States contains no annotations. An extension of this work may be found in *A List of Current Social Science Research by Private Scholars and Academic Centers*,⁷¹ published by the External Research Staff of the U.S. Department of State. These lists, which cover the various areas of the world, are compiled from information submitted by scholars and research centers throughout the United States. The External Research lists now appear annually and include both in-progress and unpublished studies.

Currently, an awareness of the need for bibliographical control in the field of education has resulted in a plethora of individual and highly specialized programs. We mention only a few here. One example is the work being done by Professor H. Frederick Kilander, Dean of the Graduate School at Wagner College (Staten Island, New York.)⁷² He is compiling an annotated list of textbooks in each of the following areas: elementary school, secondary school, and college level. Similarly, Professors James Vocalis of the Department of Education and John Sherman of the Department of Library Services (Jersey City State College) are planning a three-year project which will involve the preparation of a comprehensive bibliography of the history of education, particularly emphasizing the historical aspects of teacher education.⁷³ Many more could be named.

The *College and University Reporter*⁷⁴ is a commercial product of the Commerce Clearing House which applied its half a century of experience in the publication of specialized reports on tax and business law to the problem of disseminating information on federal government programs affecting educational interests. Their reporting covers many federal programs of specific interest to colleges, universities, faculties, students, and donors. Subscription to the service includes two loose-leaf volumes with a basic explanation of Federal programs, current weekly reports with details of new Federal actions and programs, and legislative dispatches which include the texts of major education bills, committee reports, and texts of new laws. Relevant bibliographies published by U.S. government agencies are reported

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and kept up to date in the loose-leaf text. Full information, including price, office of publication, date, and description is given to the extent that it is available.

For some of the new bibliographical projects, machine technology and the information storage capacity of the computer are being used. An example of this is the KWIK (Key-Word-In-Context) index and bibliography of comparative education prepared at the University of Michigan.⁷⁵ This was an attempt to make maximum use of current, general bibliographic work in comparative education. Every significant word in bibliographical lists prepared by William W. Brickman of the University of Pennsylvania, Brian Holmes of the University of London, and Saul Robinsohn of UNESCO Institute for Education are printed in alphabetical order in a column in the middle of the page along with as much of each title as can be fitted in before and after them. Each line consists of one "key word" in the context of its title and a code number. Printed in alpha-numeric order in the second part of the *Index*, code numbers are the means of locating the full bibliographic entries. A third part of the *Index* contains an alphabetical printout of authors along with the coded reference to the bibliographic entries in part two. This was followed (1966) by a KWIK index and bibliography on *Education in India*.⁷⁶ An expansion of the *Comparative Education* index is now planned for 1967 as well as an index and bibliography on *Education in Japan*.

Another approach to the use of technology is represented by a project of the staff of the *American Behavioral Scientist* in New York which has been announced as the development of an electronic reference system which will provide scholars with high speed access to research literature in the social and behavioral sciences.⁷⁷ The innovation, named the Universal Reference System, operates by annotating and coding a research report, book, or article, according to a general classification plan of 185 standard descriptors (abbreviated descriptive terms) and additional unique descriptors. These data, which may contain up to 200 words on a single book or article, are then transferred to magnetic tape and stored in a data bank. For the production of a specific bibliography a computer is programmed to locate and print out data on studies referred to by any combination of selected descriptors.

Still another approach is exemplified in the plan of the Iowa Educational Information Center which involves the control of information rather than of books and periodicals.⁷⁸ Data stored in the central file

is to be made available to research workers. IEIC proposes to maintain a comprehensive system for the continuous, systematic and routine collection of information about all phases of the educational program. Included are data about the organization, curriculum, library, administrative practices, special services, and physical plant of the school as well as information about the pupils, teachers, supervisors, counselors, administrators, custodians, school board members, and parents.

Another kind of bibliographical project is represented by the Association for Educational Data Systems with the support of the Fund for the Advancement of Education.⁷⁹ This is a national center established in the Washington, D.C., area rendering educational data services free to all non-profit educational institutions. In the bibliographical field the new center will undertake to print and mail bibliographies which deal with the teaching of subjects identified with the computer sciences on the elementary and secondary levels throughout the country. The center also proposes to maintain a central library of documented computer programs and make them available to school districts or institutions of higher learning which want to apply automatic data processing procedures to a variety of school administrative activities including the processing of statistical data for research purposes. There are many other aspects to this program.

The most promising development of our generation in the direction of a resolution of the problems of educational bibliography can be traced to the study of M. F. Tauber and O. L. Lilley, *Feasibility Study Regarding the Establishment of an Educational Media Research Information Service*,⁸⁰ which was made under a contract with the U.S. Office of Education. Although the focus of the study was upon research in educational media—print, television, radio, films, pictures of all kinds, models, and other items included in the field of audiovisual materials and media of communication—it has bearing upon the entire range of bibliographical problems in education, the communication arts, and ultimately on the social sciences and humanities. In regard to educational media research, Tauber and Lilley came to the conclusion that “reports of research relating to new media are not represented satisfactorily in the existing bibliographical controls.”⁸¹ They recommend a comprehensive information service designed to improve the situation.

A valuable aspect of this study lies in the analysis of the various viewpoints of and approaches to sources of information on research

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in educational media—an analysis which is also equally applicable to the field of bibliographical control in the entire field of education. For example, Tauber and Lilley recognize the importance of the work of individual bibliographical workers but at the same time assert that the individual scholar is no longer able to provide the continuing and comprehensive coverage necessary. Henry B. Van Hoesen and Frank K. Walter dealt with this problem many years ago and described individual efforts to solve extensive bibliographical problems as remnants of ancient and medieval scholarship.⁸² Again, although the positive aspects of bibliographical work sponsored by scholarly associations are recognized, they too are found to be limited by the need for wider coverage, more frequent publication, and greater distribution. Commercial indexes also fail in that the scholar's needs cannot be met by an entrepreneurial commercial firm engaged in making a profit. University or institutional publications are criticized for their restriction to special interests, and commercial documentation services because they were adjudged as not being qualified to provide the continuing and coordinated service required. The consultants then concluded that the most feasible program would have to be organized in a government agency (in this case the Educational Media branch) which (a) would not be hampered by the special interests of an individual, a commercial form, commercial index, association, university or other institution; (b) which could work independently with all agencies; (c) which could contribute to coordination in the total program of research, and (d) which could eventually include all areas of the communication arts and education generally. In summary, only a national government agency could perform the bibliographical service marked by comprehensiveness, continuity, and coordination necessary to meet present-day demands.

In April, 1961, based in part on the information and direction developed in the Tauber and Lilley study, the U.S. Office of Education fostered another study at the Center for Documentation and Communication Research at Western Reserve University which may be referred to as the first major mechanized information storage and retrieval system in a "soft" subject field, in this instance, in educational research.⁸³ The purpose of the Western Reserve study was to devise a system to function so that the body of knowledge already available might be fully utilized, "to assure that research is fully productive, that teaching is based on the most modern knowledge, and that practice employs the most modern advances."⁸⁴ This study accepted as a

general premise the Tauber and Lilley thesis that no one individual, organization, agency, or country can identify or acquire with absolute certainty all of the articles, papers, reports, and other communications media that contain useful information. The U.S. Office of Education grant called for the establishment of a pilot information service which would acquire a collection of documents, process the collection, and test and evaluate the pilot system. The outcome was a plan for an Educational Research Information Center (ERIC) which would be an operational information service designed to serve educators and others having a need for the results of educational research.

In May of 1965 an operational center was established as a clearing house for completed education research, particularly in the fields of elementary and secondary education. This center was to be associated with a network of specialized clearing houses designed to meet the need for information retrieval in education while avoiding the weakness of independent development. Extension of the system depends on contractual agreements between ERIC and one or more "satellites" such as universities or established research groups. For example, Western Reserve University is a satellite in the field of educational media research, and Syracuse University in the area of adult education. Each satellite does preliminary gathering and sifting of information. Since each scholarly satellite often has greater knowledge, or more specialized access to it, than does ERIC, it records the basic documentary data. ERIC does the final sifting for documentation and distribution giving particular emphasis to research reports funded by the Office of Education and unpublished or almost uncirculated articles. The present objectives of the system are to:

- (a) Establish and operate a specialized clearing house for research and research-related information in cooperation with the Educational Research Information Center (ERIC) of the U.S. Office of Education;
- (b) Provide services in the clearing house to acquire, process, store, retrieve and disseminate materials in the defined subject area;
- (c) Assist ERIC in the project of building an educational thesaurus; and
- (d) Provide a means to test and evaluate the effectiveness of the clearing house operations.

In summary, the current problems of bibliographical control in the field of education are complicated by an explosion of publication—an

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exponential explosion. The traditional bibliographical techniques have failed to solve the problem. First of all one needs to use too many bibliographical sources to be certain that a vital publication is not overlooked. Second, bibliographical work is uncoordinated and marked by the waste of duplicated effort. Third, the volume of publication is such that those seriously concerned with education information can no longer depend on the scholarship of individual amateurs or commercially-oriented producers. Fourth, standard bibliographical tools, as is the case with book cataloging, are often too far behind events to serve researchers in the field. Fifth, the needs of education workers are more and more interdisciplinary in character and of a degree of specificity which current subject heading lists were never designed to meet. Students in the field of education have yet to hammer out a common language, the vocabulary of which could be adjusted to a rapidly changing world. These needs could only be met by a detailed subject index which encompassed all the social sciences, if not the humanities as well, and all different forms of published and unpublished materials. Further, those who wish to tap man's memory need to know not only what has been known and done in the past but also what thinking and study is now in process. Therefore an ideal system of bibliographical control for education—which is an interdisciplinary science—is one which will have the following characteristics: ^{85, 86}

1. It must be comprehensive enough to include all of the social sciences.
2. It must represent a combined and coordinated national and international effort.
3. It must provide access to all forms of materials, books, periodical articles, unpublished reports, documents, and ephemera.
4. It must be up to date.
5. It must be able to provide for several echelons of depth:
 - a. With citation only
 - b. With table of contents or abstracts
 - c. With translations from many languages.
6. It must be in a form compatible with national and international systems of mechanized information storage and retrieval systems.

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