Line Lexington, P a.
October 23, 1965

Dear Charlie,

I want to say congratulations for getting the ADI Award this year. For some reason I did not find out until after FID. I was called out of the business meeting before [illegible] it was announced. The invitation to the cocktail party said it was in honor of you, and I wondered vaguely what for, but thought you deserved it no matter what, so did not take the occasion to inquire.

You have done such a lot for ADI, I'm glad it is being recognized as formally as ADI can do it. I hope you feel cheered on to further work on behalf of the "profession". I know the profession advances much faster because of the participation of people like you, even if it doesn't seem so to you-- the guy who is behind the wheel, pushing.

My students rely on you very heavily for explaining things in simple words and for showing them pictures that make remembering much easier. You often are spoken about in the local bar after class--and that's where it counts.

Best wishes for a good year ahead.

Sincerely,
Claire

RUTGERS · THE STATE UNIVERSITY

GRADUATE SCHOOL
OF LIBRARY SERVICE

5 HUNTINGTON STREET
NEW BRUNSWICK, NEW JERSEY 08903

April 5, 1965

Dr. Charles P. Bourne
Research Engineer
Stanford Research Institute
Menlo Park, California

Dear Charles:

Attached is the abstract of our publication -

SYNTOL by J. C. Gardin
for American Documentation

You may be interested to know that I am using your book as a text for my Documentation course and both my students and I find it very useful.

Sincerely,

Susan

Dr. Susan Artandi
Assistant Professor

SA:ce
enc.

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
OFFICE OF AEROSPACE RESEARCH
UNITED STATES AIR FORCE
WASHINGTON D.C. 20333

SRI

27 August 1964

Mr. Charles P. Bourne
Stanford Research Institute
Menlo Park, California

Dear Charles:

I have just finished reading and enjoying "Methods of Information Handling" from the dedication on. I hope it clicks in the textbook market. It would be a pleasure to teach a course based on it.

All the chapters were good but oddly enough, some were better than others. You have disarmed me in advance by admitting some errors of omission. I would not be doing what I consider to be my duty if I did not point out certain of these which I have discovered. Having just returned from India, I feel that your statement on page 26 that few installations actually use a complete colon classification system should perhaps be confined to the North American continent. INSDOC, the Indian National Scientific Documentation Center, classifies its files by colon and since Ranganathan is turning out the bulk of the documentalists in India, many special libraries such as that at the Hindustani Machine Tool Works are classified by colon.

On page 72, I find the Remington Rand pilot hole and punch card somewhat more useful than the IBM Port-a-Punch since it will, I understand, go through machines without shedding holes. This card is identical except for printing with the Omnidex shown on page 114. Apparently, Remington Rand prints the cards and sells them to Omnidex, but it is possible to purchase the equipment directly from Remington Rand if you can find someone in the company who knows that it exists.

One omission from the manual card system file is the Radex card developed at Documentation, Inc. and now marketed by Jonkers in connection with Permatrex. This is a very useful way of filing numbered cards in random sequence by the position of small decimal tabs on the top.

I gather from a trip report by the head of the Pakistan National Documentation Center that at least one library in England is using peek-a-boo cards with edge notches. I know of no such work in this country but the possibilities fascinate me.

Your footnote No. 16 on page 147 might more properly cite No. 11 of Current Research and Development in Scientific Documentation. This is perhaps only a matter of elegance but since No.11 is dated November 1962, it could conceivably have been included in a publication dated August 1963. On page 174, the G.E. 225 computer actually installed at Western Reserve might be included as a computer bought primarily for information storage and retrieval.

I am not sure that on page 178 I would even have bothered to mention the Remington Synchrotape typewriter. It was an excellent device with very stupid marketing policies. At the time that I first came into contact with it you had to buy some 25 to 50 at a clip. Apparently they cast up the main frame in a batch at one time and when these ran out were reluctant to make any more. I suspect a paper tape expert might be able to put one or two more modern additions to the table on 8-1. I know that we have been having a great deal of fun at Rockford with a German Helschriber. You should talk sometime to Calvin Mooers about this piece of gear which is both rugged and cheap.

I supose historical completeness required the inclusion of the G.E. 250 Information Search and Selector. If the one in the picture is the same as the one I saw at Western Reserve, it would have been fun to open the doors. The one at Western Reserve was only an empty cabinet. I question in fact whether it was ever built at all.

I do not think that your Chapter 9 on micro-film is not one of your stronger chapters. I particularly regret the omission of any reference to microfiche since this is rapidly becoming the federal standard microfilm for document dissemination. There might even have been some space to include the NASA Microfiche operation.

All in all though, Charles, it is a good book and you need not be ashamed of having written it.

Sincerely,

Harold

HAROLD WOOSTER
Director
Information Sciences Directorate

use of a microscope is considered necessary,' although some blemishes are apparent to the unaided eye. Adequate lighting, of course, is essential for proper examination of the film; but some blemishes are more readily apparent when a filter is used. The handbook contains photomicrographs to illustrate the six types of blemishes in color; these will aid the reader materially in sure, instant recognition of the blemishes. Other photographs used in the handbook depict graphically the method of handling film in order to assure maximum success in detecting the incidence of blemishes and their severity.

Once the causes of the blemishes and suitable corrective action have been determined, the problem will cease to be of appreciable significance. Detection and classification of blemishes will be greatly simplified by use of the information contained in the handbook, and appropriate preventive measures can be applied readily.

It is unfortunate that the causes of these blemishes and acceptable preventive measures have not yet been fully determined. But the search for a solution to any problem cannot begin until recognition and determination of the existence of the problem is established, as it is in this work. The author's suggestions for recording pertinent data relating to the film and its storage seem to indicate that the search for causes of blemishes and methods of prevention will be successfully concluded in the immediate future. The handbook should stimulate every archival agency responsible for microfilm to realize the necessity for inspection of stored film and the need to exercise every precaution to insure optimum standards of processing and storage.

DOROTHY K. TAYLOR

Division of State Archives and Public Records
Denver, Colorado

Methods of Information Handling, by Charles P. Bourne. (New York, 1963. xiv, 241 p., illus. $12.95.)

Here is a book of considerable reference value but with a misleading title. It does not cover methods of information handling in general, and it dismisses the two most common methods—conventional filing and library catalog systems—with a brief critique of their shortcomings. What the book does cover are the new methods known as information retrieval, particularly as they apply to document retrieval. New Methods of Document Handling would have been a more accurate title.

The value of the book is that it brings together in a concise and well-organized form information that otherwise is difficult to obtain. In its natural state this information lies fragmented in hundreds of articles and books produced apparently under the goad of publish or perish, written in semi-English, and devoted wholeheartedly to the particular at the expense of the general. Mr. Bourne has done a fine job of resurrecting some of these buried facts and marshaling them before us in good order.

The book contains sections on selecting indexing terms, coding indexing terms, representing the terms on punched cards and tape, manual notched-card

systems, punched card and computer systems, paper tape and magnetic media equipment, and microfilm systems. Besides name and subject indexes, there is a very complete table of contents that is actually an outline of the book.

This work is recommended for any library or individual as a reference on information retrieval. It is particularly useful for those who may wish to have a few general works instead of many specialized ones.

THOMAS WILDS

Union Carbide Corporation

Records Management: A Modern Tool for Business, by Mary Claire Griffin. (Boston, 1964. xiv, 300 p.)

Until something better comes along this will be the standard text on records management in our business college courses on administrative services. It easily supersedes all existing one-volume, general treatment accounts.

Dr. Griffin was assistant professor of industrial management in the School of Industrial Management and Textile Science, Clemson College, at the time of the book's publication. The illustrations in the book show that she obtained much of her information from visits to industrial and government organizations and, surely, from extensive correspondence with records administrators.

The book devotes a chapter to controls over records creation and gives full exposition (five chapters) to records maintenance. Its coverage of records disposition (four chapters) will generally be found satisfactory. It concludes with chapters on microphotography, automated equipment, organizing a program, and a records program manual.

The strong point of the book is that it brings together data from hundreds of sources, thereby summarizing existing literature (although there is no bibliography). In giving short shrift to records creation it can be argued that this is simply what most records programs do, too.

The weakest point of the book is the noticeable fact (to the professional) that the author's knowledge is second hand. It was not obtained on the firing line. On page 175, for example, besides erroneously placing the Leahy Archives in Washington, D.C., there is a statement on charges of commercial records centers that could not have come from a practitioner. Or, beginning on page 179, the description of a records inventory does not read as if written by a person who has had to prepare one. Examples of this kind are fairly frequent.

EVERETT O. ALLDREDGE

Office of Records Management
National Archives and Records Service

lems that defending attorneys are faced with. There is also a chapter which refers to over sixty court decisions concerning criminal abortion.

Although the reader ought to be cautioned of occasional inappropriate statistical inferences and outdated references, this book offers a refreshing introduction into the recent literature of a somewhat definitive investigation into the problem of criminal abortion, viewed from a necessary behavioral scientific approach rather than from the often limiting medico-legal approach. This book offers to the lawyer a new and necessary perspective on cases involving criminal abortion and as such should be purchased by all progressively-minded law libraries in addition to all social science and medical libraries.

PAUL CHASSY

Department of Sociology
University of Colorado

Billyou, De Forest. *Air Law*. New York: Ad Press, Ltd. 1963. Pp. xxvi, 608. $16.00.

Rather than a treatise, this looks like a casebook for use in a law school course in aviation law. To those, however, who would object to the book on that score, the answer is that it has significant research utility beyond the classroom. Professor Billyou indicates in his preface that the most recent volume on air law published in the United States prior to his work was done some fifteen years ago. This alone, it strikes me, should justify a new volume reflecting a re-examination of existing concepts as well as consideration of what has developed in the interim. Professor Billyou, however, has gone beyond this into areas not included in earlier works, particularly the economic and financial aspects of air transport, employee relations, taxation, agricultural aviation, supersonic air transport and space. The book contains a table of cases, a table of abbreviations used in citations and copious bibliographical notes and citations. The index and table of contents appear adequate.

The present volume will be useful for anyone attempting research in air law as a guide to where to look and as a source for many of the important questions that should be raised. It is therefore recommended for all law libraries.

MORTIMER SCHWARTZ

Law Library
University of Oklahoma

Bourne, Charles P. *Methods of Information Handling*. New York: Wiley. 1963. Pp. 241. $12.95.

Information handling is a topic which covers a good deal of ground, from indexing techniques to computer characteristics to film densities. In this book Mr. Bourne covers a very large part of the waterfront, placing most of the emphasis on equipment and hardware characteristics. He discusses edge-notched cards, punched cards, aperture cards, microcards; sorters, collators, and tabulators; computers and tape searchers; and film readers and printers. Much of this is familiar territory to librarians who have kept their eyes and ears open during the last few years, but some of it is not, and Bourne has performed a very useful service in pulling together an immense amount of material and organizing it conveniently for use.

Bourne's method is predominantly descriptive. He presents the salient characteristics of a group of machines; he describes the varieties of apparatus available; he outlines many different types of applications to which the equipment has been put; and he offers representative cost data for the machines, and sometimes time and cost data on the operations. He is content to rest with description; only rarely does he offer critical comments or appraisals, but when he does he is generous and fair-minded.

Bourne has a tremendous grasp of the literature of the field, which his previous work has amply demonstrated. Again here his footnote references are voluminous and valuable as a bibliographical guide to this area. One can only lament that, in this field more than in most, the source literature tends to be embodied predominantly in technical reports which to many, for all practical purposes, are inaccessible. And that is

one more reason why a compilation of this kind in book form is worth while.

DR. FRANK ROGERS
Librarian
University of Colorado Medical Center
Denver, Colorado

Bowe, William J. *Tax Savings Through Estate Planning*. Nashville, Tennessee: Vanderbilt University Press. 1963. Pp. viii, 102. $3.50.

This book fills a general need, that of alerting the layman to the importance of estate planning. The book is a substantial revision of an earlier work, *Tax Planning for Estates* (1944, revised in 1952 and 1955). Since it is designed for the layman, it does not have a bibliography or a table of cases and could not be used as a reference work. The book should be of special interest to trust officers, accountants, investment brokers, and life underwriters.

While there are other books on various aspects of tax savings, the reviewer doubts if there are any other works as comprehensive in the field of estate planning.

In easily understood language the author, professor of law in the University of Colorado and tax counsel for State Farm Life Insurance Company, discusses the marital deduction, testamentary trusts, the use of gifts, sales within the family, joint tenancies and the many other estate planning tools. An especially valuable feature of the book is its treatment of revocable trusts in estate planning. In an appendix, the author points out some of the advantages of revocable trusts such as: choice of law, protection from attack, avoidance of restrictions on charitable bequests, surviving spouse's forced share, avoidance of probate proceedings, avoidance of court control, and creditor claim avoidance.

The author stresses throughout the book that it is not designed for use by lawyers and that no estate planning should ever be undertaken without the aid of competent legal advice. Perhaps the book would be a quick and pleasant refresher course for older attorneys and younger general practitioners whose busy schedules have prevented them from keeping abreast of the latest tools in tax savings through estate planning.

HUGH S. MCCAFFREY
Central Bank & Trust Co.
Denver, Colorado

Brett, Sir Lionel, and McLean, Ian. *The Criminal Law and Procedure of Lagos, Eastern Nigeria and Western Nigeria*. London: Sweet and Maxwell. 1963. Pp. lxxiii, 992. £7. 7s. $23.50.

This book, the first practitioners' textbook on a branch of Nigerian law, supplies, with commentary, the principal enactments applied in Nigerian criminal courts (excluding the Northern Region). The Criminal Procedure Act, Evidence Act and Criminal Code are reproduced, with other relevant statutes, so that a large proportion of the book is occupied by legislative texts, but the sections are interspersed with notes, comment and case references on the lines of *Archbold*—to which work cross-references are given where the Nigerian law is regarded as identical with that of England.

The authors, respectively Federal Supreme Court Judge and former law school head in Nigeria, modestly disclaim special status for their book but it is assuredly authoritative. Students will consult it but it is "not a jurist's book" and has little criticism or evaluation; its clarity will attract and aid non-lawyers such as prosecutors. The preliminary note on the source of the Criminal Code is misleading. The authors do not, as they hope, refer to all decisions reported before October 1st, 1962—a small number of quite important decisions are omitted including Onward (1955), Nwankwo (1956), Ojo (1958), Inneh (1959) and Agbode (1960)—all in W.R.N.L.R.—and Chima, 10 W.A.C.A. 223. On some matters, cases from East Africa or Queensland could have been cited.

Paragraph numbering is the basis throughout of references in the useful index and tables of cases and statutes. Hedges, *Introduction to the Criminal Law of Nigeria*, the only other work in this field, is a much shorter

All contain examples of "writing down" to children, and I should hate to go to dinner with the author who states that "you can buy quite an assortment of *ready-cooked* frozen fish"! All four have both black and white, and coloured illustrations.

I would not have realised that each book had a different illustrator if I had not read the title page. This may be partly due to the rather poor reproduction of the illustrations.

After those uncomplimentary remarks about HAMILTON'S latest non-fiction series I hasten to give praise to the two most recent additions to the "Look Books". These are *Look at Schools* by G. F. Lamb and *Look at British Wild Animals* by A. Windsor-Richards (HAMILTON, 7s 6d.). Both contain a great deal of interesting information and are expertly geared to the reading ability of the young child. I was particularly delighted with Pat Marriott's illustrations for *British Wild Animals*.

HAMISH HAMILTON have been busy on the fiction side as well. They have launched a new series called "Gazelle Books", intended for pre-"Antelope" readers. I have seen two of them, *The Pram Race* by Barbara Willard, and *The Playground* by Bruce Carter (5s. each).

They are about half the length of an "Antelope" book, and have two-colour illustrations. Both stories will be enjoyed by 5-7-year-olds, especially *The Pram Race*, which contains plenty of incident and action. Both authors have succeeded in portraying real characters within the space of a very short book.

Even though the books are short I wish they were divided into even shorter chapters. A child who can read right through a "Gazelle" book could just as easily read two or three chapters of an "Antelope" book.

There are four new titles in the "Antelope" series this month. *It Happened One Summer* by Joan Phipson, is a little longer than some, with smaller print. The setting is Australia and the exciting climax centres round a bush fire. *Abdul the Grey* by Brian R. Hall consists of short tales about a most enterprising cat; a little far-fetched, but good entertainment. *No-one at Home* by Christine Pullein-Thompson is an everyday adventure of three children who set out to find their Grannie's house when they arrive home from school and find their mother is not at home.

The Holiday by Dorothy Clewes is my favourite out of the four. It's a simple little adventure tale of two children who accidentally become stowaways on a cross-Channel ferry.

I always look forward to reading a new book by A. Rutgers Van der Loeff. *Everybody's Land* (U.L.P., 13s 6d.) is not an easy book to describe. The plot concerns a group of children who play on a waste piece of land. The early hostility between white and coloured children is resolved and they call their playground, Everybody's Land. But the adult world wants to take from the children the place which is an eyesore in the town and would be a valuable building site.

The author certainly remembers what it was like to be a child, and his child characters ring absolutely true to life. So do two or three of the adults, but the rest are caricatured. This is deliberate and helps to press home the author's theme of racial tolerance. For this is a book with a message.

Child readers will enjoy the story and see some of their own pleasures and sorrows reflected in it. One hopes that something of the author's belief that the world is "Everybody's Land" willl become impressed upon their minds as they read. Adult readers may understand more fully the underlying poignancy of the story and see the author's purpose more clearly.

The book is translated by Elizabeth Meljer, and not once as I read it did I become aware that it was a translation.

The illustrations by Jenny Dalenord are excellent and continue the contrast between the characters who can see straight and those who are blinded by self-importance and greed. The sketches of the children are delightful and I'm still chuckling over the line of pompous town councillors walking determinedly across a double page spread.

The Widgeon Gang by Reginald Maddock (NELSON, 12s 6d.) also condemns racial intolerance, though in a less deliberate way. This is not 'literature', as Van der Loeff's book is, but it's a good, modern adventure story with convincing characters who behave in a realistic fashion. The 'gang' are mainly Secondary-Modern school youngsters and include one West Indian boy. Three "teds" from a nearby town are out to cause trouble for the coloured boy and his friends. The plot is swift-moving, with plenty of action and suspense.

This is a good book for the 11-13-year-old who likes a story set in the world of today.

The Hounds of Black Maggy by Dorothy E. Crowder (DENNIS DOBSON, 13s 6d.) is an interesting and well-written adventure story set in the Fenlands. The plot is basically that of children finding hidden treasure. As is usual in such stories some of the events are hardly credible and some of the characters are over-drawn. But this is offset by the fascinating background of Fenland legend and history and by the author's ability to create atmosphere.

It is a book which is not easily put down and will be popular with readers aged about 10-13. I believe this is the author's first published book and hope she will write more.

An interesting anthology called *Under the Sun*, edited by John Verney and Patricia Campbell, is published by CONSTABLE YOUNG BOOKS at 25s. Many of the stories, poems and articles are by contemporary writers and were first published in the magazine *Elizabethan*. Others are by writers such as Boswell, Conan Doyle, Leigh Hunt and Edgar Allen Poe, to name but a few. Altogether there are 48 authors represented here, and the illustrations are the work of 23 different artists.

This all goes to make a very varied anthology for young people in their early teens—and for those much older. Apart from the pleasure the anthology itself will give, it will also serve as an introduction to writers whose work may otherwise be missed by young people beginning to explore adult literature.

The librarian's library

BOURNE, C. P. *Methods of information handling.* WILEY, New York, etc., 1963. 241pp. Illus., tables, diagrams. 11 ins. (Wiley Information Science Series No. 2.) £5.

The literature on information theory, coding and retrieval systems during the past 10 years is notable for its volume and as a record of experimentation. This book provides a review of the methods in existence in 1962-63 in the USA together with brief historical notes. Some items mentioned in the text as in progress, e.g. science citation index, or telephone directories on microfilm, may be recognised as being facts now.

Attractively produced in double-column text with profuse use of illustrations, the work is recommended for its clarity of writing. One admires the author's efforts to map out his subject from a four-page contents list, through a summary of topics with each chapter, to an introductory paragraph to each chapter and careful choice of typefaces for sections and sub-divisions. The illustrative material is also notable for its clarity and for its position as close to the text reference as possible.

Library World. Vol. 65 June 1964
p. 414, 416

Citations to articles, etc. are given as footnotes immediately below the text, plus additional reading at the end of each chapter. Very few citations are non-American. Three indexes of acronyms, names, and subjects complete the work. Proof-reading seems perfect; only two minor queries were noted. The indexes gain clarity through separation. The name index includes the footnote references but the acronym and the subject indexes do not. Thus a reader interested in the subject who may have heard of, say, algorithm, auto-abstract, COMIT, cryptography, HAYSTAQ, MOBL, SEAC, will have considerable difficulty in locating references to them.

This is mentioned because the work is likely to be used by librarians, students and lecturers as a reference book. The book's strong point is the inclusion of data on purchase prices and rental charges (both in dollars), capacity, speeds, etc. Also because the subject has its own terminology and many definitions are given. Quite a number of terms have equivalents in the language of librarianship, e.g. semantic shift, collectanea, index thesaurus, syntactical control, descriptors, semantic code, micro-abstract, file record, and probabilistic indexing.

The author proceeds logically, after a review of the growth of information, through indexing principles, index display methods, coding and machine-language representation (punched cards and tapes) and descriptions of manual and machine systems on to computer systems, their (very expensive) programming and use for information retrieval. The last chapter covers microforms and equipment.

While aware of the problems of handling very large collections of bits of information, this reviewer from the viewpoint of librarianship senses that information scientists have not paid as much attention to the principles of classification as the subject warrants. That after years of experiment some systems have evolved subject headings' lists and 'also see' references. That indexing from words in a title has its pitfalls, but that some titles may need 'enrichment', or that is trying to take care of everything implied in a title, the index may become too bulky.

That there is no limit to the intricate ways of encoding (shuffling, truncating, word counting, word position, synonyms) but that a standard system of indexing has not yet emerged. That when applied to punched cards encoding becomes extremely complex and creates additional work in devising systems to countercheck and after that more errors may be discovered.

As Bourne says: "It is unlikely that in the near future any machine indexing will approach the quality obtained by manual indexing . . ." and "the use of a computer with an information retrieval system will not necessarily enhance or improve the efficiency of retrieval—that is something that will depend primarily upon the indexing and classification techniques that are used . . ."

Or again, "Retrieval performance will depend primarily upon the intellectual organisation of the index, and not upon the method of implementation".

Regarding mechanical abstracting which may cost $44 for one abstract of a 4,400 word article, the result is nothing more than a reproduction of some of the author's words based on a frequency count.

Computers can obtain answers to average questions for about $10 per question. Yet all claims about the very fast speeds of searching seem to count for nothing when one reads that requests for information must be allowed to accumulate for perhaps a week in order that one run through can be made for a number of requests simultaneously.

Moreover, enquirers seem quite happy to wait! The 'information' supplied is most likely to be only a list of references to enable the inquirer to start work. Some machines could provide abstracts at the same time, but only at much greater expense.

To purchase machines (and many of those described in the book have never gone into production) requires from $\frac{1}{2}m.$ to $3m.$ or to rent from $50 to $550 *per hour*, to which must be added many other costs. Hence the conclusion that these methods of information handling have great value for organisations handling vast quantities of digital information, e.g., mailing lists, bank cheques, machinery parts.

Libraries may be satisfied with traditional methods of classification and indexing coupled with the more modest forms of information handling such as manual systems of punched cards and the use of microforms. H. A. WHATLEY.

HARRISON, K. C. *Facts at your fingertips: everyman's guide to reference books.* London, KENNETH MASON, 15s.

This is a heavily annotated guide to some 150 standard works. The test of such a compendium is whether the right books have been chosen, and whether the author gets his message across. First, as to the selection: anyone could quarrel with it, for it is quite simple to damn a work by complaining that one's own favourite sources have been omitted. But this would be pointless, for any selection must be arbitrary, and Mr. Harrison's is that, but it is also remarkably good.

All the important standbys of any able reference librarian are here and, where there must be a definite choice—as in the field of encyclopaedias and language dictionaries—the best have been named. The notes are not only good, they are interesting as well—some are allusive, others historical, but all sufficiently pithy to make this little work a godsend to people studying for examinations in librarianship, for they help to distinguish and make each item memorable.

But this book is aimed at a wider audience than just student librarians: it is designed to interest the ordinary man in the street—and his son and daughter—in the great works that stand on the shelves of every public reference library. It is here that the second part of the test must be made.

Do these notes in fact achieve their task of impelling such people to look inside the covers of such books? This will only become apparent later, and may for the most part only be confidently recognised in school libraries—and it would be foolish of any school librarian to overlook this guide—where cause and effect can be identified more readily than in the larger readership of a public library.

But my guess is that Mr. Harrison's notes will have the right effect, and that he has built a way through the heavy covers and imposing austerity of reference material.

One aspect seem to me to have been overlooked. Each work is treated as a separate entity. But reference librarians and research workers do not carry out their task by using only one instrument at a time. Their operations comprise instead the innards of many different works which, carefully compared and cautiously weighed for their conflicting and overlapping evidence, may somehow indicate the truth.

What is needed here is an additional chapter on detection in reference books: some good examples of how research is carried out, demonstrating the successive stages from the initial problem to the complete answer. And, following this, some exercises on the same lines, with a list of likely clues printed elsewhere in the volume. At 15s. even such a well-printed and handsomely bound book could surely carry these few extra pages without any increase in price.

R. L. COLLISON

Sir Sydney Roberts, Chairman of the Roberts Committee, and Mr. Edward Sydney, who was one of its members, have been elected as Honorary Fellows of the Library Association in recognition of their work in helping to lay the foundation for the Public Libraries and Museums Bill. Both have previously been Presidents of the Library Association.

Sir Sydney Roberts, a former Vice Chancellor of Cambridge University, headed the committee bearing his name, which studied the structure of the public library service in England and Wales.

Mr. Sydney was formerly Borough Librarian of Leyton and now lives at Stow-on-the-Wold.

Becker, J. and R. M. Haves. Information storage and retrieval: tools, elements, theories. New York: Wiley, 1963. 460 pp. $ 11.70. (Information science series, v.1)

Bourne, C. P. Methods of information handling. New York: Wiley, 1963, 255 pp. $ 12.95. (Information science series, v.2)

The Information Science Series of which these are the first two volumes "is designed to include books that are concerned with various aspects of communicating, utilising and storing digital and graphic information" and "the aim . . . is to bring together the interdisciplinary core of knowledge that is apt to form its foundation". During the past ten years there has been a headlong rush into a machine optimism tempered only slightly by a growing realisation that it is indexing language and classification systems - "software" rather than "hardware" - that will ultimately determine real progress. Trailing along in the wake of rapid developments in computer technology we lack a coherent body of theory against which mechanisation can be evaluated. Becker and Hayes rightly point out that "Unfortunately, most of the information concerning the present-day activities of electronic machines in the information field is highly technical and in some cases so evidently promotional that even those familiar with the work and intellectually sympathetic to it find it difficult to distinguish fact from fiction". Therefore it is most welcome that a librarian with an engineering education, a mathematician with equipment experience and a systems engineer have tried to present this medley of technologies and disciplines in the form of the two books under review.

Becker and Hayes

The first section deals with the tools: the various systems which have been proposed and developed and the main pieces of equipment which are in use or available on the market. It includes two brief chapters on the traditional systems of classification and cataloguing in libraries and the newer techniques of indexing. This is followed by a fairly detailed description of machine systems, based on computers on the one hand and automated files for microfilm storage on the other hand.

The next section analyses user needs, the organisation of the units of documentation (vocabulary, coding, format etc.) and the parameters of the equipment in terms of input and output efficiency. The information on costing is very useful and revealing. Thus the authors point out that "It has become a rule of thumb in the computing business that system design and programming costs over the estimated life of an installation will very nearly equal the costs in equipment rental during that same period". In other words mechanisation needs more highly trained staff not less than conventional methods do, admittedly with an increased potential of achievement in certain respects.

The final section tries to provide a mathematical basis, models on which information systems can be designed. This involves the elements of Boolean algebra, matrix and statistical theory.

Bourne

This book is a straightforward and well organised account of the tools, equipment and methodology of information processing, storage and retrieval. There are chapters dealing with classification and indexing, coding, machine-language representation, manual and punched cards, computers, paper tape and magnetic media, and finally microfilm and image handling devices.

Under classification the author points out that "The highly mechanized file systems need at least as good a file organization as the manual systems. Otherwise, the machine system may have the dubious distinction of making mistakes 1000 times faster than the manual system". In the chapter on coding, the indexing shorthand, there is perhaps too detailed a treatment of the statistical nature of English words and proper names. It might have been more profitable to elaborate the section on the criteria for the selection of indexing methods. However, the remaining chapters give an unusually good description of equipment including costs, wherever available, and copious references to the literature. In fact I know of no one place where so much useful and up-to-date information is collected together, particularly for the reader who is not a specialist in information processing.

These two textbooks are intended for instructional use at the university level and there certainly is a dearth of such literature. Nevertheless, the publishers in planning the Series should have ensured that there be less overlap and duplication in the first two volumes. From the point of view of training a new generation of documentalists and helping to orient the older practitioners a more historical and evaluative approach would be useful. That was attempted in the series on "The state of the library art" edited by Ralph R. Shaw. But of course the relevant volume on "Retrieval systems" (1961) is already out of date in some respects. Clearly the whole art is still too experimental and confused for any more definitive study to emerge. We must be grateful for these two books, which together with an earlier work on punched cards* provide texts from which we can now start to learn and to teach.

H. Coblans
(London)

National Academy of Sciences - National Research Council. The Metallurgical searching service of the American Society for Metals, Western Reserve University. A report by an ad hoc committee of the Office of Documentation, NAS - NRC. Washington, 1964 (Publication 1148).

This report presents the results of a detailed and critical appraisal of the operation and efficiency of one of the biggest and best known computer based systems for information retrieval. In 1944, the American Society for Metals commenced publishing its Review of Metal Literature in an effort to provide a control on the vast quantity of metallurgical publications. By the early 1950's, the Society had decided that the volume of literature justified the use of machine assistance, and supported an experimental mechanized pilot project based at Western Reserve University. Results of the early work were very encouraging and led the ASM to provide a service which is currently based on an input of 36,000 abstracts per year. A great deal has been written about the service and its methods of operation, but this report summarizes a detailed investigation into just how good the service is, and what its users think of it.

The National Science Foundation were considering a grant to Western Reserve University in 1959, for a test program to evaluate the information processing methods which had been developed, and the NAS - NRC were asked to form a committee to plan the test program. The Committee decided first that it needed some frame of reference for the evaluation of an IR system. Two exploratory studies were commissioned using operational research techniques. Whilst these studies were in preparation, an objective comparison was obtained by having parallel searches made on some typical questions handled by the service. These searches were made by the John Crerar Library, the Franklin Institute, the Department of Commerce Office of Technical Services, and also by an independent patent agent specializing in metallurgy. In addition, the Committee accepted an offer by Cyril Cleverdon to include the Service in the tests made by the ASLIB Cranfield Project team's work on evaluation of methods of information retrieval.

The operations research studies resulted in separate and complementary analysis procedures being devised to give a measure of effectiveness of any system. Mathematical performance simulation models were devised to establish cost and time criteria, and both studies stressed the need for objective measures of effectiveness. The problem of degree of relevance is also stressed later by the results of the parallel searches. Typical users of the Service were also asked to give their ratings of the ability of the service to answer their questions. Generally, it appears that two-thirds of the users were satisfied with their information. The parallel searches, however, frequently produced many more possible references, and the number of documents retrieved by both searches was surprisingly small. On one current awareness search, 60 do-

*Casey, R. S., Perry, J. W., Berry, M. M., and Kent, A. Punched cards: their application to science and industry, 2nd ed. New York, Reinhold, 1958.

may be found scattered through several articles and the reader cannot immediately pinpoint any specific problem, but may have to browse through the whole publication. Space requirements is such a case, with relevant data appearing in at least four papers by different authors.

More than a third of the papers have already appeared in earlier Special Library Association publications, and of the rest only one was written especially for this monograph, the remainder being articles presented at the first Symposium on Library Planning held by the New York chapter of the Special Libraries Association in 1958 and brought up to date for publication. Another point of criticism is that the American bias detracts from the usefulness of the monograph for readers in this country. This is particularly true of the articles on photocopying and microphotographic equipment. Also all ten of the case histories of the planning of individual libraries are of special libraries in the United States. There is one article, however, which deals with a problem most pertinent to United Kingdom libraries, that is, Dr E. L. Schulze's paper on 'How to expand in confined areas'. This article is packed with ingenious ideas for space production by rearrangement of furniture and equipment or by the introduction of space-saving equipment such as five-drawer filing cabinets and chairs with tablet arms.

Although some of the articles are brief and patently superficial, the range of the collection is fairly wide, touching on most aspects of special library planning. The monograph is a useful introduction to a more intensive study of the subject and for this the reader will be guided by the excellent eleven-page bibliography by Gertrude Schutze included at the end of the volume.

JEAN AITCHISON

CHARLES P. BOURNE. Methods of information handling. New York, Wiley, 1963. xiv,241p. illus. $12.95; 100s.

The author states in his preface that this book 'is meant to be an aid and reference work for those people who are interested in the design of information systems'. He also states that it 'was not meant to be an encyclopedia'. As a reference work on the many kinds of hardware and their capabilities the book is undoubtedly an extremely useful guide. In the same sense it comes very near to being encyclopedic. There are two particular respects in which this work is markedly better than most recent American publications on the subject. Firstly, it is the work of a single author and is consequently a more coherent and unified whole than almost any of the many books which comprise collections of papers by several contributors. Secondly, the author's style is refreshingly free from the jargon which mars so many American writings on the subject.

After a chapter outlining the nature of the problem and another on classification and indexing, the author devotes two chapters to coding and the translation of coded material into machine-manageable form. The several kinds of physical media used for feeding coded information to machines, i.e. punched cards, punched tape, magnetic tape, etc., are discussed. Chapters 5 and 6 are devoted respectively to manual and machine punched-card systems. The former provides an admirable account of both term-entry and item-entry manual systems with a nice balance between the description of the types of card, the ways in which coding can be applied to them, and actual applications. The latter confines itself more to the machines themselves than to systems.

From the point of view of the worker in the information-retrieval field who is not a computer specialist, Chapter 7 is one of the best accounts of computer capabilities which has appeared to date. It covers the many applications of such equipment to retrieval prob-

lems, ranging from the simple KWIC principle to the complexities of textual analysis, and from a more general point of view the account of programming, including automatic programming techniques, is particularly useful. In the computer field the author is a specialist. He is also very much of a realist, for he states on page 145 '... the use of a computer with an information retrieval system will not necessarily enhance or improve the efficiency of retrieval—that is something that will depend primarily upon the indexing and classification techniques that are used.' The last two chapters deal with subjects which are largely auxiliary to the main subject of 'handling' information. They cover methods of storage in the form of paper tape, magnetic media, microfilm, etc., though some of the pieces of equipment described are also searching devices.

The weakest part of the book is the one and only chapter devoted to classification and indexing principles (Chapter 2). The author has confined himself to a rather scrappy account of what is currently being done with regard to the application of classification and indexing principles, but there is far too little basic theory for the potential user of retrieval systems, and without more comprehensive guidance than this the newcomer might well tend to use very inefficiently some of the elaborate machinery so excellently described later in the book. There is, for instance, no clear differentiation between kinds of indexing language and the simple mechanics of concept co-ordination. This is rather surprising in a book written by a computer engineer, particularly as he does not mention the elementary logical operations which are the basis of concept co-ordination, though these are referred to briefly later. There is a great deal less attention paid to this aspect of the subject than is the case with Allen Kent's *Textbook on mechanized information retrieval*, though the two books range over much the same ground. In contrast to the author's own admirable style some of the terminology which he must necessarily quote in this context is something of an irritation. The word 'correlative', for instance, is used in a very different sense from that implied by Jahoda in his notable thesis of 1960, *Correlative indexing systems for the control of research records*, and the use of the term 'collectanea' for what librarians have known for decades as an alphabetical catalogue with abstracts and multiple entry is hard to understand.

Apart from this one chapter, the book is an excellent reference work for all concerned with information-retrieval systems. The collection of the information must have been a mammoth task for a single author and a very creditable feature is the very exhaustive documentation supporting the text. The presentation of the material physically is also very good and the book's large format makes it an excellent vehicle for the numerous illustrations.

JOHN R. SHARP

LUCILLE J. STRAUSS *and others*. Scientific and technical libraries: their organization and administration; by Lucille J. Strauss, Irene M. Strieby and Alberta L. Brown. New York, Interscience, 1964. xi,398p. (Library science and documentation, vol. 4.) $8.50; 65s.

This book is packed with information on every aspect of library work. It will be very helpful to students and new entrants, and particularly useful to those who, lacking any formal library training and possessing only limited experience of library planning and organization, are still given the responsibility of setting up a technical library.

Consideration of the various facets of a librarian's work, including selecting, ordering, accessioning, cataloguing, and filing the material, is limited to rather brief descriptions of established methods in use in special technical libraries. But they are augmented by an extensive listing of suppliers of equipment, publishers, booksellers, subscription agents, etc. Unfortunately, although some English and European names appear, these lists are really

in this book will be providing useful library services. Still, at least passing reference to the user and what we know of his information requirements, use of literature and libraries, and the differences between his and a librarian's approach to literature would serve well where this book's straightforward descriptive approach fails to provide a clue as to which operation needs to be introduced when, and when departures from text would be useful.

The book's great virtue is that it quickly provides the reader with enough information to establish and operate a specialized scientific library and provides him with an excellent list of readings for more background and details. The citations, whether to readings or to reference books, are quite current. In relatively few cases could additional or more appropiate references have been provided. (The citation to Henderson's original article on "cubooks," or to the use of the cubook formula in *Time Saver Standards* would be helpful in understanding this space-planning device mentioned in chapter iv.) Details are sometimes given where a generalization would have sufficed. (It is stated that in routing periodicals the issues are to be kept by users no longer than *three days*. What dictates this period of time? Why not "for a brief period, perhaps up to three days, but no longer than is required to note contents and scan the most pertinent articles"?)

The authors should be sharply criticized for their frequent citations of personal communications. Since so much reliance must be placed on further reading, these personal communications are useless. The authors need not have documented every example; many details obviously stemming from the authors' experiences are given without citations. In several such cases adequate examples are readily available in the open literature. For instance, the authors describe a projected conversion from a conventional to a punched-card indexing procedure in an industrial library, with information taken from a personal communication. Dozens of equally well-described examples are available in the published NSF surveys of non-conventional indexing systems in current use.

The over-all judgement, however, must be that this is an excellent manual for a small-library planner. The resulting operation will conform to standards based on sound principles; the rest is a matter of the creativity and vitality of the special librarian—qualities which must prevail for successful service regardless of training or guidance.

RUSSELL SHANK

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Berkeley

Methods of Information Handling. By CHARLES P. BOURNE. ("Information Sciences Series.") New York: John Wiley & Sons, 1963. Pp. xiv+241. $12.95.

As the second volume in a series, this work maintains the high standards set by Becker and Hayes in Volume I, *Introduction to Information Storage and Retrieval: Tools, Elements, Theories*. Volume II provides a comprehensive survey of the design of information systems, applicable not only to mechanized retrieval but also to any system in which large files are used for retrieval purposes.

The organization of content is admittedly "somewhat arbitrary." Some chapters overlap, but there is a logical progression from problem definition to solution and implementation. The file problem is defined in terms of file characteristics, with respect not only to libraries but also to industry and government; not only for retrieving books, periodicals and reports but also for retrieving engineering drawings, photographs, and mailing lists. The importance of file organization, coding theory, and data representation is readily appreciated with fully one-third of the volume devoted to these topics. The use of controlled as opposed to uncontrolled subject-indexing vocabulary and the use of derived codes as opposed to "English" representation are also covered, with the advantages and disadvantages of each indicated. Particularly useful is the design of coding and/or abbreviation systems based on letter and bigram frequency statistics. Practical operating systems and their file and implementation characteristics are discussed in order of increasing complexity, from manual and punched card systems through the more sophisticated systems utilizing computers, paper tape, and micro-images. The chapter on "Manual Card Systems" is somewhat repetitious of Casey and Perry's classical *Punched Cards*, but the discussion summarizes general applications rather than specific uses of equipment. Some prior knowl-

edge of computers or microimage techniques is assumed of the reader.

No punches are pulled in describing the limitations and expense of information-handling equipment. Although particular operating systems are used to illustrate such equipment, the initial processing, and maintenance costs that are given are generally representative. While some of the cost figures are already out of date, they provide a reasonable basis for cost analysis. It is left for the systems designer to weight the economic advantages, or disadvantages, gained by use of cards and other equipment. Unfortunately Bourne does not indicate the cost of conversion from, say, a manual card system to a punched-card system or from a punched-card system to a computerized system, but this may be derived with a little effort from the figures given.

The 8½ × 11 inch format is used to full advantage for visual communication through graphs, illustrations, and many examples. The introductory chapter on "The Nature of the Problem," however, is not so clearly presented as the following chapters. The "dot" distribution graphs of the introduction contrast unfavorably with the simpler and more distinct bar and distribution graphs used in succeeding pages. Hundreds of convenient footnote citations to source literature are supplemented by additional references at the end of each chapter. A list of acronyms and abbreviations and an excellent detailed subject index set off this attractive and useful volume.

It is difficult, for purposes of reference, to strike a balance between amount of coverage and detail. Bourne is successful in providing "an illustration of the tools, equipment, and methodology that might be applied" to the problems of information-processing. No one solution or method is emphasized as being better than any other. On the contrary, the pitfall of systems comparison is avoided entirely. The circle of user requirements affecting file characteristics and of file characteristics affecting file use is discussed in connection with file-purging and auxiliary file generation, part of the basic design problem. Similarly Bourne does not take sides in the controversy inherent in choice of controlled or uncontrolled indexing. No attempt is made to encourage or discourage mechanization. These decisions are appropriately left to management. Emphasis is placed on file specifications—what use is to be made of the file and what results constitute satisfactory retrieval. Emphasis is also placed on what the equipment can or cannot do to a file. The librarian, systems designer, and manager must work out the cost/performance ratio to obtain maximum returns for minimum investment. For the librarian, here is a ready reference to available equipment and systems. For the information specialist, here is a survey of applications and design considerations. For the student, here is a guide into the fascinating field of file organization and manipulation.

WILLIAM KURMEY

International Business Machines
Poughkeepsie, New York

Biographical Directory of Law Libraries in the United States and Canada. By AMERICAN ASSOCIATION OF LAW LIBRARIES. St. Paul, Minn.: West Publishing Co., 1964. Pp. 57. Printed for private distribution.

Biographical dictionaries of librarians are rare—a strange commentary on a profession that so often bemoans the lack of reference aids in other subjects. Compiling a biographical dictionary, of course, must overcome near-Herculean obstacles, including the lack of adequate funds, the necessity of using an enormous amount of voluntary labor, and the difficulty of securing responsive co-operation of the biographees. In addition, as Robert L. Collison, a British librarian, suggested in 1954, the difficulties have been even more deeply rooted "in that curious modesty with which we announce half-apologetically to any member of the outside world that we are librarians."[1] Whatever the cause, it is a fact that there are yet (1) no authoritative directory of important librarians of the past, (2) only a very few book-length biographies on such librarians, and (3) almost no biographical dictionaries dealing with special areas of librarianship.

An exception to this third group is the new biographical directory of law librarians. Far from being fettered by a "curious modesty," this dictionary may well reflect a certain pride among law librarians that harks back even to 1906 when they established their own association, announcing that they were

[1] Thomas Landau (ed.), *Who's Who in Librarianship* (Cambridge: Bowes & Bowes, 1954), p. iii.

Professional Reading: Five Reviews

1. Becker, Joseph, and R. M. Hayes. *Information Storage and Retrieval: Tools, Elements, Theories.* New York, Wiley-Interscience, 1963.
2. Bourne, Charles P. *Methods of Information Handling.* New York, Wiley-Interscience, 1963.
3. Fairthorne, R. A. *Towards Information Retrieval.* London, Butterworth, 1961.
4. Garvin, Paul L. *Natural Language and the Computer.* New York, McGraw-Hill, 1963.
5. Kent, Allen. *Textbook on Mechanized Information Retrieval.* New York, Wiley-Interscience, 1962.

In a field that is moving and adjusting as rapidly as documentation (or whatever we are calling it today), a text faces two major hazards. First, if it is concerned with devices and techniques, it is soon out-of-date. Secondly, as this rather amorphous field begins to develop a framework and structure of discipline, a text may, regardless of its merit, become out of focus. These are occupational hazards inherent in modern technology. While these books suffer from these hazards to some degree, all the volumes under review have something to offer.

Of the five, the Becker-Hayes volume offers the broadest scope. It is written with three publics in mind: librarians who wish to understand more about information systems; engineers and managers concerned with the design of systems and system components; and information scientists interested in the development of theories and models as the basis for hypothesis and experimental design.

The Becker-Hayes work is a valiant attempt to provide a framework for an unorganized field. That is does not succeed is not the fault of the authors; it is the fault of the subject itself. Although the writing is a bit turgid, the librarian would benefit from exposure to Part II (Tools) and Part III (Theories). In Part II, a laudable, but not very successful, attempt is made to emphasize interdisciplinary aspects. For those with stamina and some degree of "numeracy", the last section of *Information Storage and Retrieval: Tools, Elements, Theories* is worth the effort. Although by no means comprehensive, it gives a theoretical framework by which the matching process can be examined more objectively.

Methods of Information Handling is intended as a supplement to the Becker-Hayes book, although there is some overlap, particularly in the chapters about equipment. The Bourne volume describes punched card systems, computer systems, paper or magnetic tape equipment, and micro-image systems. These descriptions are augmented by extensive references. Very few libraries have attempted to make use of any but the most elementary devices described by Bourne. Although many of the devices may not be suitable for operations as they are presently understood, ten years from now, to venture a prediction, much of the equipment described by Bourne, or some variation, will be commonplace in large libraries. The changeover will not be easy or simple or inexpensive. The result, after a period of trial and disappointment, will, however, allow the library to operate on a deeper and more significant level of service to its patrons than is now the case. Bourne's book offers an introduction to the devices possible for this change. In this regard, the book lacks a summary chapter evaluating the criteria necessary to determine utility of mechanization under varying conditions.

Neville's First Law of Serendipity runs something like this: in order to find *anything* one must be looking for *something*. Robert Fairthorne's book, a collection of his papers, is

Robert S. Taylor is director, Center for the Information Sciences, and associate librarian, Lehigh University. He has served as Fulbright lecturer abroad, and project director of several National Science Foundation projects in his field.

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written for the serendipitous; this is a book that one can open almost at random and be teased by an idea. I say "teased" for Fairthorne is an allusive writer, a Lewis Carroll sort of writer, rather than a solid, go-to-meeting tomist. One obviously does not go to *Towards Information Retrieval* for mundane facts or data, but for the accident of ideas. His style is not always lucid or straightforward.

The first paper, "The Mathematics of Classification" was published in 1947 in the *Proceedings* of the British Society for International Bibliography. In reference to this paper, Fairthorne justifiably states "my first published paper on documentation . . . is not out of date." Very few authors in the field can conscientiously make much a statement. The last paper, "Documentary Classification as a Self-Organizing System" is from *Information Theory*, Fourth London Symposium, September 1960. In between, Fairthorne illuminates, tickles, and discourses on a number of subjects concentrated around two general areas: "marking and parking", the clerical operations; and the intellectual problems of grouping documents or their tags by similarity and difference. Despite its allusive and sometimes discursive style, this book is a classic, written with insight, humor, and humanity.

Garvin's Approach

The volume edited by Paul Garvin is a collection of seventeen papers by mathematicians, logicians, linguists, and computer scientists. This book is less germane *at present* to the librarian than the other volumes. When the library moves out of the warehouse phase the area of linguistic data processing will become of primary importance.

The approach in *Natural Language and the Computer* typifies the newer, nonhistorical linguistics which has developed in the past thirty years. The computer has added an additional dimension and requirement. For the first time, it is possible to talk about the processing of very large bodies of text, of analyzing language in ways never feasible before. We must not misunderstand this capability: linguistic data processing can be discussed and some rather elementary things can be done, but extensive useful analysis is still a human activity, or at most a man-machine symbiosis. A more meaningful product will require both a better empirical description of language structure and a more formal, i.e. logical and mathematical, modeling of language systems. At present, these two requirements may be incompatible.

Allen Kent's *Textbook on Mechanized Information Retrieval* is the only one of those under review that is consciously designed as a textbook. It is likewise the most restricted in approach. It was developed from, and was tested in, several semesters of a course on Machine Literature Searching at Western Reserve University. As a first text, it has both weaknesses and strengths. Literature searching is merely one of many levels in the communication process (machine searching is even more restricted), and one with very little meaning unless it is seen as part of a total transfer chain from generation to use. As might be expected, subject analysis other than the Semantic Code, developed at Western, receives relatively minor attention. However, of the five books, Kent's volume is the only one in which the WRU system is discussed at any length. There is a curious display of belligerency in the introduction. Within one paragraph the reader sees such phrases as "set up barricades", "surrendering . . . key positions", "the enemy." For a moment I thought I was reading Carlyle on the French Revolution. Yet, the book partially accomplishes at least two things. It provides a coherent textbook for library schools, complete with exercises and supplementary classroom material. And it is a utilitarian book from which a reader, no matter how small his file, can obtain instruction on equipment characteristics, construction and manipulation of subject tags, and codes and notation.

I should like to enter one caveat here. In three of the volumes under review—Bourne, Kent, and Becker-Hayes to a lesser extent—many of the equipment illustrations are redundant and meaningless. In some cases, crucial

(*Continued on p. 799*)

Fishman, Solomon. *The Interpretation of Art.* Univ. of California Press 1963 $4.50

Frye, Northrop. *Fables of Identity.* Harcourt 1963 $4.95

Gottfried, Leon A. *Matthew Arnold and the Romantics.* Univ. of Nebraska Press 1963 $5

Kaiser, Walter J. *Praisers of Folly: Erasmus, Rabelais, Shakespeare.* Harvard Univ. Press 1963 $7.75 (Harvard Studies in Comparative Literature)

Krapp, George P. *The Rise of English Literary Prose.* Ungar 1963 $8

Mailer, Norman. *The Presidential Papers.* Putnam 1963 $5 (Partially analyzed)

More, Paul Elmer. *Shelburne Essays on American Literature.* Ed. by Daniel Aaron. Harcourt 1963 $4.95

Nemerov, Howard. *Poetry and Fiction: Essays.* Rutgers Univ. Press 1963 $7.50

Resources for the Future. Cities and Space. Ed. by Wingo Lowdon. Johns Hopkins Press 1963 $5.50

Professional Reading (*Cont. from p. 767*)

parts of the anatomy of the devices are obscured by portions of a female figure. The latter, in many cases, seems to be more pertinent than the equipment, depending on viewpoint of course. In other cases, illustrations are hazy, but sharp enough for the manufacturer's name to be read easily. If these volumes are intended as serious texts, this type of second-rate advertising is fatuous and out of place.

The indexing in all of these volumes is excellent. Would that this level could be carried over to monographs in other fields. The Becker-Hayes volume's index is superb, with a page and a half analytic introduction. The index for Fairthorne's book was compiled by Calvin Mooers, for Bourne's book by Pauline Atherton.

Each of the five volumes under review has a different objective, and each a special viewpoint. Taken together, they represent an approach that the librarian must not only be cognizant of, but must adopt if he is not to become but a semi-sophisticated warehouseman. This will require experimentation, self-analysis, extensive financial support, and commitment at all levels to the communication process.

Write for These

A calendar, entitled *Continuing Education for Librarians: Conferences, Workshops, and Short Courses, 1964-65,* was compiled recently by Sarah R. Reed and Doris Epstein from information supplied by library associations, schools, and agencies. Forthcoming events are listed by state and then by date. Information given in tabular form includes: title of event, date, place, sponsor, director or instructor, academic credit, tuition or registration fee, deadline for registering, and person to contact for further information. The calendar may be obtained from the U.S. Office of Education, Washington, D.C. 20202.

Leningrad's Saltykov-Shchedrin Library: *Guide to the M. E. Saltykov-Shchedrin State Public Library, Leningrad,* edited by Nikolai Iakovlevich Morachevskii, and published in Leningrad in 1956, has been translated from the Russian by Raymond H. Fisher. Addressed to the library user, this 48-page guide gives a brief history of the library, lists the library's holdings, catalogs and indexes, describes reference-bibliographical services, and gives details concerning reading rooms, exhibits, lectures, and tours. Published in 1963 as UCLA Library Occasional Paper, Number 14, this *Guide* may be purchased for $1 from Room 235A, Library, University of California, Los Angeles, Calif. 90024.

Permanence/Durability of the Book: *A Two-Year Research Program* is a 46-page report on research on book materials being carried out by the W. J. Barrow Research Laboratory. Book testing equipment and procedures are described. Included are reports on three projects: Deacidification of a Book by Spraying, The Stability of Polyvinyl Acetate Adhesives, and Development of Performance Standards for Library Binding—Phase II. Charts, a bibliography, and a colophon are appended. For a free copy of this report write the W. J. Barrow Research Laboratory, Box 7311, Richmond, Va.

Scientific information retrieval: A 24-page booklet, entitled *An Adventure in Knowledge, The Story of the Chemical Abstracts Service,* surveys the history and development of *Chemical Abstracts* and describes the problems implicit in abstracting the profuse scientific material current today. Copies may be requested from American Chemical Society, 1155 Sixteenth St., N.W., Washington, D.C.

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Reviews

ICAL ATLASES IN THE LI-
Vol. 6, Titles 7624-10254,
Notes (a continuation of
Lee Phillips). *Clara Egli*
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Complete and exact bibliographical citation and bio-bibliographical notes (often extensive) make the work an adventure in bibliography. Complete contents, so helpful in the identification of sheet maps, are given for most atlases published prior to 1820 and for multi-subject and multi-compiler atlases. Contents notes, in any instance, are included liberally to aid the user.

The Author List makes reference to numbers assigned to each title entry. An index includes detailed entries for areas, subjects, map authors, engravers, lithographers, publishers, and atlas titles with distinctive words. Authors of atlases are found only in the Author List, but a publisher, if considered the author, is found both in the Author List and in the index under the entry, Publishers.

This reviewer has had the privilege of watching Mrs. LeGear work at close range as a colleague. She is a meticulous bibliographer, performing the kind of thorough bibliographic description that few libraries can or refuse to afford. Unfortunately, there is too much of the alternative—sloppy or superficial bibliography or relegation to an impersonal and unsympathetic computer. Mrs. LeGear has served as Honorary Consultant in Historical Cartography since December 1961, following her retirement after 47 years in the Library of Congress (46 as Cataloger, Librarian in Charge of Cartographic Acquisitions, Bibliographer, Reference Librarian, Assistant Chief and Head, Reference and Bibliography Section in the Map Division).

The compiler of this *List*, in assuming full responsibility for all shortcomings and inaccuracies that may come to light, will have unlimited leisure and time to give to volumes seven and eight, which are eagerly awaited.

BILL M. WOODS, Executive Director
Special Libraries Association

METHODS OF INFORMATION HANDLING. *Charles P. Bourne.* New York: Wiley, 1963. 241 p. $12.95. (L.C. 63-20628)

Volume two in the Wiley Information Science Series is a reference intended to provide the designer of information systems with the tools, equipment, and methods needed to meet the problems of information processing. To government and industrial organizations and libraries facing the magnitude of the paper storm in daily decision-making, this non-technical text will be an essential and welcome acquisition. It is easily read and provides good introductory material to the entire field of information.

First, the author recognizes that the problems in information processing are especially pressing in the handling of the world's scientific literature and the organizing of complex commercial and governmental files. The library problems are termed "classic," indicating the non-library emphasis, but those libraries dealing extensively with analyzing literature or with reporting literature will find it useful.

Following somewhat the same organization and approach as other recent texts in this field, the author systematically outlines classification, indexing, coding, and presentation of information. Various handling systems from manual to computer are textually and pictorially illustrated with precision. This includes paper tape, magnetic media, and microfilm systems. The section on manual card systems, however, repeats the Casey volume on data, but this book does serve to update Casey. Where machines are considered, the discussion is concise, and the methods of compressing the information to reduce machine time are given primary attention.

The entire text has been thoroughly documented, providing the reader with many valuable references. However, an index to names of persons and organizations used in the text and footnotes appears in place of a bibliography. Since this text appears to be an expanded and illustrated annotation of the author's original bibliography published in 1958, this cost-cutting device may be justifiable.

In his preface, Mr. Bourne says, "Because of the nature of some of the material in the book, such as the equipment descriptions, the reader should expect that some of this material will be out of date by the time he reads it." Despite the truth of this statement, this title should be part of every special library collection. Its critical approach and clear-sighted presentation provide material for long-term evaluation, as essential as providing the latest information.

H. VOOS and I. HAZNEDARI
Technical Information Section
Picatinny Arsenal, Dover, New Jersey

New Book Distributor

Research Books, Inc., Haddam, Connecticut, has recently started operations as a general supplier of technical and scientific books of all puublishers. The firm maintains a carefully controlled book stock to serve special, college, and public libraries. All phases of insurance, chemistry, and space sciences, and nuclear engineering are being handled. All library orders are filled, shipped, and billed from Haddam.

British Journal Looks at Current Librarianship

The December 1963 issue of *The Assistant Librarian*, published in England by the Association of Assistant Librarians, contains the article, "Special Librarianship: a Semi-annual Survey of the Literature." The author, T. D. Wilson, summarizes special library services in many parts of the world. Under national and regional services, he mentions, among others, Canada's National Research Council, the Library of Congress's National

DREXEL INSTITUTE OF TECHNOLOGY
ENGINEERING - BUSINESS ADMINISTRATION
HOME ECONOMICS - LIBRARY SCIENCE
PHILADELPHIA 4, PA.

SCHOOL OF LIBRARY SCIENCE

February 21, 1964

Mr. Charles Bourne
Stanford Research Institute
Menlo Park, California

Dear Charlie:

I have read your book and wish to complement you on a successful achievement. I had heard good things about it from several people and can now tell you that I believe it to be very well written and to be quite usable for library science and information science students. Several of our classes have assigned readings in it and I expect it to be given heavy use in the future.

Our new information science curriculum seems to be getting off to a good start with 40 majors and a distinguished faculty including Herner, Welt, Schultz, Elias, and others.

Sincerely,

John F. Harvey
Dean

mps

THEODORE C. HINES
54 NORTH DRIVE
LAWRENCE BROOK MANOR
EAST BRUNSWICK, NEW JERSEY

9 February 1964

Charles P. Bourne
Research Engineer
Stanford Research Institute
Menlo Park, California

Dear Mr. Bourne:

I am very glad indeed to send you a copy of the little documentation systems outline - I would be very grateful for comments, criticism, suggestions, etc., on everything except the format and proofreading!

I should add my compliments on METHODS OF INFORMATION HANDLING. This is certainly the best thing of its kind which has yet been published. Dr. Taube is already using it as a text for our documentation course at Columbia.

I am sorry this letter has been delayed, but forwarded mail is always a bit slow. Please note the change in business address.

Sincerely,

Ted Hines

Theodore C. Hines
Special Assistant to the Dean
School of Library Service
Columbia University
New York, New York 10027

TCHssh

STANFORD RESEARCH INSTITUTE

MENLO PARK, CALIFORNIA

February 25, 1964

Mr. Theodore C. Hines
Special Assistant to the Dean
School of Library Service
Columbia University
New York, New York

Dear Ted:

Thanks for the copy of your documentation systems outline, and the comments on my book.

Since you are now the AD Review Editor, I am sending you a copy of a review of the Becker-Hayes book by Lea Bohnert that I requested some time ago. I have not asked anyone to prepare any other reviews, and do not expect any more to be volunteered. This leaves you a completely free hand for the selection and coverage.

We have a few technical details to work out between our sections, e.g. how to avoid citing the same item in both sections, and how to note the reviews in the quarterly and cumulative indexes. As a first start, I'm assuming that you'll pick up all relevant books and edited collections of papers, although I may also treat the separate papers concurrently when they are part of a conference proceedings (even if the proceedings are published as a "book").

You'll notice that each of the Literature Notes entries has an assigned number. This is for the quarterly and cumulative indexes. I would like to continue to assign numbers to the reviews so that they too can be included in the indexes. In order that a number may be printed with the original review, I would suggest that you send me a list of the items you plan to include in each issue (say 3 weeks before we have to send copy in)--so that I can send you the numbers (the first in the series, e.g. 4/64-1, 4/64-2...) and include the items in my manuscript index (as well as assign the remaining numbers to the Literature Notes items). Did you send any copy in for the April issue? We could still put some numbers in during proof correction. Any suggestions for alternative ways of doing this?

As one further and unrelated point, I heard some time ago that one of the courses you taught, or were teaching, was concerned with time and cost analysis of library operations. Is this true? Could you send me a course outline or description of that course? I am thinking of starting such a course as one extension of the documentation course that I have been teaching at the University of California (Berkeley). I look forward to hearing from you.

Best regards,

Chas

Charles P. Bourne
Research Engineer

Enclosure

cc: Art Elias
Lea Bohnert

4/64-000 **Information Storage and Retrieval: A Survey.** 1963. George W. Barnard and Carl Abbott. Biomedical Laboratory, 6570th Aerospace Medical Research Laboratories, Aerospace Medical Division, Air Force Systems Command (Technical Documentary Rept. No. AMRL-TDR-63-8), Wright-Patterson Air Force Base, Ohio. 15 pp. $.75.

In this case, the citation seems almost as long as the document. Whether it was appropriate or not, it should be noted that this survey of "the field of information retrieval, the methods of indexing and storing the vast number of scientific documents which have been produced in recent years" was carried out by the Psychophysiological Stress Section, Biophysics Branch, of the Biomedical Laboratory. It took six months to complete, and includes a bibliography of 31 items.

As the survey is so comprehensive, it may be of value to quote some of the major conclusions directly: "Computer text searching has been developed by the General Electric (GE) Company and used at Western Reserve University . . . . The principle disadvantage of this method, aside from the difficulty of producing the abstract, is the basic difficulty with any such use of computers: the statistically based program cannot have completely adequate sensitivity." "Even more complex systems have the entire item stored along with the index. When the search is run, all the indicated documents are retrieved and presented to the user. This method requires quite elaborate machinery . . . this is the fastest method of retrieval . . . ."

"In indexing, the choice does not lie between different types of indexes, such as hierarchical versus coordinate, for it is generally agreed that a coordinate type is far superior. Instead choice lies with the amount of freedom to be allowed in the selection of terms." "The cheapest machinery is, of course, punch cards, then IBM cards and sorters, then adapted computers, then specially designed systems. Each successive type has some advantage over its predecessor . . . . The capacity of electronic-based systems, while still finite, is beyond the limit of human need."

While some of the items cited by the authors in their bibliography are basic works in the field, it seems unfortunate that they did not consult Kent's excellent basic textbook, or have available to them the clear introductions to the field provided by Becker and Hayes, or by Bourne.

TCH

4/64-000 **Methods of Information Handling.** 1963. Charles P. Bourne. John Wiley & Sons, Inc. (Information Sciences Series), New York. 241 pp. $12.50.

This second volume of Wiley's Information Sciences Series (the first was *Information Storage and Retrieval* by Joseph Becker and Robert M. Hayes) indicates that the quality of the first item was no accident. Bourne aims at providing "an aid and reference work for those people who are interested in the design of information systems." The aim is amply fulfilled, and the work is highly recommended both as a reference work and as a text.

The major divisions of the book cover the nature of the information handling problem; classification and indexing: the organization of information; coding: the indexing shorthand; machine language representation; manual card systems; punched card systems; computer systems; paper tape and magnetic media equipment; microfilm and image handling equipment; plus a list of acronyms and abbreviations, an index to names of persons and organizations (which suffers from strings of undifferentiated references), and a very good subject index. The book is copiously illustrated with meaningful tables, charts, diagrams, and pictures. Footnote references are given freely on every area discussed. Additional references for background and further reading appear at the end of each main section.

Modern Information Handling is remarkable for its completeness (although it necessarily gives less attention to any of the areas covered than the devotee of that area might want), its clarity of presentation, and its freedom from bias (at least discernible bias) toward any one of the violent viewpoints documentalists hold. It shows a broad and eclectic knowledge of the literature. It manages (most amazingly) to discuss machines and devices, giving facts and figures, without either being misleading or offering judgments. From the viewpoint of this reviewer, it is fascinating to see an author in this area consistently looking forward without, at the same time, ignoring the validity and usefulness of the experience of the past to be found in the earlier literature of librarianship and indexing.

It seems useless to carry this eulogy further. This is a basic item, and while it would (as always) be possible to cavil at this and that, it is not worth the effort to do so. Bourne has set out to provide a clear basic volume on the subject; broadly speaking, he has done this ably indeed.

TCH

4/64-000 **Thesaurus of Descriptors: A List of Keywords and Cross-References for Indexing and Retrieving the Literature of Water Resources Development.** 1963. (Tentative Edition) U. S. Department of the Interior, Bureau of Reclamation, Denver. 140 pp.

This is an interesting thesaurus of descriptors (descriptors are not used in Calvin Mooers' sense of the term). Part I (104 pages) is the main list of descriptors and use references. Part II (20 pages) lists the descriptors themselves in 47 class groupings. Part II lists the descriptor groups by broad general fields (Civil Engineering, Earth Sciences and Agriculture, etc.). An appendix gives hints for indexing and abstracting.

The thesaurus is intended for use with a selective dissemination system, an abstract bulletin, and for the Bureau's library accession list, as well as for a printed index to supplement the library card catalogs. The main descriptor list includes *use* (*see*) references from terms not used to those used, the group number of the term, and *see also* references (occasionally) to additional group numbers. When direct rather than inverted entry is to be preferred, the list gives every entry in inverted form followed by a *use* instruction, rather than giving several examples and indicating that this pattern is to be followed. This wastes a good deal of space, and the list will swell enormously if this practice is continued. Indeed, if *refer from* references had been included to assist in the construction of a syndetic apparatus, the list would already be far larger than it is. *Refer from* references are not mentioned in the preface, but it may be assumed that a file of them is maintained elsewhere and that the indexers are not responsible, directly, for syndetics.

In general, descriptors are given in the plural form. The notes for indexing indicates that additional terms (called "identifiers") may be added for proper names, etc., and that these should be entered in the singular. It is unfortunate that "Laser" should be given as an example here, and that the practice of entering in the plural is not always followed in the main descriptor list. New terms may be added provisionally as identifiers, again in the singular. It is suggested that descriptors as specific as possible be used, and broader terms should be used "at only one or two higher generic levels — not all the way up the hierarchical tree." It is apparently intended that 10–25 descriptors be assigned to the average report and that four or so major ones be weighted by marking them with an asterisk. Unexplained system requirements limit descriptors to 27 characters, and proper nouns are to be abbreviated *after* the first word, presumably for alphabeting purposes.

Some oddities appear. For example, it is difficult to see why users would want separate entries under all of the individual parts of the names of projects of the Bureau of Reclamation — the example given is "Clear Creek Tunnel/Trinity River Div/Central Valley Project/California." It is not easy to justify entry under California in this instance.

The section giving abstracting instructions, like that on indexing, is exceptionally clearly written and easy to follow.

Review Articles

Yale's Selective Book Retirement Program. By Lee Ash. Hamden, Conn.: Archon Books, 1963. xii, 94p. $4. (63-17389).

This is the interesting report of a three-year study that was financed by a grant of $150,000 from the Council on Library Resources. There is a Preface by James T. Babb; a Foreword by John H. Ottemiller, who directed the project; and a Concluding Statement by Professor Raymond D. Morris. The working papers and the longer report by Mr. Ash from which this printed volume was abstracted are available at Yale for consultation.

The difficulties of selective retirement are not minimized, and the claims made for it are modest. Mr. Babb writes, "Although we believe that our Selective Book Retirement offers a palliative to the increasing space problem in research libraries, we recognize that it is not a solution." Professor Morris observes that the selection of books for retirement "is time-consuming, requiring the best judgment that we can muster, which means that it is an expensive program. It could very well turn out that it will prove so expensive in execution that (as with microreproduction) there will be a point beyond which it will not be feasible in terms of economy."

In view of this economic question, it might have been desirable to include a more rigorous analysis of costs. During the course of the project, 74,648 volumes were transferred from the main stacks to storage by size, 28,443 were discarded, 17,259 were transferred to other libraries (2,572 of these to libraries outside the university), and 14,188 new acquisitions were sent directly to storage. Adding these, and dividing their total of 134,538 into the $81,936.60 spent for salaries of the processing staff for the project, the report concludes that processing cost 61¢ per volume. The 14,188 new acquisitions, however (except for some of the new theses), were not handled by this staff, and the cost that is reported includes nothing for materials, for 95,777 photoclerk exposures, for space occupied by the project staff, or, apparently, for refiling cards.

Space in the main stack is calculated to be worth $1.68 per volume; space in storage comes to 42¢ per volume. On this basis, the library saves $1.26 on space for each volume transferred to storage; but, if processing takes 61¢ or more, then selection, requiring consideration by faculty or high level professional personnel, might indeed cut the total saving to a minute sum. The report notes that it is easy at the beginning of such a program to deal with subjects of little interest to the university's teaching and research, but, "As those subjects are completed, the selecting becomes more time consuming and difficult; and, as the staff moves to subjects that are heavily used, hours of work produce but meager results." When one considers what it costs to store a book by size (42¢ for space, plus 61¢ or more for processing, plus high priced time for selection), one begins to wonder if a book worth that much is not worth the whole $1.68 that it is now taking on accessible and classified shelves.

Obviously, then, this is a significant chapter in the story of storage, but no means the last one.—*Edwin E. Williams, Harvard University.*

Methods of Information Handling. By Charles P. Bourne. New York: John Wiley & Sons, 1963. xiv, 241p. $12.95. (63-20628).

It is difficult for a textbook writer to review the work of a colleague who has written a text in the same field. If there is overlap, it can be said that the overlap is unnecessary; if different material is presented, it can be said that there is unnecessary detail; if material has been omitted, that can also be criticized. Obviously, the reviewer has used his best judgment in his own work, and therefore his review might tend to be overly critical.

But try as I might, it was not possible to be anything but glowing about this excellent book. The Bourne book is a good one; it

adds substantially to those existing in the field in the following ways:

1. The information storage and retrieval field is viewed broadly—going beyond the traditional library and even beyond the specialized information or documentation center. Rather, the information that is considered covers the broad spectrum, ranging from numerical to nonnumerical information; the systems considered range from the manual to the computer-oriented.
2. The organization of the field is pleasing: starting with fundamental filing problems; continuing with organization of information; then on to coding (called "the indexing shorthand"); going on to machine language representation; punched card systems; computer systems; and finally to microfilm and image handling equipment.

The book is interspersed with cost estimates and practical words of caution. The author has obviously made a special attempt to illustrate the book exhaustively, since there are no less than 176 figures and 23 tables in the numbered sequences, and more of them unnumbered. Their production is rather uniformly good.

From rags to riches is the situation we now have with regard to textbooks in the information storage and retrieval field. Only eighteen months ago there were none, and now there are three. Of course, there are overlaps, but not unhealthy ones. The instructor who now wishes to use a text for an introductory course in the information sciences can use parts of each text, or he can follow closely any one of them.—*Allen Kent, University of Pittsburgh.*

The Place of a Research Library in a Liberal Arts College, Proceedings of a Symposium Held at Bowdoin College, February 21-22, 1963. Brunswick, Maine: Bowdoin College, 1963. 84p. $2. (63-25194).

The achievements of the brilliantly conceived and admirably carried out Bowdoin College conference on *The Place of Research in a Liberal Arts College* held in February 1963 are now available to a wider audience. Frederick Wagman, graduate of a liberal arts college and the director of a large university library, was in an excellent position to make comparisons. He was fretful about junior colleges and the new "universities" with inadequate resources, to say nothing about faculty and student research needs. The task of selecting materials for a college library is more difficult than selecting materials for a large university. Coordination of the teaching and research programs is essential in both colleges and universities. Mr. Wagman suggested that the resources, staffs, and buildings have to be generous if the prestige colleges are to maintain their status in the years to come.

The second speaker, Eileen Thornton, is responsible for directing the library of Oberlin, a prestige college. With smaller faculties and a more compact curriculum, the college nevertheless has marked problems of recruitment and retention of faculty members as specialized interests emerge that may change the variety of materials demanded. The increased number of periodicals and serials required to support teaching programs and to meet faculty and student needs, means ever increasing budgets, staff, and buildings. Good basic collections plus staff members prepared and able to identify suitable topics for student specialization are essential. An increase in independent work may reduce the faculty load but will increase the library staff load and will affect library staff budgets.

Bowdoin was represented among the speakers by Professor Athern Daggett, Professor Emeritus Edward C. Kirkland, and Librarian Richard Harwell. They commended Bowdoin for its library resources assembled over a long span of years. Mr. Harwell suggested that faculty-library relations are a two-way street. Professor Kirkland reminded the conference that the library is a central fact larger than architectural terms but extending to basic policy, library staff, and faculty appointments, promotions, and replacements. What counts is students and professors at work together in classrooms and the library.

The conference closed with an address by Verner W. Clapp, president of the Council on Library Resources. He defined a research library as a place in which one can go to the sources and trace a footnote back home. The possibility of assembling a million-volume library in microform will not

HERMAN DE JAEGER
SLEIDINGE (België)

78 Polenstraat

To the Author of
"Methods of Information Handling".

Onderwerp	Uw kenmerk	Uw brief van	Ons kenmerk
			May 27, 1964.

Dear Mr. Bourne,

Your Editors, John Wiley and Sons, London, had the kindness to send me a copy of your Handbook. Please accept my congratulations for this outstanding work. I shall not fail to recommend it in my talks, which I regularly organize for students, managers, educators, researchers and officials.

I should be particularly pleased to receice the reprints of articles you might publish in the future.

I am, dear mr. Bourne,

Yours truly,

Herman de Jaeger,
Information Officer, Venex (Society for the Advancement of the Economic Expansion), Brussels;
Lecturer at the Library School of Brussels;
Founder and Secretary of the C.I.D. (Committee Economic Information and Documentation), Brussels.

DOCUMENTATION
INCORPORATED

4833 RUGBY AVENUE
BETHESDA 14, MARYLAND
301 • 656-9500

Eugene Miller
President

April 2, 1964

Mr. Charles P. Bourne
Stanford Research Institute
Menlo Park, California

Dear Charles:

I had a chance the other day to go through your book, "Methods of Information Handling". It is an excellent work -- certainly the best of its kind in the field. I checked with Mort and found that he was using it in his class at Columbia.

Sincerely,

EM:sl

April 6, 1964

Mr. Eugene Miller, President
Documentation Incorporated
4833 Rugby Avenue
Bethesda 14, Maryland

Dear Gene:

Thanks very much for your kind comments on my book. The reports of the earlier pioneering work in this field by yourself, Mort Taube, and others at Documentation Incorporated--as well as your more current projects such as Slamecka's work and NASA activities--were helpful in its preparation.

Best regards,

Charles P. Bourne
Research Engineer

CPB:pe

RESEARCH FOR INDUSTRY

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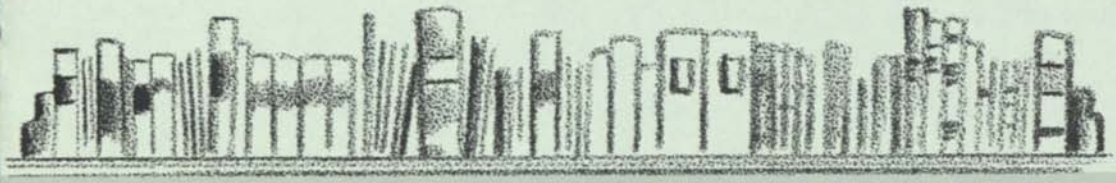
RESEARCH FOR INDUSTRY Stanford Research Institute
Menlo Park, California



Information Handling

EVERYONE is generally aware of the frightening amount of published information. But some specific figures brings the realization that the information explosion is even bigger than we commonly think. To cite only a few numbers: approximately 30,000 technical journals in 50 languages publish two million articles per year; about 75,000 new book titles are published each year; the Federal Government produces 25 billion pieces of paper per year and has accumulated enough records to fill 7.5 Pentagons, at a cost of $4 billion per year.

These, and other figures are contained in the beginning pages of a 240-page book, "Methods of Information Handling," by Charles P. Bourne, SRI Research Engineer. After identifying the principal literature, library, and file problems, Bourne discusses, at length, classification and indexing; coding; machine-language representation; manual and punched card systems; computer systems and other mechanical devices; and microfilm and image-handling techniques.

"Methods of Information Handling," by Charles P. Bourne, is published by John Wiley & Sons, New York. Price $12.95. ■

Vitamins and Coenzymes

ONE of the most active areas of biochemistry is vitamins and enzymes. This is well illustrated by the fact that a chapter on vitamins – albeit a major chapter – in a book on medical chemistry in 1960 has now become a 528-page book in itself. The book is "Vitamins and Coenzymes" by Arthur F. Wagner and Karl Folkers, written while both were on the staff of Merck Sharpe and Dohme Research Laboratories. Dr. Folkers has since joined the staff of SRI. The new volume is intended to be of interest primarily to chemists, biologists, biochemists, and professors of chemistry, biology, and bacteriology. The book is being published by John Wiley & Sons, New York. Price $17.50. ■

RESEARCH FOR INDUSTRY
STANFORD RESEARCH INSTITUTE
MENLO PARK, CALIFORNIA 94025

Staff Writings

The following titles by staff authors may be obtained by writing a card or checking desired titles on this page and mailing the page to Department 300, Stanford Research Institute, Menlo Park, California.

477.—TACTILE PRESENTATION OF VISUAL INFORMATION, K. Kotovsky & J. C. Bliss, *IEEE Trans. on Military Electronics*, Apr.-July, 1963.

478.—USE OF A COMPLEX NEIGHBORING GROUP TO PREPARE AMINOMERCAPTOFURANOSE SUGARS, L. Goodman & J. E. Christensen, *J. of Org. Chem.*, Oct., 1963.

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481.—OXIDATION PRODUCTS OF VITAMIN E AND ITS MODEL, 6-Hydroxy-2,2,5,7,8-PENTAMETHYLCHROMAN. V. STUDIES OF THE PRODUCTS OF ALKALINE FERRICYANIDE OXIDATION, W. A. Skinner & P. Alaupovic, *J. of Org. Chem.*, Oct., 1963.

482.—NONHYDRODYNAMIC ATTENUATION OF SHOCK WAVES IN ALUMINUM, D. R. Curran, *J. of Applied Phys.*, Sept. 1963.

483—SCIENCE, SOCIETY AND INDIVIDUALS, M. W. Evans, presented at seminar on "The Public Understanding of the Role of Science in Society," Aspen Institute for Humanistic Studies, Aspen, Colo., June 1962.

484.—ERRATIC DIELECTRIC STRENGTH OF SILICON MONOXIDE FILM CAPACITORS, S. W. Chaikin & G. A. St. John, *Electrochemical Technology*, Sept.-Oct. 1963.

485.—FLUORESCENT YIELD IN THE PHOSPHOR NE-102 FOR X RAYS FROM 4 TO 17 keV, L. E. Bailey, *J. of Appl. Physics*, Oct. 1963.

486.—THE CALIFORNIA ECONOMY, W. B. Gibson, presented at the Seventh Annual Calif. Ind Develop. Conf., San Francisco, Nov. 1963.

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491.—SYNTHESIS OF A FLUORINATED OXADISILA-[3-*m*-3-*p*]-CYCLOPHANE, S. A. Fuqua & R. M. Silverstein, *Chemistry and Industry*, 1963.

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495.—THE KINETICS OF DECOMPOSITION OF LIQUID AMMONIUM NITRATE, W. A. Rosser, S. H. Inami, & H. Wise, *J. of Phys. Chem.*, 1963.

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499.—GROUP DELAY AND DISSIPATION LOSS IN TRANSMISSION-LINE FILTERS, L. Young, *IEEE Trans. on MTT*, May 1963.

500.—SPECTROMETRY IN ORGANIC ANALYSIS. APPLICATION TO SMALL SAMPLES, G. C. Bassler & R. M. Silverstein, *J. of Food Science*, 1963.

501.—THE ECONOMICS OF 'TAX SWITCHING,' H. E. Riggs, *Finan. Analysts J.*, Sept.-Oct. 1963.

Bourne, Charles P

Methods of information handling. New York, J. Wiley [1963]

xiv, 241 p. illus., diagrs., tables. 29 cm. (Information sciences)

Includes bibliographical references.

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DOCUMENTATION ON REVIEW

BOURNE, Charles P. *Methods of Information Handling*. N.Y: John Wiley & Sons, 1963. 241pp. 63-20628. $12.95

BOURNE'S BOOK is essentially a review volume, and a good one. To a considerable degree it is an illustrated annotation of his own very useful bibliography which has been of great value to persons interested in documentation since its first publication in 1958. There is very little that is technical or not easily read by any librarian. Only in the chapter on coding does the author become mathematical and present a small treatise on the subject, in depth well beyond the remainder of the volume. This section with its emphasis on frequency of occurrence of the letters of the alphabet has only slight connection with the subject matter of the remainder of the volume.

It should be emphasized that this volume is not aimed at libraries or librarians. Only those who deal extensively with analyzing the literature or with report literature will find more than a small part of it directly useful. Library classifications, subject headings, and card catalogs are considered but only briefly and with no specific suggestions for changes in methods for coping with the problems of management of libraries. This is not surprising since this volume is primarily a review of the literature, and there have been few reports on either experimental or practical programs applying the methods of data processing and data storage to library operations. Recent developments, especially in medical libraries and in some general libraries are not mentioned. This is due primarily to the fact that the literature reviewed ends about the middle of 1962, even though the preface is dated August 1963.

The book will give the librarian and other readers a good introduction to processing, storage, and retrieval of data in the field of information. Classifications coding, machine language, manual and punched card systems, computer systems, paper tape and magnetic media equipment, and microform equipment are described with illustrations of many types of commercial equipment. — *Melvin J. Voigt, Librarian, University of California, San Diego at La Jolla, California*

New Periodicals

GREEK HERITAGE

The American Quarterly of Greek Culture. Published by the Athenian Corporation, 360 North Michigan Ave., Chicago, Ill., 60601. Kimon Friar, editor. (Vol. 1, No. 1, Winter, 1963.) Quarterly. Charter Member (one year) $20; Regular (one year) $25; Contributor (3 years) $50; Sustaining Member (5 years) $75; Sponsor (Life Membership) $500

LAUNCHING a new periodical is always a hazardous venture financially; doubly or triply so when the publication is to be a deluxe, hard cover quarterly, aimed at a small cultural elite. The publisher of *Greek Heritage* hopes that its readers will be made conscious of the continuing contribution of Greece to western culture from the well known classical period through the less familiar Byzantine era to our own time. The journal "is dedicated not to the Greeks themselves, but to the Greek in spirit, and they are legion, surpassing barriers of language and nationality."

As editor, Kimon Friar, the well known translator of *The Odyssey: a Modern Sequel* by Kazantzakis, has been selected. The journal, beginning as a quarterly, is expected to be published bi-monthly within two years. Its first issue contains a story by Kazantzakis, the first ranking author of modern Greece, a hitherto unpublished essay by George Santayana, a paper by the late classicist, Edith Hamilton, and two poems by Lawrence Durrell. A short excerpt from a contemporary account of the siege of the Acropolis by the Turks in 1825, articles on Sappho, on the Athenian general, Themistocles, on ancient Greek furniture, on Byzantine icons, on modern Mykonos with its famous pelican, Peter, and on other aspects of Greek history and culture add to the attractiveness of this first issue. Articles are specialized enough to be

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"Technical Services in 1963" by Maurice F. Tauber.

contains much that is known to experienced technical services personnel in cataloging, classification, and related areas. The chapters dealing with computers, role of a theory of information, theories of files organization, and theories of system design are probably not as well known, and warrant the attention of librarians. The chapters on theories of file organization and theories of system design will require an understanding of mathematical formulae, as well as some acquaintance with previous studies in the field.

Another volume of general interest to librarians is that of Charles P. Bourne, of the Stanford Research Institute, Menlo Park, California. Mr. Bourne, who is active in the American Documentation Institute, has developed a volume[9] that is designed to provide guidance to personnel interested in the design of information systems. Although librarians are noted as individuals who will be interested in the volume, *Methods of Information Handling*, it will not be a surprise to Mr. Bourne to learn that some of them are familiar with basic procedures of filing, coding, notation, and perhaps even machine language representation. Included in the text are discussions, with appropriate illustrations, of manual systems as well as tabulating card and computer systems. Much attention is given to equipment of microreproductions, and it is observed that such equipment might well be out of date at the time of description. Note may be made of the fact that Mr. Bourne, as did Becker and Hayes, includes mathematical approaches to coding.

From your clipping service

Librarians have been concerned with possible application of machine approaches to their work, and it is not surprising that the 49th Annual Conference of Eastern College Librarians should be involved with a theme, "Do We Need to Reinvent the Library?" at its November 30, 1963, meeting. The morning portion of this meeting was devoted to reports by Mario G. Salvadori, Professor of Civil Engineering and Architecture, Columbia University, and Henry J. Dubester, Chief of the General Reference and Bibliography Division, Library of Congress. Dr. Salvadori reported on the progress of the project to analyze in minute detail the operations in the Engineering Library at Columbia University in an effort to discover possible applications of automation. Similarly, Mr. Dubester reported on the Library of Congress automation study and its implications for academic libraries. This latter study was published by the Library of Congress in December, 1963,[10] and is commented on below.

The afternoon session included a discussion by Edward Heiliger of the approach to automation at the library of the new Florida Atlantic University, at Boca Raton. It is expected that this installation will represent one of the important experiments in the application of automation to university library operations. Heiliger indicated that every effort would be made to introduce mechanical approaches to various technical services in acquisitions and cataloging which lend themselves to such manipulations.

A brief summary may be made at this point of the Library of Congress automation study noted above. Three areas of library work—

LRTS

Charles Percy Speaks To DPMA Members

Charles H. Percy, former board chairman of Bell and Howell Co., who is presently seeking the Republican nomination for governor of Illinois, spoke to 600 DPMA members in Chicago recently. His subject was "Politics and the Businessman."

According to Percy, more businessmen should act as political candidates because of their ability to understand people and business conditions.

University of Chicago Studies Stock Exchange

A study has been completed, at the University of Chicago Graduate School of Business, which gives the first comprehensive and accurate measurement of rates of return on investments in all common stocks on the New York Stock Exchange from 1926 through 1960.

The study, which was performed by the Center for Research in Security Prices (sponsored by Merrill Lynch, Pierce, Fenner & Smith Inc.), took over three years and more than $200,000 to complete.

The data, drawn from millions of separate computations, is available in a chart containing 132 entries showing the rate of return for the entire stretch between January 30, 1926, and December 30, 1960, and for 21 shorter time periods within that span. The information was recorded on seven reels of magnetic tape fed into a large scale computer at the university.

About half of the finances for the project came from the National Science Foundation, the Ford Foundation, and the University of Chicago.

Book Reviews

COBOL, A Self-Instructional Manual, by James A. Saxon—Prentice-Hall, Inc., Englewood Cliffs, N.J., $6—Thirty-four lessons pertaining to the language of COBOL are written in a self-explanatory style for the reader with a basic knowledge of computers. Quizzes and a final exam are included in the text to test the student's understanding and comprehension of the course.

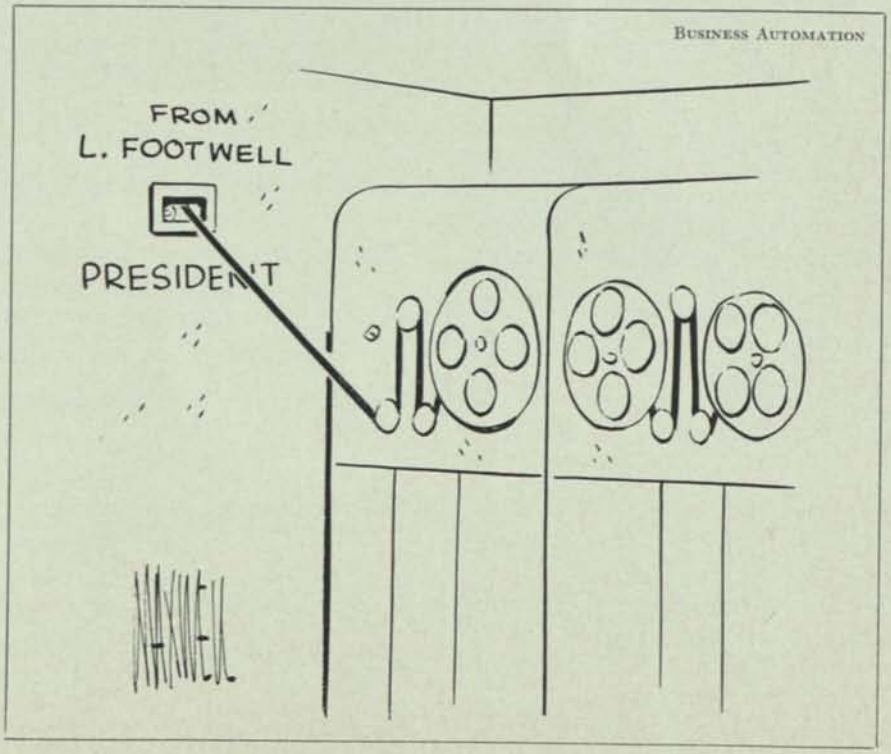
Unified Operations Management: A Practical Approach to the Total Systems Concept by Arnold O. Putnam, E. Robert Barlow and Gabriel N. Stilian—McGraw-Hill Book Co., 330 W. 42nd St., New York, $9.50—This book presents a non-technical discussion of the concepts and techniques involved in this tool for corporate management. It discusses the philosophy of business known as Unified Operations Management which takes in the company as a whole and considers the impact of decisions in all functions of the company upon over-all profits. Each of the authors is considered an expert in this field.

Methods of Information Handling by Charles P. Bourne—John Wiley & Sons, Inc., 605 Third Ave., New York, $12.95— This book illustrates the tools, equipment and methodology which might be applied to the problems of information processing, storage and retrieval. It starts with the basics of file organization and moves to methods of coding, notation and machine-language representation. Afterwards, it goes into the discussion of more complex techniques such as computer systems and microfilm and micro-image equipment.

Electronic News Financial Fact Book & Directory 1963—Fairchild Publications, Inc., New York, $35—This 322-page index to over 700 electronic companies includes parent companies, divisions, subsidiaries and affiliated organizations. It is arranged alphabetically and is cross-indexed. There also are several graphs and a concise summary of the history of the electronics industry from 1950 to 1962.

A Programmed Introduction to Program Evaluation, and Review Technique (PERT) by Federal Electric Corp.—John Wiley & Sons, Inc. 605 Third Ave., New York, $3.95—This book supplies an interesting and unique method for learning the concepts involved in PERT—a planning method widely applied by the government and other management groups for scheduling and cost controlling of large and small projects. With questions on each page regarding each new principle, the book effectively encourages an individual to learn this new method and thereby helps him make sound and logical decisions.

The Dartnell International Trade Handbook, edited by Leslie L. Lewis—The Dartnell Corp., 4660 Ravenswood Ave., Chicago, $17.50—Published in cooperation with the American Institute for Foreign Trade, this handbook serves as a guide to a company with an interest in performing its business overseas. In more than 1,300 pages, the book discusses such problems as how to handle legal problems; finding sales markets in other countries and how to develop them; and how to get representation abroad. The book contains a foreword by Luther H. Hodges.



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DATA SYSTEMS BOOKSHELF

ISA Transducer Compendium.
Emil J. Minnar, Editor
565 *pp. Plenum Press, Inc.* $25.00

This large and useful work, undertaken two years ago by the Instrument Society of America, will be welcomed by every engineer who has ever been plagued by the difficulty of finding—or even imagining—sensing elements for the evermore complicated and minute measurements demanded by the age of automation and the exploration and exploitation of space.

Briefly, the volume is a list of every transducer known—if not to mankind, at least to the ISA—together with complete specifications on each. Or rather, it is a list of 556 manufacturers' **series** of sensing elements (some 2,886), each comprising anywhere from one or two to hundreds of distinguishable units. The editors do not pretend that the list is complete. In the two years spent in collecting data, they found that both birth and mortality rates among transducer manufacturing companies (many of them small operations) were exceedingly high. They estimate that at any given moment, perhaps 1500 companies are engaged, in whole or in part, in transducer production.

The list is divided into 14 chapters, each devoted to a different variable, as follows: motion, dimension, pressure, force and torque, flow of materials, sound, electric and magnetic quantities, temperature, chemical composition, time and frequency, electromagnetic radiation, nuclear and penetrating radiation, humidity, and level. Each chapter is introduced by a short summary, by an expert in the field, of the state of the art in that field. Many of the chapters are broken up into sub lists; e. g., Electrical and Magnetic Quantities into: current, current and voltage, voltage, power, power and VAR, frequency, resistance, etc.

The lists are arranged on facing pages (each 13" wide by 9½" deep) across the tops of which range the column headings (some 20 odd) for the relevant items of information: manufacturer, model series designation, variable to be measured (measurand), ranges, operating principle, output characteristics, sensitivity, resolution, life, calibration, environmental ranges, dimensions, etc., etc.

The data was collected by means of a series (one for each of the 14 general categories) of very carefully prepared questionnaires designed to obtain the most complete and precise information on each of the transducers to be listed. Each questionnaire is reprinted at the beginning of its chapter.

The volume concludes with a general summary on the subject by Prof. Peter L. Balise of the University of Washington, after which come appendices listing manufacturers alphabetically and by product and a list of their addresses. The inside covers and fly leaves list the abbreviations used.

The industry should be grateful for this painstaking compilation, and the editors suggest that this appreciation can best be demonstrated by the fullest use of the **Compendium** and through **feedback from its users.**

Methods of Information Handling.
By Charles P. Bourne
241 *pp. John Wiley & Sons, Inc.* $12.95

Second in a series of works on "Information Sciences," this book addresses itself to problems of information processing — indexing, storage, and retrieval—and comprehensively summarizes the methodologies and equipment available for this processing.

Beginning with the classic library problems of cataloging and filing, the author continues through methods of classification and indexing (including types of abbreviation), coding systems, and machine language techniques—punched cards and paper and magnetic tapes. Two chapters are devoted to the coding, punching, and sorting of punched cards and to the applications in which the cards may be used. A chapter on computers discusses programming, applications, file searching and retrieval, and representative costs; another does the same thing for tape equipment. A final chapter discusses microfilm and image handling equipment and the uses to which they may be put. The working electronics of these systems does not come within the author's purview, which is confined to the methodological problems they may assist in solving.

The book is liberally illustrated with photographs of equipment, reproductions of various types of indexes and catalogs and of printed, punched, and notched cards. Each chapter is documented at length, and an index of authors and a subject index are provided at the end. Mr. Bourne is a staff member of the Stanford Research Institute at Menlo Park, California, and a lecturer at the University of California School of Librarianship. He holds degrees for work in digital computer design, data processing, and time and motion studies.

Optimum Design of Digital Control Systems.
(Vol. 10 of Mathematics in Science and Engineering).
By Julius T. Tou
188 *pp. Academic Press Inc.* $7.00

This book applies dynamic programming techniques to the optimum design of digital control systems. Dynamic programming is a simple but powerful concept that has proved useful in solving multi-stage decision problems in a number of branches of economics, management, and engineering.

Since optimum digital control problems may be viewed as multi-stage decision processes, the application of dynamic programming seems a natural solution. After two introductory chapters, the book takes up optimum control of linear, multivariable, time-varying, and random parameter systems. Quadratic performance criteria and the problems of estimation and optimization are covered quite completely.

A final section of two chapters deals with the design of optimum discrete systems with quantized control signals, and reviews variational calculus, maximum principle, and dynamic programming. The book is a valuable reference work for computer and control engineers and may also be used as a supplementary textbook. The author is a member of the Computer Sciences Laboratory at the Technical Institute of Northwestern University, and has based his work on researches carried out by himself and two colleagues, Dr. John B. Lewis and Dr. Peter D. Joseph.

Servomechanism Fundamentals.
By Ben Zeines
254 *pp. Paperback. McGraw-Hill Book Company, Inc.* $2.75

Intended for students in technical courses and trainees in industrial and military programs, this book covers the fundamentals of servo and data transmission systems. The subject is presented in clear, straight-forward

(*continued on page* 16)

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August 10th, 1966

Mr. Charles P. Bourne -314 B
Programming Services Inc.
493 Middlefield Road
Palo Alto, California

Dear Charlie:

AIP publishes a series of glossaries which are used mainly by science writers. The Glossary of Terms used in Scientific Documentation is due to be revised, and I suggested that an acronym/abbreviation list should be added. It seemed like a useful addition at this time, when I suspect people invent the acronym before they invent the system, or establish the committee! Also, I remember how hard I had to search for some of these when I was working on the ADI index.

A short acronym/abbreviation list is therefore being added to the Glossary. The ADI index and the list in your book were used as major sources, and appropriate acknowledgment has been made in the Glossary.

Many thanks for your help at the Gordon Conference. I was very grateful for the chance to pick your brains. We shall now see if the improved quality of the first part of the index is noticed.

With regards,

Yours sincerely,

Stella

Stella Keenan
Research Associate
Information Analysis and
Retrieval Program

SK:dew

Enclosure

UNIVERSITY OF PITTSBURGH
PITTSBURGH 13, PENNSYLVANIA

November 21, 1963

Mr. Charles P. Bourne
Stanford Research Institute
Menlo Park, California

Dear Charlie:

Your new book has just arrived, and I've gone through it in some detail.

You have done a good and useful job; the book is an important contribution to the literature.

Congratulations! Best regards,

Sincerely,

Allen Kent, Director
Knowledge Availability Systems Center

For chemical engineers

TECHNIQUES OF PROCESS CONTROL. *Page S. Buckley. Published by John Wiley & Sons, New York. 303 pp., $15.00*

This highly mathematical treatment, intended for the chemical engineer, requires a familiarity with differential equations, Laplace transformations, and frequency response methods. Substantial groundwork in modern statistics, machine computation, optimization theory, and root locus methods would also be helpful.

The author deals perceptively with perturbation techniques, compensation, distributed parameter systems, pulsation damping, and the dynamics of mixing and blending, and heat transfer. The text includes excellent frequency response plots.

For those sufficiently prepared, the generous presentation of fundamental theory is adequate. Of particular value is the detailed attention to practical and familiar situations in process control, of which the author has an admirable grasp.

The style is lucid, diagrams are excellent, and terms clearly defined.

D. S. Davis
University of Alabama

Useful flood

METHODS OF INFORMATION HANDLING. *Charles P. Bourne. Published by John Wiley & Sons, Inc., New York. 241 pp., $12.95*

An enormous amount of data and statistics previously available only in scattered references is contained in Bourne's thorough study of information handling. It discusses how information should be organized and coded, the kinds of equipment available to do the job, and the kinds of systems presently in use–he has done a tremendous service by including typical equipment, material, and process costs.

The only fault is the author's failure to be critical: so much material is presented that this reviewer was unable to evaluate it.

This is one of the books in the Wiley Science Information Series. It is to be hoped that the others will be written for the less specialized–but interested–reader.

Leslie R. Axelrod
Powers Regulator Co.

WHAT'S AVAILABLE IN REPRINTS

These reprints have been prepared to make available important reference-type editorial material to CONTROL ENGINEERING readers in convenient filable form. Some reprints are individual articles, while others are "packages"—several articles published over a period of time that logically supplement one another in the coverage of a specific phase of the control field. Any reprint can be obtained at the nominal cost listed below by filling in the order form and sending it, together with remittance, to Reprint Dept. Quantity rates will be quoted on request.

926—Incremental and Miniature Magnetic Tape Recorders, 16 pp. incremental recorders step the tape, moving it on receipt of a bit of information. Data can then be read continuously. Two articles discuss available stepping recorders and where they apply, and stepping techniques for computer compatible tapes. A third article describes applications of miniature continuous recorders. 50 cents.

925—Control Designer's Guide to Solid State Photosensors, 16 pp. Light-sensitive detectors are useful and are becoming more essential in control technology. Solid state photosensors feature small size, low cost, and low power consumption. Here's a roundup of the various kinds on the market now, including photoresistors, photodiodes, phototransistors, photoswitches, and photogenerative cells. 50 cents.

924—Fluid Amplifiers as Control Components, 44 pp. Thorough treatment of both discrete and continuous no-moving-parts fluid amplifier components and control systems. Covers basic devices and their theory, system design procedures, available fluid elements, and many applications in control systems. 75 cents.

923—Stable Platforms and Inertial Components, 68 pp. Compilation of 15 closely related and complementary articles from CONTROL ENGINEERING. It starts with the design and analysis of stable platform systems, continues by

(*Continued on page 137*)

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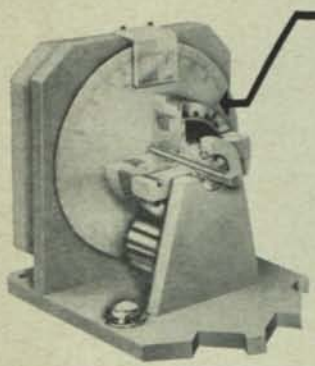

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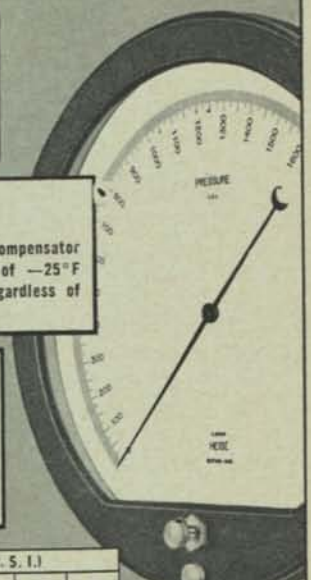

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NEWS NOTES (cont.)

tee of the Division of Chemical Literature at the Spring ACS meeting in Detroit. Comments and suggestions from Division members may be sent to Chairman Harriet Geer prior to the meeting.

Meanwhile, Staff Contributors should continue to send abstracts of material in their assigned journals to Mary B. O'Hara.

The Society of Technical Writers and Publishers will hold its annual meeting at the New York Hilton from May 19 to May 22, 1965. The theme of the convention is "New Vistas in Communication."

Dean Boelter of UCLA will moderate a panel discussion on "Preparing Today's Technical Writers for Tomorrow." Brig. Gen. A. T. Stanwix-Hay will introduce a technicals manual panel with a talk on integrated technical logistic data and the related DOD program.

Another panel will cover new equipment and techniques, including the use of an automatic editing machine. Other panels will be concerned with technical advertising, technical report writing, and medical writing.

Details can be obtained from Mrs. Norma Kennedy, STWP, P. O. Box 3706, Beechwold Station, Columbus 14, Ohio.

The Graduate School of Library Science will sponsor a one-day Government Publications Conference at Drexel Institute of Technology, Philadelphia, on May 13, 1965. The Conference will consider reference use, acquisition, and organization of all types of documents from municipal, state, federal, and international sources.

The closing date for registration is May 1. Miss Carole Butcher, Graduate School of Library Science, Drexel Institute of Technology, 33rd and Chestnut St., Philadelphia, is in charge of registration.

BOOK REVIEWS

METHODS OF INFORMATION HANDLING. Charles P. Bourne, John Wiley & Sons, New York, 1963. 241 pages. $12.95.*

This book is a first-rate coverage of the basic principles and hardware involved in automated and semi-automated data processing methodology. The author has a straight-forward and lucid way of describing the various aspects of the subject, and very adequately covers information on topics and areas that many, or most of us, have had to develop or learn through experience. Experience may be the best teacher, but Bourne gets the same lesson across with considerably less expense and wear and tear on the would-be user of automatic systems.

Close your eyes. Imagine you're creating a weekly current scientific awareness service to alert you to only those particular articles you are interested in. You think to yourself this is a good idea, but not possible.

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In the first chapter, Bourne succinctly states the nature of the problems besetting libraries and librarians with regard to storage and retrieval of all types of information. He closes the chapter with a definition of the purposes of the book -- to describe hardware and techniques used in information handling.

There are a number of worthwhile aspects of Bourne's book that bear discussion; his cost analyses, for instance, reveal the fact that computerized retrieval is quite expensive unless it is done on a multiple-search basis with a number of inquiries being combined to share the expense engendered in machine operations. Bourne's analyses along this line have already caused this reviewer to drastically review and revise his own operations in data retrievals. Some computer organizations may have rather cleverly covered up the cost angles by simply not revealing them until the user is committed to a program.

Chapters deal with classification and indexing, coding, machine-languages, manual card systems, on to computerized systems and machines, including various microfilm and visual retrieval methods. Two indexes and a set of excellent illustrations enhance the usefullness and clarity of the text. Each chapter is well-authenticated by a thorough listing of "additional references," and throughout the book the text is well footnoted.

Bourne discusses at length some of the very serious limitations to electronic data processing technology as it applies to information retrieval and the careful reader will undoubtedly begin to question the advisability of using this new technology in specific applications. This is as it should be, as the glamour of computers has led to many errors of concept and of application. On the other hand, there are equally valid uses to which this technology can be put. Bourne gives one the necessary insight to make an intelligent beginning in choosing the specific type of technique or machinery for specific objectives.

Since this book was written, a number of new machines have appeared on the market -- to the extent that these machines have appeared, Bourne is out of date on details, but his central thesis remains timely and valuable, and this book will still be valuable ten to twenty years hence, although by that time his examples may seem archaic and unsophisticated. We can hope that the author can be prevailed upon to revise and update his chapters from time to time. James D. McLean, Jr., Director, McLean Paleontological Laboratory, Alexandria, Virginia.

CLARITY IN TECHNICAL WRITING. S. Katzoff, NASA SP-7010, U. S. Gov't Printing Office, Washington, D.C. 1964. iv + 25 pages. 15 cents.

Reviewers have been full of praise for this small pamphlet written -- not for publication -- by a NASA scientist-administrator to advise his younger colleagues. One reviewer compared it to the need for a 5 cent cigar -- for technical writers. E.H.C.

*Although this is a review of a book already more than a year old, we thought this enthusiastic review merited publication. E.H.C.

Data, Trans. Third Prague Confer. Inform Theory, Statistical Decision Functions, Random Processes, Prague, 1964, pp. 657-682/. The general results formulated in theorems 1 and 2 by Dnykin are encountered in various special situations in papers by many different authors. The author studies random quantities which acquire only a finite or enumerable set of values. The transition to random quantities with values in an arbitrary measurable space does not require new ideas and is a matter of simple engineering. On the other hand, the transition from random time series to random processes with continuous time is non-trivial and requires special analysis. The first section of the paper is devoted to partially observed random time series with a win (models). The following topics are dealt with: 1) trial with partially observed outcome; 2) partially observed random time series; 3) the state of the observer; 4) the win; 5) models; 6) estimates; 7) transformations of estimates (the operator L); excessive and harmonic estimates; 8) general model. The second section is devoted to controlled models. The following topics are covered: 1) strategies; 2) $\underline{n}$-strategies; 3) ϵ-optimal strategies; 4) controlled models with attenuating action; 5) sufficient subdivisions; 6) convexness of the value of an attenuating model. *

BOOK REVIEW OF "METHODS OF INFORMATION HANDLING" [V.P. Smiriagin, A. B. Smirnov] Zhurnal Vychislitel'noi Matem. i Matem. Fiz. 5: 391-92, No. 2, March-April 1965
[7A8 · 5 · 12]

A brief review of "Methods of Information Handling" By Ch. P. Bourne (London, John Wiley and Sons, Inc., 1964, 241 pp.) is given. The book is one of a series on information systems. The present volume studies problems of storing, coding, and choosing text and graphical information in large information systems. *

ON THE NOISE STABILITY OF PHASE TELEGRAPHY [P. A. Gerastovskii] Elektrosviaz' No. 3: 13-22, March 1965
[7A8 · 6 · 45]

It is demonstrated that for radio communication through a medium with varying parameters and a sufficiently high signal-to-noise ratio the minimum probability of errors for phase telegraphy is assured when the following conditions are satisfied: a) a reference voltage restored from the received signal is used for phase detection purposes, and 2) this voltage must be practically inertialess relative to the effect of the medium on the phase of the signal. The noise in the reference voltage channel is considered. The reception of binary phase telegraphy signals for ideal utilization of a priori information on the signal and for the presence of a "synchronous heterodyne" tracking system is studied. The results are analyzed and compared. *

EFFECT OF NOISE CORRELATION ON THE NOISE STABILITY OF COHERENT PHASE TELEGRAPHY RECEPTION [V.V. Sokolov, M. I. Pelekhaty] Elektrosviaz' No. 3: 23-31, March 1965
[7A8 · 7 · 41]

It is demonstrated that the potential (ideal) noise stability can be achieved for phase telegraphy in communication channels with varying parameters by increasing the noise correlation at the inputs of the synchronous detector. Relationships are derived which characterize the noise stability of the coherent reception method under different conditions. The relationship between the noise correlation coefficient and the receiver parameters is demonstrated.

--- For coherent reception we usually strive to narrow the pass band of the reference channel in order to reduce the effect of noise on that channel; this in turn increases the noise stability of the reception. However, the system for forming the reference signal becomes more inertial, and the correlation coefficient for the signals decreases; this degrades the reception quality when fading is present.

In this paper we study a different possibility of raising the noise stability of phase telegraphy for coherent reception; the technique is based on increasing the noise correlation at the synchronous detector inputs by equalizing the transfer coefficients of the received and reference signal channels. It is obvious that in this case the correlation coefficients of the signals will tend toward unity.

Figure 1 shows a vector diagram of the signals and noise which act in a synchronous detector for single phase telegraphy.

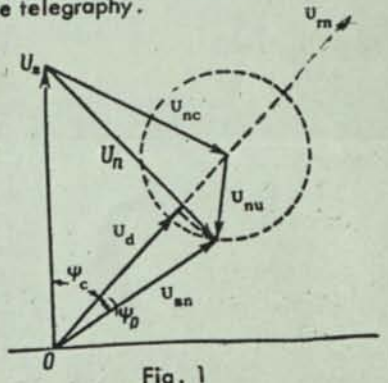

Fig. 1

from: Automation Express vol. 7 no 8 (1965)

ICC Bulletin - Oct. 1964
(International Computation Centre)

Computer analysis producing bigger and better beef cattle.

The science of beef cattle breeding is being further refined through use of a computer to compare individual animals as well as the performance of each sire and dam in breeding.

At National Cash Register's Denver data processing center an NCR 315 computer system is employed by Performance Registry International (PRI) to develop detailed hereditary records. Cattle producers who use the PRI service report a close connection between animals with high rates of calf production, rapid weight gain and quality of meat.

The computer at the center analyzes 14 hereditary traits which can be controlled by selective breeding for each animal, and prepares permanent breeding records for the year for each herd studied. By selecting breeding animals with superior traits, genetic improvements are uniformly carried to all succeeding generations, increasing the quality of the beef and the value of each animal. Also, breeders with computer records are assured that sires have had their performance throughly tested and evaluated.

Book Reviews

Analyses

BOURNE, C. P.: *Methods of Information Handling*. Wiley, London, New York. Sydney, 1964, pp. XIV + 241, 100s.

This book is a member of a new series of books on the information sciences, of which « Information Storage and Retrieval » by Becker and Hayes has so far appeared. It is a handsome production in the large format used in the past for the Cambridge University Press' more important productions. It is stated by the author to be a book that is meant as an aid and reference for those people who are interested in the design of information systems and as a general principle attempts to provide such things as cost estimates and cautions as to the limitations on applicability of various systems.

The book starts with an account of the problem which is to be solved, that is to say an analysis of current world paper production and of some of the mechanization problems of conventional libraries. This general account leads to a discussion of one of the anethemas of bibliophiles, that of the purging of information, no longer of conceivable interest, from files or libraries. These general matters being concluded, the author goes on to give a systematic account of the classification and indexing of information for all purposes, but especially for the purposes of retrieval. Some samples are given of current indexes of one sort and another, and there is a very extensive bibliography of literature in the field.

→

The third chapter in the book is concerned with the coding of information for retrieval. It is prefaced by a number of very useful statistical tables and diagrams which provide information about such things as letter usage and word length distribution. After the statistical preliminaries are over, the author describes, systematically, methods of abbreviating English words and names, matters of which are of considerable importance when any practical system is to be implemented. All of the best known methods of coding are discussed in detail and accounts are given of such things as prime numbers and superimposed coding.

So much then for the theoretical preliminaries of the book. In the fourth chapter there is a comprehensive account of the various forms of machine language media. That is to say, media upon which records can be made so as to be interpretable by computing machines of the present time. Such things as paper tape, punch cards, and magnetic tape are discussed here. Chapter five discusses, in detail, manual systems for handling punch cards containing data which will be invaluable as a record of equipment which is available. Too often, a prospective user of a punch card system is aware only of one or at most two, makers of equipment in this field, and it will do much to popularize worthy, but relatively unknown, equipment to find it described in such detail in a readily available work such as the present one.

Classical punched card systems form the subject of the sixth chapter, and as might be expected with so venerable an area, there is little new. Perhaps the most interesting things are the accounts of the COMAC manufactured by the Benson-Lehner Corporation, and the ILIAS or inter-related logic accumulating scanner designed by the office of Research and Development of the United States Patent Office, for chemical patent searching. This particular chapter ends with a comprehensive account of a number of applications of classical punch card systems in the information sciences. The seventh chapter describes fully automatic computer systems. It is perhaps unfortunate that this chapter gives a very biased view of the available equipment in the computer field. The principal emphasis being on IBM equipment and on the General Electric Model 225 machine. These defficiencies are to some extent compensated by the very useful table which occurs on page 175 in which a number of computing machines are tabulated and an indication of their cost is given. The diagram would, however, be considerably more useful had the costs and machine times been accompanied by some indications of their relative virtues.

The eighth chapter describes some other equipment which has been designed especially for information science work. There are for example, descriptions of such things as the CCC Index Searcher, the General Electric G.I.250 Information Searching Selector designed for Western Reserve University, and a valedictory account of the W.R.U. Searching Selector complete with a photograph of this early and extremely ingenious device.

The last chapter in the book discusses in great detail microfilm and other information storage devices in which a direct image of the stored material is retained. As far as the reviewer can judge this is a very complete account, lucidly written describing all of the latest available equipment.

A useful account of the prices of different sorts of image storage systems is given on page 224. Here, though, as at earlier points, the author fails to achieve perfection by omitting to reduce or in any way give in parallel, the costs of the various systems applied to the same job. These figures, which are admittedly computable from data given within the body of the chapter, would nevertheless have been very useful to those people who will use the book as a reference work and may wish to obtain relevant cost figures from time to time without refreshing their memory as to the detailed contents of the various chapters.

The book ends with the usual name and subject indices and also with a list of achronyms and abbreviations. There are so many organizations in information retrieval in the present day, that even those working in the field find it difficult on occasion to remember what the various initials stand for. The list will be a very valuable *aide-memoire*. The bibliographical sections at the end of each chapter are excellent and give the reader all the information which he needs to pursue various topics in greater depth.

It might perhaps as a general criticism be said of this book, as of the work of Becker and Hayes in the same series, that the treatment itself is at the descriptive rather than at the explanatory level. It will be quite suitable for the librarian or administrator of a business system. It does, however, leave the scientific reader with a sense of diappointment, and he must go elsewhere to obtain a detailed understanding of the various matters which are discussed.

A. D. Booth

Gutenmakher, L. I.: *Electronic Information-Logic Machines*. (Translated from Russian by R. Kent and edited by A. Kent) Wiley, London, New York 1963, pp. x + 170, 60s.

The awkward title labels, in a sense appropriately, a translation which is often clumsy (one example may suffice: 'intelligence tests' is rendered here as 'intellectual tests'). Probably also the original text is not always perspicous (witness such phrases as: 'These salts include such widely known materials as barium titanate, triglycinesulfatahexahydrate, etc.).

The editor says in his preface that workers in the information-retrieval and computer field will find the book useful to evaluate the Russian effort. The book contains in fact a description of a special purpose computer for information retrieval developed at the Laboratory of Electromodelling of the U.S.S.R. Academy of Science.

The book is divided into four chapters: Fundamental concepts; Machine memory; Address systems of the machine memory; Transfer of information in the machine; Elements of the decision device of information machines; Processing of information (with a section on the processing of chemical literature). [*Note*: one entry is missing in the list of contents]. There is a short bibliography with a dozen pertinent Russian references and also Author's and subject indices.

G. Capriz

July 1964

in this book will be providing useful library services. Still, at least passing reference to the user and what we know of his information requirements, use of literature and libraries, and the differences between his and a librarian's approach to literature would serve well where this book's straightforward descriptive approach fails to provide a clue as to which operation needs to be introduced when, and when departures from text would be useful.

The book's great virtue is that it quickly provides the reader with enough information to establish and operate a specialized scientific library and provides him with an excellent list of readings for more background and details. The citations, whether to readings or to reference books, are quite current. In relatively few cases could additional or more appropiate references have been provided. (The citation to Henderson's original article on "cubooks," or to the use of the cubook formula in *Time Saver Standards* would be helpful in understanding this space-planning device mentioned in chapter iv.) Details are sometimes given where a generalization would have sufficed. (It is stated that in routing periodicals the issues are to be kept by users no longer than *three days*. What dictates this period of time? Why not "for a brief period, perhaps up to three days, but no longer than is required to note contents and scan the most pertinent articles"?)

The authors should be sharply criticized for their frequent citations of personal communications. Since so much reliance must be placed on further reading, these personal communications are useless. The authors need not have documented every example; many details obviously stemming from the authors' experiences are given without citations. In several such cases adequate examples are readily available in the open literature. For instance, the authors describe a projected conversion from a conventional to a punched-card indexing procedure in an industrial library, with information taken from a personal communication. Dozens of equally well-described examples are available in the published NSF surveys of non-conventional indexing systems in current use.

The over-all judgement, however, must be that this is an excellent manual for a small-library planner. The resulting operation will conform to standards based on sound principles; the rest is a matter of the creativity and vitality of the special librarian—qualities which must prevail for successful service regardless of training or guidance.

RUSSELL SHANK

University of California
Berkeley

Methods of Information Handling. By CHARLES P. BOURNE. ("Information Sciences Series.") New York: John Wiley & Sons, 1963. Pp. xiv+241. $12.95.

As the second volume in a series, this work maintains the high standards set by Becker and Hayes in Volume I, *Introduction to Information Storage and Retrieval: Tools, Elements, Theories*. Volume II provides a comprehensive survey of the design of information systems, applicable not only to mechanized retrieval but also to any system in which large files are used for retrieval purposes.

The organization of content is admittedly "somewhat arbitrary." Some chapters overlap, but there is a logical progression from problem definition to solution and implementation. The file problem is defined in terms of file characteristics, with respect not only to libraries but also to industry and government; not only for retrieving books, periodicals and reports but also for retrieving engineering drawings, photographs, and mailing lists. The importance of file organization, coding theory, and data representation is readily appreciated with fully one-third of the volume devoted to these topics. The use of controlled as opposed to uncontrolled subject-indexing vocabulary and the use of derived codes as opposed to "English" representation are also covered, with the advantages and disadvantages of each indicated. Particularly useful is the design of coding and/or abbreviation systems based on letter and bigram frequency statistics. Practical operating systems and their file and implementation characteristics are discussed in order of increasing complexity, from manual and punched card systems through the more sophisticated systems utilizing computers, paper tape, and micro-images. The chapter on "Manual Card Systems" is somewhat repetitious of Casey and Perry's classical *Punched Cards*, but the discussion summarizes general applications rather than specific uses of equipment. Some prior knowl-

edge of computers or microimage techniques is assumed of the reader.

No punches are pulled in describing the limitations and expense of information-handling equipment. Although particular operating systems are used to illustrate such equipment, the initial processing, and maintenance costs that are given are generally representative. While some of the cost figures are already out of date, they provide a reasonable basis for cost analysis. It is left for the system designer to weight the economic advantages or disadvantages, gained by use of cards and other equipment. Unfortunately Bourne does not indicate the cost of conversion from, say, a manual card system to a punched-card system or from a punched-card system to a computerized system, but this may be derived with a little effort from the figures given.

The 8½ × 11 inch format is used to full advantage for visual communication through graphs, illustrations, and many examples. The introductory chapter on "The Nature of the Problem," however, is not so clearly presented as the following chapters. The "dot" distribution graphs of the introduction contrast unfavorably with the simpler and more distinct bar and distribution graphs used in succeeding pages. Hundreds of convenient footnote citations to source literature are supplemented by additional references at the end of each chapter. A list of acronyms and abbreviations and an excellent detailed subject index set off this attractive and useful volume.

It is difficult, for purposes of reference, to strike a balance between amount of coverage and detail. Bourne is successful in providing "an illustration of the tools, equipment, and methodology that might be applied" to the problems of information-processing. No one solution or method is emphasized as being better than any other. On the contrary, the pitfall of systems comparison is avoided entirely. The circle of user requirements affecting file characteristics and of file characteristics affecting file use is discussed in connection with file purging and auxiliary file generation, parts of the basic design problem. Similarly Bourne does not take sides in the controversy inherent in choice of controlled or uncontrolled indexing. No attempt is made to encourage or discourage mechanization. These decisions are appropriately left to management. Emphasis is placed on file specifications—what use is to be made of the file and what results constitute satisfactory retrieval. Emphasis is also placed on what the equipment can or cannot do to a file. The librarian, systems designer, and manager must work out the cost/performance ratio to obtain maximum returns for minimum investment. For the librarian, here is a ready reference to available equipment and systems. For the information specialist, here is a survey of applications and design considerations. For the student, here is a guide into the fascinating field of file organization and manipulation.

WILLIAM KURMEY

International Business Machines
Poughkeepsie, New York

Biographical Directory of Law Libraries in the United States and Canada. By AMERICAN ASSOCIATION OF LAW LIBRARIES. St. Paul, Minn.: West Publishing Co., 1964. Pp. 57. Printed for private distribution.

Biographical dictionaries of librarians are rare—a strange commentary on a profession that so often bemoans the lack of reference aids in other subjects. Compiling a biographical dictionary, of course, must overcome near-Herculean obstacles, including the lack of adequate funds, the necessity of using an enormous amount of voluntary labor, and the difficulty of securing responsive co-operation of the biographees. In addition, as Robert L. Collison, a British librarian, suggested in 1954, the difficulties have been even more deeply rooted "in that curious modesty with which we announce half-apologetically to any member of the outside world that we are librarians."[1] Whatever the cause, it is a fact that there are yet (1) no authoritative directory of important librarians of the past, (2) only a very few book-length biographies on such librarians, and (3) almost no biographical dictionaries dealing with special areas of librarianship.

An exception to this third group is the new biographical directory of law librarians. Far from being fettered by a "curious modesty," this dictionary may well reflect a certain pride among law librarians that harks back even to 1906 when they established their own association, announcing that they were

[1] Thomas Landau (ed.), *Who's Who in Librarianship* (Cambridge: Bowes & Bowes, 1954), p. iii.

Becker, J. and R. M. Hayes. Information storage and retrieval: tools, elements, theories. New York: Wiley, 1963. 460 pp. $ 11.70. (Information science series, v.1)

Bourne, C. P. Methods of information handling. New York: Wiley, 1963, 255 pp. $ 12.95. (Information science series, v.2)

The Information Science Series of which these are the first two volumes "is designed to include books that are concerned with various aspects of communicating, utilising and storing digital and graphic information" and "the aim . . . is to bring together the interdisciplinary core of knowledge that is apt to form its foundation". During the past ten years there has been a headlong rush into a machine optimism tempered only slightly by a growing realisation that it is indexing language and classification systems - "software" rather than "hardware" - that will ultimately determine real progress. Trailing along in the wake of rapid developments in computer technology we lack a coherent body of theory aggainst which mechanisation can be evaluated. Becker and Hayes rightly point out that "Unfortunately, most of the information concerning the present-day activities of electronic machines in the information field is highly technical and in some cases so evidently promotional that even those familiar with the work and intellectually sympathetic to it find it difficult to distinguish fact from fiction". Therefore it is most welcome that a librarian with an engineering education, a mathematician with equipment experience and a systems engineer have tried to present this medley of technologies and disciplines in the form of the two books under review.

Becker and Hayes

The first section deals with the tools: the various systems which have been proposed and developed and the main pieces of equipment which are in use or available on the market. It includes two brief chapters on the traditional systems of classification and cataloguing in libraries and the newer techniques of indexing. This is followed by a fairly detailed description of machine systems, based on computers on the one hand and automated files for microfilm storage on the other hand.

The next section analyses user needs, the organisation of the units of documentation (vocabulary, coding, format etc.) and the parameters of the equipment in terms of input and output efficiency. The information on costing is very useful and revealing. Thus the authors point out that "It has become a rule of thumb in the computing business that system design and programming costs over the estimated life of an installation will very nearly equal the costs in equipment rental during that same period". In other words mechanisation needs more highly trained staff not less than conventional methods do, admittedly with an increased potential of achievement in certain respects.

The final section tries to provide a mathematical basis, models on which information systems can be designed. This involves the elements of Boolean algebra, matrix and statistical theory.

Bourne

This book is a straightforward and well organised account of the tools, equipment and methodology of information processing, storage and retrieval. There are chapters dealing with classification and indexing, coding, machine-language representation, manual and punched cards, computers, paper tape and magnetic media, and finally microfilm and image handling devices.

Under classification the author points out that "The highly mechanized file systems need at least as good a file organization as the manual systems. Otherwise, the machine system may have the dubious distinction of making mistakes 1000 times faster than the manual system". In the chapter on coding, the indexing shorthand, there is perhaps too detailed a treatment of the statistical nature of English words and proper names. It might have been more profitable to elaborate the section on the criteria for the selection of indexing methods. However, the remaining chapters give an unusually good description of equipment including costs, wherever available, and copious references to the literature. In fact I know of no one place where so much useful and up-to-date information is collected together, particularly for the reader who is not a specialist in information processing.

These two textbooks are intended for instructional use at the university level and there certainly is a dearth of such literature. Nevertheless, the publishers in planning the Series should have ensured that there be less overlap and duplication in the first two volumes. From the point of view of training a new generation of documentalists and helping to orient the older practitioners a more historical and evaluative approach would be useful. That was attempted in the series on "The state of the library art" edited by Ralph R. Shaw. But of course the relevant volume on "Retrieval systems" (1961) is already out of date in some respects. Clearly the whole art is still too experimental and confused for any more definitive study to emerge. We must be grateful for these two books, which together with an earlier work on punched cards* provide texts from which we can now start to learn and to teach.

H. Coblans
(London)

National Academy of Sciences - National Research Council. The Metallurgical searching service of the American Society for Metals, Western Reserve University. A report by an ad hoc committee of the Office of Documentation, NAS - NRC. Washington, 1964 (Publication 1148).

This report presents the results of a detailed and critical appraisal of the operation and efficiency of one of the biggest and best known computer based systems for information retrieval. In 1944, the American Society for Metals commenced publishing its Review of Metal Literature in an effort to provide a control on the vast quantity of metallurgical publications. By the early 1950's, the Society had decided that the volume of literature justified the use of machine assistance, and supported an experimental mechanized pilot project based at Western Reserve University. Results of the early work were very encouraging and led the ASM to provide a service which is currently based on an input of 36,000 abstracts per year. A great deal has been written about the service and its methods of operation, but this report summarizes a detailed investigation into just how good the service is, and what its users think of it.

The National Science Foundation were considering a grant to Western Reserve University in 1959, for a test program to evaluate the information processing methods which had been developed, and the NAS - NRC were asked to form a committee to plan the test program. The Committee decided first that it needed some frame of reference for the evaluation of an IR system. Two exploratory studies were commissioned using operational research techniques. Whilst these studies were in preparation, an objective comparison was obtained by having parallel searches made on some typical questions handled by the service. These searches were made by the John Crerar Library, the Franklin Institute, the Department of Commerce Office of Technical Services, and also by an independent patent agent specializing in metallurgy. In addition, the Committee accepted an offer by Cyril Cleverdon to include the Service in the tests made by the ASLIB Cranfield Project team's work on evaluation of methods of information retrieval.

The operations research studies resulted in separate and complementary analysis procedures being devised to give a measure of effectiveness of any system. Mathematical performance simulation models were devised to establish cost and time criteria, and both studies stressed the need for objective measures of effectiveness. The problem of degree of relevance is also stressed later by the results of the parallel searches. Typical users of the Service were also asked to give their ratings of the ability of the service to answer their questions. Generally, it appears that two-thirds of the users were satisfied with their information. The parallel searches, however, frequently produced many more possible references, and the number of documents retrieved by both searches was surprisingly small. On one current awareness search, 60 do-

*Casey, R. S., Perry, J. W., Berry, M. M., and Kent, A. Punched cards: their application to science and industry, 2nd ed. New York, Reinhold, 1958.

REVUE INTERNATIONALE DE LA DOCUMENTATION

FEDERATION INTERNATIONALE DE DOCUMENTATION (FID)

With the compliments of

The Editor
H. Coblans
c/o ASLIB
3 Belgrave Square
LONDON, S. W. 1
United Kingdom

Your ref. Your letter of Our ref. London,

THE AMERICAN ARCHIVIST

Vol. ___ : ___ OCT. 1964).

use of a microscope is considered necessary, although some blemishes are apparent to the unaided eye. Adequate lighting, of course, is essential for proper examination of the film; but some blemishes are more readily apparent when a filter is used. The handbook contains photomicrographs to illustrate the six types of blemishes in color; these will aid the reader materially in sure, instant recognition of the blemishes. Other photographs used in the handbook depict graphically the method of handling film in order to assure maximum success in detecting the incidence of blemishes and their severity.

Once the causes of the blemishes and suitable corrective action have been determined, the problem will cease to be of appreciable significance. Detection and classification of blemishes will be greatly simplified by use of the information contained in the handbook, and appropriate preventive measures can be applied readily.

It is unfortunate that the causes of these blemishes and acceptable preventive measures have not yet been fully determined. But the search for a solution to any problem cannot begin until recognition and determination of the existence of the problem is established, as it is in this work. The author's suggestions for recording pertinent data relating to the film and its storage seem to indicate that the search for causes of blemishes and methods of prevention will be successfully concluded in the immediate future. The handbook should stimulate every archival agency responsible for microfilm to realize the necessity for inspection of stored film and the need to exercise every precaution to insure optimum standards of processing and storage.

DOROTHY K. TAYLOR

Division of State Archives and Public Records
Denver, Colorado

Methods of Information Handling, by Charles P. Bourne. (New York, 1963. xiv, 241 p., illus. $12.95.)

Here is a book of considerable reference value but with a misleading title. It does not cover methods of information handling in general, and it dismisses the two most common methods—conventional filing and library catalog systems—with a brief critique of their shortcomings. What the book does cover are the new methods known as information retrieval, particularly as they apply to document retrieval. New Methods of Document Handling would have been a more accurate title.

The value of the book is that it brings together in a concise and well-organized form information that otherwise is difficult to obtain. In its natural state this information lies fragmented in hundreds of articles and books produced apparently under the goad of publish or perish, written in semi-English, and devoted wholeheartedly to the particular at the expense of the general. Mr. Bourne has done a fine job of resurrecting some of these buried facts and marshaling them before us in good order.

The book contains sections on selecting indexing terms, coding indexing terms, representing the terms on punched cards and tape, manual notched-card

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systems, punched card and computer systems, paper tape and magnetic media equipment, and microfilm systems. Besides name and subject indexes, there is a very complete table of contents that is actually an outline of the book.

This work is recommended for any library or individual as a reference on information retrieval. It is particularly useful for those who may wish to have a few general works instead of many specialized ones.

THOMAS WILDS

Union Carbide Corporation

Records Management: A Modern Tool for Business, by Mary Claire Griffin. (Boston, 1964. xiv, 300 p.)

Until something better comes along this will be the standard text on records management in our business college courses on administrative services. It easily supersedes all existing one-volume, general treatment accounts.

Dr. Griffin was assistant professor of industrial management in the School of Industrial Management and Textile Science, Clemson College, at the time of the book's publication. The illustrations in the book show that she obtained much of her information from visits to industrial and government organizations and, surely, from extensive correspondence with records administrators.

The book devotes a chapter to controls over records creation and gives full exposition (five chapters) to records maintenance. Its coverage of records disposition (four chapters) will generally be found satisfactory. It concludes with chapters on microphotography, automated equipment, organizing a program, and a records program manual.

The strong point of the book is that it brings together data from hundreds of sources, thereby summarizing existing literature (although there is no bibliography). In giving short shrift to records creation it can be argued that this is simply what most records programs do, too.

The weakest point of the book is the noticeable fact (to the professional) that the author's knowledge is second hand. It was not obtained on the firing line. On page 175, for example, besides erroneously placing the Leahy Archives in Washington, D.C., there is a statement on charges of commercial records centers that could not have come from a practitioner. Or, beginning on page 179, the description of a records inventory does not read as if written by a person who has had to prepare one. Examples of this kind are fairly frequent.

EVERETT O. ALLDREDGE

Office of Records Management
National Archives and Records Service

Centre d'Études de Recherche Opérationnelle
Reçu le Mar. 4, 1965

BIBLIOGRAPHIE

Charles P. BOURNE, *Methods of Information Handling*. John Wiley and Sons, New York (1963). XIV + 241 pp., relié toile, 100/–.

Cet ouvrage est consacré à la description des systèmes de traitement de l'information, depuis la bibliothèque traditionnelle jusqu'aux techniques récentes de stockage, classement et utilisation d'information utilisées par exemple dans les grands complexes industriels ou publics.

Le but de l'auteur est résumé dans ces quelques lignes extraites de la préface : « This book provides an illustration of the tools, equipment, and methodology that might be applied to those problems. Wherever possible, the chapters are liberally sprinkled with cost estimates, practical word of caution, and references to supporting literature ».

L'ouvrage est divisé en neuf parties, suivant une progression assez logique, et comprend un chapitre introductif, trois chapitres consacrés à l'organisation et au codage, deux chapitres traitant des cartes : système manuel et cartes perforées, et trois chapitres décrivant les techniques modernes utilisant les ordinateurs électroniques, les cartes perforées et équipement magnétique, et les microfilms.

L'auteur signale lui-même quelques critiques que l'on pourrait formuler : « Because of the nature of some of the material in the book, such as the equipment descriptions, the reader should expect that some of this material will be out of date by the time that he reads it. Unfortunately it can never be any other way. In the same way, the book was not meant to be an encyclopedia. Consequently, there will be some errors of omission, but these are felt to be slight ».

L'ouvrage est abondamment illustré de graphiques et photos, et de reproductions de pages extraites d'index et catalogues. Les références sont nombreuses et le texte clair, est parsemé d'exemples bien choisis.

Ce livre, accessible à toute personne intéressée à ces problèmes, et sans formation préalable nécessaire, constitue une bonne introduction aux techniques de traitement de l'information.

G. LOUCHARD

CHARLES P. BOURNE: **Methods of information handling.** John Wiley, London 1963. 241 sid. Pris 100 s.

Fråsan om att kunna återvinna relevant information ur det som publicerats har alltid haft särskilt intresse för kvinnor. Kemin är ett av de områden som i retrospektiv har den bästa ordnade dokumentationen. Den ökade användningen av datamaskiner har medfört att personer med utbildning i systemanalys, simulering, operationsanalys och informationsteori i allt högre grad kommit att syssla med frågan om informationsåtervinning (information retrieval), vilka härrid anlagt ett annat synsätt än det lidigare traditionella (bibliotiksmässiga). Av ett flertal böcker som enbart under det senaste året framkommit eller dessa nya linjer, utgör den förelliggande av C. P. Bourne, en av de mest vasentliga.

Först. är forskningsinstitutet inom det omtalade Stanford Research Institute inom det område som man allmer betecknar som *artificial intelligence*. Som lärare vid Berkeley-universitetets bibliotekshögskola har han emellertid kommit i kontakt med de speciella problem som för information återvinning. Det föreliggande arbetet präglas av en systemanalytikers anfrappsätt. Bourne ser återvinningen av information medelst katalogar, register, index, descriptorlistor o. dyl. som ett sätt system, där klassificeringen utgör själva stymekanismen, vilken rent operationellt kan utformas med olika grad av manskilg insats. Bokens kap. 2 utgör därför ett mycket intressant bidrag till systematiseringen av klassificeringsstandet. Bourne visar efter vilka vägar utvecklingen har gått fram. Man får en presentation av den från *Chemical Titles* kända KWIC-indexeringen, olika nyckelords- och descriptorlistor m. m.

Som EDB-man är det emellertid naturligt för Bourne att uppehålla sig vid härdvarusidan. Överskådligt finns här samlat alla de mekaniska anordningar och datamaskinella hjälpmedel som för närvarande finns tillgängliga på marknaden eller i laboratorierna. Beskrivningarna omvaxlar med blockdiagram och eleganta illustrationer. Därmed är man inne på bokens svaghet. De intressanta, principiella partierna upplar mindre än hälften av boken, och dessa är av mer bestående karaktär. De tekniska beskrivningarna, som övervägor utryymmesmässigt, kommer emellertid att snabbt bli föråldrade genom utveckningen.

Boken är en utmärkt uppslagsbok. De detaljerade litteraturreferenserna till varje avsnitt och det utomordentliga register bidrar till det goda intrycket. Den är klart presenterad, slösande rikt illustrerad och innehåller många intressanta diagram. Ur kemisynpunkt kan sägas, att boken uppehåller sig utförligt vid de speciella problem som strukturformler och deras behandling i datamaskin utgör, t. ex. genom beskrivning av principerna för *Index Chemicus* och *Chemical-Biological Activities*.

Björn Tell
Bibliotekets
KTH, Stockholm

P. T. B. SHAFFER: **High-temperature materials: Materials index.** Plenum Press, New York 1963. 740 sid. Pris $ 22.50.

G. V. SAMSONOV: **High-temperature materials: Properties index.** Plenum Press, New York 1964. 418 sid. Pris $ 17.50.

Dessa två handböcker lämnar data avseende sammansättning, struktur, elektriska, mekaniska, optiska, termiska och kemiska egenskaper för 320 respektive 600 substanser tillhörande följande grupper: element, karbider, nitrider, borider, sulfider, fosfider, silicider och i den första även oxider. Den första är en amerikansk litteratursammanställning, där varje substans beskrivs för sig. Den andra är en översättning av ett ryskt arbete, där data i stället samlats i tabeller under respektive egenskap. Den senare innehåller även termodynamiska data, bl.a. tillståndsdiagram, något utförligare korrosionsdata samt en tabell över ämnenas användning. De bägge volymerna kompletterar varandra väl och är båda utmärkta i sitt slag.

Sten T. Lundin
Inst. f. kemisk teknologi
KTH, Stockholm

SVENSK KEMISK TIDSKRIFT
Rec'd. May 1965

Bourne, Charles P. *Methods of Information Handling*. New York: Wiley. 1963. Pp. 241. $12.95.

Information handling is a topic which covers a good deal of ground, from indexing techniques to computer characteristics to film densities. In this book Mr. Bourne covers a very large part of the waterfront, placing most of the emphasis on equipment and hardware characteristics. He discusses edge-notched cards, punched cards, aperture cards, microcards; sorters, collators, and tabulators; computers and tape searchers; and film readers and printers. Much of this is familiar territory to librarians who have kept their eyes and ears open during the last few years, but some of it is not, and Bourne has performed a very useful service in pulling together an immense amount of material and organizing it conveniently for use.

Bourne's method is predominantly descriptive. He presents the salient characteristics of a group of machines; he describes the varieties of apparatus available; he outlines many different types of applications to which the equipment has been put; and he offers representative cost data for the machines, and sometimes time and cost data on the operations. He is content to rest with description; only rarely does he offer critical comments or appraisals, but when he does he is generous and fair-minded.

Bourne has a tremendous grasp of the literature of the field, which his previous work has amply demonstrated. Again here his footnote references are voluminous and valuable as a bibliographical guide to this area. One can only lament that, in this field more than in most, the source literature tends to be embodied predominantly in technical reports which to many, for all practical purposes, are inaccessible. And that is one more reason why a compilation of this kind in book form is worth while.

DR. FRANK ROGERS
Librarian
University of Colorado Medical Center
Denver, Colorado

BULLETIN DE DOCUMENTATION CÉRAMIQUE

fonction des aléas que comporte celle-ci.

Il insiste sur l'importance des contacts intérieurs et extérieurs à tous les stades de la recherche.

102/19 578

Recd March 8, 1965

ANONYME

CHAIRE D'ENSEIGNEMENT LIÉE A L'INSTITUT POUR VERRE, CÉRAMIQUE ET LIANTS HYDRAULIQUES A L'UNIVERSITÉ TECHNIQUE DE BERLIN

37/A 113 - A 851

Tonind. Zg u. K. R. (5 mars 1964) 88 (4) 86, 1 p., All.
(Lehrstuhl mit Institut für Glas, Keramik und Bindemittel an der Technischen Universität Berlin)

En application des recommandations faites en 1960 par les autorités de l'enseignement scientifique, a été créé à la Faculté des Mines et de la Métallurgie de Berlin un Institut du Verre, de la Céramique et des Liants Hydrauliques qui est analogue aux Instituts déjà existants d'Aix-la-Chapelle et de la Bergakademie Clausthal. Ces recommandations rejoignent les efforts des industries du verre et de la céramique pour développer l'enseignement et la recherche. Le titulaire du nouvel Institut est le Dr Horst Scholze, précédemment collaborateur du professeur A. Dietzel au Max-Planck-Institut pour la recherche sur les silicates à Würzburg. Tandis que l'enseignement sera le même dans les trois Instituts, les buts de la recherche seront différents car ils dépendent personnellement des titulaires des chaires.

102/19 579

Charles P. BOURNE

MÉTHODES DE TRAITEMENT DE L'INFORMATION

A 13 s

1 vol. relié, 250 p., 22 tabl., 176 fig., A. éd. John Wiley and Sons, Inc. New York. London. Sydney, 1963.
(Methods of information handling)

L'auteur, ingénieur de recherches et membre du Conseil Exécutif de l'Institut américain de Documentation, étudie de façon détaillée : la classification et les différents modes d'indexation des documents, notamment le choix de mots-clés ; le codage des mots ; les divers équipements utilisés pour l'enregistrement et la recherche des informations codées (cartes ou bandes perforées à manœuvre manuelle ou mécanique, rubans magnétiques, machines à mémoires à noyaux magnétiques, procédés photographiques de reproduction.

Useful flood

METHODS OF INFORMATION HANDLING. *Charles P. Bourne. Published by John Wiley & Sons, Inc., New York. 241 pp., $12.95*

An enormous amount of data and statistics previously available only in scattered references is contained in Bourne's thorough study of information handling. It discusses how information should be organized and coded, the kinds of equipment available to do the job, and the kinds of systems presently in use—he has done a tremendous service by including typical equipment, material, and process costs.

The only fault is the author's failure to be critical: so much material is presented that this reviewer was unable to evaluate it.

This is one of the books in the Wiley Science Information Series. It is to be hoped that the others will be written for the less specialized—but interested—reader.

Leslie R. Axelrod
Powers Regulator Co.

DUPLICATE

FEBRUARY 1965

Control Engg.

books

000 GENERAL WORKS

Bourne, Charles P. Methods of information handling. 1963. 241p. illus., diagrs., tables. 11¼ in. Wiley, $12.95.

A comprehensive presentation of problems of information handling, intended as an introduction and as a reference for administrators interested in the storage and retrieval of information in libraries or industrial, research, or governmental organizations. Very lucidly covers such topics as file organization, coding, notation, machine language representation, manual systems of handling information, tabulating card and computer systems, and microfilm and microimage equipment. Footnotes and additional references at the end of various chapters constitute a good literature survey. Numerous photographs, drawings, diagrams, tables, and other illustrative matter clarify the text.

010.78 Information storage and retrieval systems
63-20628

Jonker, Frederick. Indexing theory, indexing methods and search devices. 1964. 124p. illus. Scarecrow, $4.

Concise presentation of theory of indexing, its terminology, methods, and their interrelationships, plus basic principles of search devices. The area covered is sound but represents a small rubric in the total field of information retrieval. Treatment is reasoned, with perhaps too much emphasis on the author's optical coincidence system. Portions revised and expanded from papers written by the author at Documentation, Inc. based on research sponsored by the Air Force Office of Scientific Research. Systems references at

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July 1, 1964

Biological Abstracts 6/64

44782. BOURNE, CHARLES P. Methods of information handling. xiv+241p. Illus. John Wiley and Sons, Inc.: New York 16. 1963. Pr. $12.95.--This book is meant to be an aid and reference work for those people who are interested in the design of information systems. Such information systems are typified by the traditional libraries, but the same problems of information processing, storage and retrieval are present in many government and industrial organizations in many places besides the library. This book provides an illustration of the tools, equipment, and methodology that might be applied to those problems. The chapters are liberally sprinkled with cost estimates, practical words of caution, and references to supporting literature. The chapters follow a somewhat logical progression, starting with the basics of file organization and moving up to methods of coding, notation, and machine-language representation; then through various manual systems and into the more complex equipment such as tabulating card and computer systems, and finally microfilm and microimage equipment.--From auth. preface.

M. Heřman: Schutzzeichen und geschützte Muster (10 Seiten),
L. Mikešová: Technische Normen als Quelle technischer und ökonomischer Informationen (44 Seiten);
J. Spirit: Der schöpferische Anteil der Informationseinrichtungen an einer wirksameren Nutzbarmachung von Informationen (37 Seiten);
J. Spirit: Die Mechanisierung und Automatisierung in der technischen und ökonomischen Information (35 Seiten).

Den Schluß des II. Teiles bilden eine Übersicht über die benutzten Abkürzungen und ein detailliertes Inhaltsverzeichnis der Sammlung.

Abgesehen vom ersten Beitrag, der für den ausländischen Leser begreiflicherweise kaum von praktischem Interesse ist, bieten die anderen Artikel auch für die Informations- und Dokumentationskräfte der DDR eine Fülle origineller Gedanken, praktikabler Verfahren und wertvoller Anregungen. Die Autoren sind erstklassige Spezialisten des tschechoslowakischen Informations- und Bibliothekswesens, deren Namen zum Teil auch dem Leser der Zeitschrift „Dokumentation" durch hier veröffentlichte Aufsätze bekannt geworden sind. Die Sammlung bestätigt die Richtigkeit der vom ehemaligen Institut für Dokumentation der Deutschen Akademie der Wissenschaften zu Berlin eingeleiteten Herausgabe von Monografien zu Teilgebieten der Information und Dokumentation für Aus- und Weiterbildungszwecke, aber auch als Orientierungsmittel für die Praktiker der Information und Dokumentation. Vergleicht man die Thematik der vorliegenden Sammlung mit der des in der DDR begonnenen Gesamtwerkes, so fällt auf, daß jene zwei sehr wichtige Phasen der Dokumentationsarbeit zu kurz kommen läßt, nämlich das Referieren und die Schlagwortgebung. Sie werden zwar im vierten Beitrag (Klassifikationssysteme für Informationen) gestreift, aber meines Erachtens nicht ausgiebig genug behandelt. Andererseits enthält sie mehrere Themen, die in der Konzeption der Veröffentlichungsreihe der DDR fehlen oder nicht so deutlich profiliert sind. Wenn der Sammlung auch, wie bereits erwähnt, ein sehr detailliertes Inhaltsverzeichnis beigefügt ist, so ist dieses doch nicht als Ersatz für ein die Benutzung der Sammlung sehr erleichterndes Sachregister anzusehen.

Die graphische Gestaltung – die Sammlung (Format A 4) ist mittels schreibmaschinenschriftlicher Vorlagen vervielfältigt – ist anspruchslos, aber durchaus zweckentsprechend.

Eine Zusammenarbeit zwischen dem Herausgeber der vorliegenden Sammlung und dem Zentralinstitut für Information und Dokumentation der DDR bei der Planung und Herausgabe weiterer Editionen dieser Art bietet sich an.

Dr. Josef Koblitz, Berlin

DK 002.002.2

Bourne, Charles P.:
Methods of Information Handling
(Methoden der Informationsverarbeitung)
New York: Wiley & Sons, Inc. 1963. 241 S. 12,50 $

Der 2. Band der „Information Sciences Series", der unter dem obengenannten Titel erscheint, ist ein nützliches Hilfsmittel für alle, die sich mit der Entwicklung von Informationssystemen befassen. Dabei beschränkt sich der Autor nicht auf die Behandlung der Informationssysteme bei Problemen, wie sie in Einrichtungen der wissenschaftlich-technischen Information auftreten, sondern zieht auch die Informationsaufbereitung, -speicherung und -recherche an Hand von Beispielen aus Regierungs- und Industrieorganisationen in Betracht. Dieser Standpunkt und die gelungene Darstellung des umfangreichen Stoffes machen das Buch zu einem guten Übersichts- und Nachschlagewerk.

Der Inhalt des Buches ist in neun Kapitel gegliedert: Problemstellung; Ordnung der Information durch Klassifikation und Register; Verschlüsselung; Darstellung von Information in Maschinensprache; Handlochkartensysteme; Maschinenlochkartensysteme; Datenverarbeitungssysteme; andere Loch- bzw. Magnetbandanlagen und Mikrofilm- beziehungsweise Bildverarbeitungssysteme.

Die einzelnen Kapitel sind klar und instruktiv geschrieben und reich illustriert mit Tabellen, Diagrammen und Bildern. Obwohl die knappe textliche Darstellung, vor allem der einzelnen kommerziellen Systeme und deren Auswahl, das Studium weiterer Fachliteratur zu einem vollen Verständnis notwendig macht, ist das Buch doch ein in sich abgeschlossener nützlicher Ratgeber.

Von besonderem Wert sind die orientierenden Kostenangaben für Material, Geräte und Systeme am Ende der Kapitel sowie einige technische Kennziffern der behandelten Verfahren und Systeme. Die Literaturangaben zu den einzelnen Kapiteln sind umfangreich und stellen eine Auswahl aus der wichtigsten amerikanischen Literatur bis zum Jahre 1962 dar.

Von besonderem Interesse ist die Darstellung der Mikrofilmtechnik. Ausgehend von den Problemen eines zweckmäßigen Verkleinerungsfaktors und dem Auflösungsvermögen des Filmmaterials werden die Aufnahme-, Kopier- und Lesegeräte behandelt. Die Anwendung des Diazo- und Kalfaxprozesses bei der Herstellung von Filmkontaktkopien im schnellen trockenen Verfahren und der elektrostatischen Prozesse für Kopieren auf unbeschichtetes Papier werden besonders dargestellt. Als grundlegende Mikroformen werden dann der Mikrofilm auf Rolle, in Streifen oder als Blatt in der Fensterlochkarte sowie die Mikrokarte bzw. der Mikroplanfilm behandelt.

Anschließend folgen komplexe mechanisierte Systeme für die Recherche von Mikroproduktionen. Eingangs wird erwähnt, daß bisher nur wenige Systeme dieser Art angewendet werden und diese vorwiegend im staatlichen Sektor. Kurz beschrieben werden die Systeme Rapidselector, FMA Filesearch und Benson-Lehner-Flip für Rollfilm sowie Minicard und Filmorex für einzelne Filmkarten. Ein komplexer Großspeicher ist das IBM-Walnut-System. Jede auf Mikrofilmstreifen befindliche Dokumentenseite kann bei diesem System mit einer Zugriffszeit von 5 sec. aus 990 000 Einheiten ermittelt und automatisch auf eine Fensterlochkarte mit Kalfaxfilm übertragen werden (Preis des Systems: 500 000–1 000 000 Dollar). Stärker in Gebrauch als die eben behandelten sind einfache Systeme auf Filmbasis zur Suche und Abbildung von Dokumenten, die durch eine Nummer gekennzeichnet sind, wie zum Beispiel das System Recordak Lodestar with Counting Accessory, bei dem durch Einstellung auf einem Steckbrett der Film bis zur vorgegebenen Ziffer mittels Stellmotor aufgewickelt wird.

Ferner werden die Anwendungsprobleme des Mikrofilms untersucht. Es wird eingeschätzt, daß sich noch keine Geräte oder Systeme auf dem Markt befinden, die sowohl die Speicherung als auch die Recherche wirksam ausführen, und daß für die Entwicklung komplexer Systeme mit breitem und wirtschaftlichem Einsatzbereich noch 5 bis 10 Jahre erforderlich sind. Die Anwendung der Mikroform hat sich bewährt im Publikationswesen für Zeitungen, Zeitschriften und Bücher, dar-

unter auch Telefonbücher. Besonders hervorzuheben ist die Verwendung von Mikrokarten zur Veröffentlichung von Forschungsberichten durch die Atomic Energy Commission (AEC) in den USA.

Weiteres Hauptanwendungsgebiet für den Mikrofilm ist die Wirtschaft mit ihren Archivierungsproblemen, besonders das technische Zeichnungswesen. Letzteres Gebiet ist am aktivsten bei dem Einsatz von Mikrofilmspeicher- und Recherchesystemen. „Beinahe alle entwickelten Systeme mit Fensterlochkarten waren zur Anwendung im technischen Zeichnungswesen bestimmt." Interessant ist in diesem Zusammenhang die Bemerkung: „Obgleich die meisten Anwender von Fensterlochkarten Filmblätter auf Standard-Maschinenlochkarten montieren, benutzen nur wenige davon die Möglichkeiten der Verwendung von Lochkartenmaschinen in diesem System".

Abschließend werden in Tabellenform die Kosten für gebräuchliche Mikrofilmausrüstungen, für Mikrobildrecherchesysteme, für Filmmaterialien und ihre Entwicklung angegeben.

Franz Kneitschel, Berlin

Paper jungle

METHODS OF INFORMATION HANDLING by Charles P. Bourne. Pp. xiv + 241. Price 100s. London: John Wiley & Sons, 1964.

THE first real application of computers to literature searching can be placed around 1954. However, an equally significant and widespread change in outlook has come about during the past 10 years in the techniques of indexing scientific papers and reports. Traditionally hierarchical classification in the physical form of the classified catalogue or standardised subject headings in the dictionary catalogue—the former predominating in Europe, the latter in America—were used for subject control. More and more in the U.S.A. special libraries, above all in industry, have introduced co-ordinate indexing, based on uniterms, keywords or descriptors. This has culminated in recent years in the thesaurus concept—comparatively short authority lists tailored to suit engineering, the nuclear sciences, etc. Co-ordinate indexing is now invading Europe, above all the United Kingdom. Although it has some advantages, it is far from certain that this indexing technique is superior to other methods. Perhaps one of the reasons for this trend is that it is more suited to mechanisation, from the simple optical feature cards to the sophisticated magnetic tape storage of computers. Thus, the time is approaching when documentalists and librarians everywhere must start coming to terms with these developments to which so much American practice seems to be committed. The rush into the machine future has been such that there is no accepted body of theory and practice, no standard textbooks; it is a borderland where many technologies, electronics, photography, magnetic recording, printing, many disciplines such as statistics, semantics, mathematical logic, clash and merge to the accompaniment of much noise. Bourne in this volume under review has provided a useful guide to this field. It is stated in the Preface that it "is meant to be an aid and reference work for those people who are interested in the design of information systems", but the emphasis is on the "hardware" aspects.

The first three chapters introduce the problems presented by classification, indexing and coding in the setting of machine usage. The rest of the book describes the tools and techniques presently available or at prototype stage; the storage media and their associated coding patterns, manual and punched card systems, computer systems and the related ancillary equipment for input and output, and the microfilm and image-handling devices. Throughout the text, which is well illustrated, cost analysis is attempted whenever possible. This is especially commendable as most of the literature of information retrieval is very reticent on this score. Admittedly, this is by far the most intractable problem in these newer techniques, far more research and development will have to be done before real cost and efficiency can be assessed. Thus he points out that "the cost of installing and running a computer (however small) seems to range from two to five times the cost of the equipment, regardless of the computer model, the type of use, and whether the equipment is purchased or leased". Its reference value is enhanced by its thorough documentation both in terms of copious bibliographic references and commercial availability.

For those who know something about the jungle of information storage and retrieval this textbook may have too much description and not enough evaluation. However, we should be grateful for what it is—a clear exposition of practice and prospects in the U.S.A. The whole art is still too young and confused for any definitive study.

H. COBLANS

The attached cuttings appeared in the issue of THE PHARMACEUTICAL JOURNAL dated November 28, 1964.

CHARLES P. BOURNE. Methods of information handling. New York, Wiley, 1963. xiv,241p. illus. $12.95; 100s.

The author states in his preface that this book 'is meant to be an aid and reference work for those people who are interested in the design of information systems'. He also states that it 'was not meant to be an encyclopedia'. As a reference work on the many kinds of hardware and their capabilities the book is undoubtedly an extremely useful guide. In the same sense it comes very near to being encyclopedic. There are two particular respects in which this work is markedly better than most recent American publications on the subject. Firstly, it is the work of a single author and is consequently a more coherent and unified whole than almost any of the many books which comprise collections of papers by several contributors. Secondly, the author's style is refreshingly free from the jargon which mars so many American writings on the subject.

After a chapter outlining the nature of the problem and another on classification and indexing, the author devotes two chapters to coding and the translation of coded material into machine-manageable form. The several kinds of physical media used for feeding coded information to machines, i.e. punched cards, punched tape, magnetic tape, etc., are discussed. Chapters 5 and 6 are devoted respectively to manual and machine punched-card systems. The former provides an admirable account of both term-entry and item-entry manual systems with a nice balance between the description of the types of card, the ways in which coding can be applied to them, and actual applications. The latter confines itself more to the machines themselves than to systems.

From the point of view of the worker in the information-retrieval field who is not a computer specialist, Chapter 7 is one of the best accounts of computer capabilities which has appeared to date. It covers the many applications of such equipment to retrieval prob-

lems, ranging from the simple KWIC principle to the complexities of textual analysis, and from a more general point of view the account of programming, including automatic programming techniques, is particularly useful. In the computer field the author is a specialist. He is also very much of a realist, for he states on page 145 '. . . the use of a computer with an information retrieval system will not necessarily enhance or improve the efficiency of retrieval—that is something that will depend primarily upon the indexing and classification techniques that are used.' The last two chapters deal with subjects which are largely auxiliary to the main subject of 'handling' information. They cover methods of storage in the form of paper tape, magnetic media, microfilm, etc., though some of the pieces of equipment described are also searching devices.

The weakest part of the book is the one and only chapter devoted to classification and indexing principles (Chapter 2). The author has confined himself to a rather scrappy account of what is currently being done with regard to the application of classification and indexing principles, but there is far too little basic theory for the potential user of retrieval systems, and without more comprehensive guidance than this the newcomer might well tend to use very inefficiently some of the elaborate machinery so excellently described later in the book. There is, for instance, no clear differentiation between kinds of indexing language and the simple mechanics of concept co-ordination. This is rather surprising in a book written by a computer engineer, particularly as he does not mention the elementary logical operations which are the basis of concept co-ordination, though these are referred to briefly later. There is a great deal less attention paid to this aspect of the subject than is the case with Allen Kent's *Textbook on mechanized information retrieval*, though the two books range over much the same ground. In contrast to the author's own admirable style some of the terminology which he must necessarily quote in this context is something of an irritation. The word 'correlative', for instance, is used in a very different sense from that implied by Jahoda in his notable thesis of 1960, *Correlative indexing systems for the control of research records*, and the use of the term 'collectanea' for what librarians have known for decades as an alphabetical catalogue with abstracts and multiple entry is hard to understand.

Apart from this one chapter, the book is an excellent reference work for all concerned with information-retrieval systems. The collection of the information must have been a mammoth task for a single author and a very creditable feature is the very exhaustive documentation supporting the text. The presentation of the material physically is also very good and the book's large format makes it an excellent vehicle for the numerous illustrations.

JOHN R. SHARP

Extrait du
BULLETIN DES BIBLIOTHEQUES DE FRANCE

9è année - n° 7 - JUILLET 1964

Duplicata X

1266. — BOURNE (C. P.). — Methods of information handling. — New York, London, J. Wiley, 1963. — 28 cm, XVI-241 p., fig. (Information sciences.)

Le titre de cet ouvrage illustre bien l'évolution qui se poursuit aux États-Unis dans le domaine des techniques documentaires : celles que décrit l'auteur, en effet, relèvent toutes, ou presque, de la mécanisation. Une autre particularité de l'ouvrage est la place qu'y occupent les descriptions de procédés ou d'équipements particuliers, de préférence aux questions théoriques. Celles-ci ne sont en fait abordées que dans un court chapitre, sous le titre « classification et indexation : l'organisation de l'information » (pp. 13-37); la typologie des méthodes d'indexation qu'y présente l'auteur est cependant excellente, et tout à fait complète de par son principe de construction même. A part un long chapitre sur les méthodes de codification (pp. 38-67), le reste de l'ouvrage porte entièrement sur les procédés mécaniques en usage dans la documentation : systèmes manuels à cartes perforées (pp. 80-115), équipements mécanographiques (pp. 70-79 et 116-136), calculateurs (pp. 136-176), machines spéciales à bandes perforées ou magnétiques (pp. 177-187), sélecteurs sur microfilm (pp. 188-224). Cette manière d'aborder le sujet s'explique par la qualité de l'auteur, ingénieur au « Stanford research institute »; elle a pour conséquence de masquer quelque peu l'uniformité des démarches intellectuelles, au-delà des différences d'instrumentation... Mais de nombreux exemples d'application sont donnés dans chaque cas, accompagnés d'indications approximatives de coût; l'inventaire de C. P. Bourne — limité toutefois aux seuls États-Unis — est à cet égard fort précieux.

Jean-Claude GARDIN.

NEW Books

METHODS OF INFORMATION HANDLING by Charles P. Bourne. John Wiley & Sons, Inc., 605 Third Ave., New York 10016, 241 pp., $12.95.

Aid and reference work for the design of information systems, this book illustrates the tools, equipment and methodology for the problems of information processing, storage and retrieval. Where possible cost estimates are given. Chapters progress from the basics of file organization to coding, notation, and machine language representation; then through various manual systems and into tab card and computer systems. It ends with an examination of microfilm and microimage equipment.

This item appears on page(s) 39

in NEW BOOKS **in the** OCTOBER 1965 **issue of THE OFFICE.**

Circulation over 74,000—the most widely read publication reaching the business systems, data-processing and office equipment market.

BOOK REVIEW

Methods of Information Handling
Charles P Bourne
John Wiley and Sons. pp 241.

ON a first sight one is tempted to classify this book with all the other data processing books that are filled with photographs, descriptions and instructions for using present day equipment. The majority of such books are no more than executives' picture books. They are rarely up to date. To place 'Methods of Information Handling' in this category would be wrong for this is not just a book of machine descriptions.

The volumes of information which must be dealt with for the efficient running of our industrial, paper-governed society, and the difficulties of controlling the information flows will soon be recognised as a severe threat to our well-being. Mr Bourne opens his book with some figures which indicate the size of this problem. In administering the United States, the Federal Government alone produces 25 thousand million pieces of paper a year at a cost of four thousand million dollars. Even in technical journalism the task of keeping abreast of published information is Herculean, with 30,000 journals publishing over two million articles a year in over 50 languages.

The hammer blows of gigantic statistics which open Mr Bourne's first chapter give way to a discussion of the difficulties which must be surmounted in the organisation and maintenance of file systems. These problems—variations in indexing, indexing discontinuities, losses of information and the need to modify and purge file structures are encountered whatever the size of a file, but with truly gigantic files can render the information store completely valueless because it is unretrievable.

The next two chapters form a really excellent discussion of classification, indexing and the structures of coding systems. Mr Bourne is concerned pincipally with systems of classification related to the 'subject index' of libraries where the problem is to give as complete a statement of the topic of the document in as brief a form as possible with considerable organisation in the form of the statement so that search routines can be described. In his discussion of coding the author covers alphabetic abbreviation techniques and assigned codes. He reviews the synonym problem and the methods for ascertaining the amount of information any code can handle.

The first three chapters form a theoretical base for the practical structure of the remainder of the book.

Chapter five describes manual card systems, giving an account of both interior punched and edge-notched cards. Mr Bourne runs through the coding possibilities of both types, illustrates his chapter with some typical systems, and reviews the machinery which is available for card punching and selection.

Search and file systems based on punched card machines and general purpose computers are discussed in the two following chapters. Discussion here must necessarily be incomplete to keep within the limits of the book, but a good general survey of the main techniques is given.

Chapters eight and nine are devoted to special purpose equipment for storing and searching magnetic tape, punched tape and micro-film files. The chapter on microfilm usage thoroughly covers the equipment and techniques at present in use.

MAX LANCASTER

DATA AND CONTROL

As published in Chemistry & Industry 14th August, 1965.

England

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Methods of Information Handling. By C. P. Bourne. Pp xiv + 241. *London: John Wiley & Sons.* 1964. 100*s*

X

The problems encountered in information handling and processing are many and complex.

Some of these problems are briefly described and the early chapters of the book give a review, in some detail, of the fundamental methods employed in classification, indexing and coding of information. The reader is thus introduced to the main body of the book, which describes a wide variety of systems, mostly mechanical, which are employed in the U.S.A. to deal with data processing, storage and retrieval. Descriptions are given of manually-operated card systems, both edge-punched and body-punched, machine-operated punched card systems, electronic computer systems, punched paper tape and magnetic media equipment and, finally, microfilm and other image handling equipment. Accompanying the descriptions of the functions and operating details of all the equipment mentioned is a wealth of excellent figures, diagrams and photographs of the various machines in use in the U.S.A. They help considerably in giving the reader a clearer understanding of the type and function of the equipment described.

One of the most valuable features of the book consists of the quotation of representative costs, both capital and running, of all the equipment described. These costs figures should give the reader who is contemplating the purchase of new equipment much food for thought.

The magnitude of the problem of dealing with the ever-increasing flood of information in the U.S.A. is clearly demonstrated.

It is interesting to note that the author estimates that there are 3000 special information centres in the U.S.A. which maintain collections of information on special technical subjects, and that most of these centres employ conventional manual bibliographical handling equipment.

Although the book was available in the U.S.A. in 1963 and, at the time of writing, the author expressed the view that some of the material, such as descriptions of equipment, would be out of date by the time it reached the reader, this should not affect the impact of the book on the British reader. The wide variety of equipment described is probably many years in advance of that which is being used in Britain at the moment.

The high quality of the indexes merits special mention, particularly the subject index, which was prepared by Mrs Pauline Atherton.

M. H. MEIKLEJOHN

Summer 1964

be hoped that as time goes on less heavily.

In the section on metabolic studies it is correctly pointed out (page 79) that: ". . . studying the fate of a drug in the animal is a valuable means by which to obtain closer insight into its mechanism of action." In contrast the statement on page 81 to the effect that nonvolatile hypnotics (as themselves) cannot be eliminated from the blood except through the kidneys appears to be a generalization which might be hard to substantiate fully.

The European Society for the Study of Drug Toxicity has made available the results of a symposium that cannot fail to stimulate both the neophyte and the seasoned expert. Despite the occasionlly obtuse English, the volume is recommended for both light and serious reading.

Herbert McKennis, Jr.
Medical College of Virginia

B. Holmstedt and G. Liljestrand, Editors
Readings In Pharmacology
New York: The Macmillan Company (A Pergamon Press Book), 1963. x + 395 pp., 96 figs., 2 tbls. $7.50.

This work is the second to appear within the last two years bearing the title *Readings in Pharmacology*. The first by Louis Shuster contains nineteen classical papers presented in their entirety and arranged in pharmacological groups. Each section is introduced with an editorial statement. For the most part historical implications are not stressed in the first book.

In contrast the work which is the subject of this review does not offer the entire paper of a particular worker; but rather, as is stated in the preface, the editors have chosen only quotations from selected classics which are typical of their time and their author. Further, their intent seems to have been to act as a guide for the reader on an excursion from one pharmacological giant to another, making appropriate introductions and commentaries along the way and at the same time endeavoring to place each point of interest in a logical historical sequence within the framework of some traditional pharmacological divisions. The reviewer recommends this trip, as it was found to be most enlightening and refreshing particularly in the present era of micro-manipulation of cells, super magnification of bioelectric potentials, and "statistical" representation of laboratory observations.

The spectrum of information extends from chapters dealing with the development of pharmacology until the eighteenth century and the rise of experimental pharmacology to a chapter on psychopharmacology and others which treat areas such as technical advances, chemoreceptors, structure-activity relationships, and antimetabolites. Of particular interest were the many reproductions of paintings and photographs, including one of Schmiedeberg and Böhm relaxing informally on a garden bench. There is also a group photograph of Schmiedeberg surrounded by pupils honoring him on his seventieth birthday, with a key giving the name and post of each person shown.

The book is well indexed both as to proper names and subject material. Pertinent bibliographic information is listed at the bottom of the page in which it is cited. The quality of the paper and binding are good, well worth the asking price. This book would be a valuable addition to a pharmacy library and might very well be a required reference for students having a special interest in pharmacology or for those taking courses in the history of medicine or pharmacy.

V. H. Duke
University of New Mexico

Charles P. Bourne
Methods of Information Handling
New York: John Wiley & Sons, Inc., 1963. xiv + 241 pp., 176 figs., 25 tbls. $12.95.

Librarians have been slow to apply modern machine methods to solving the information problem. The Bourne book, part of a burgeoning literature in the information sciences, can go a long way in making up for the "knowledge gap" that has developed in the last decade.

Starting with a general description of the information explosion (approximately 30,000 technical journals publish more than 2,000,000 articles a year in fifty languages, currently), the author proceeds to a discussion of the principles of organizing files and the fundamentals of designing information systems, describing in detail classification, indexing, and coding. Ensuing chapters deal with the use of manual systems and the adaptation of tabulating card systems to information storage and retrieval. Various computer operations, as well as the use of paper and magnetic tape as vehicles for facilitating the use of information, are described and evaluated. The final chapter reviews the use of microfilm and image handling equipment as part of the total information complex.

This inexpert reviewer admits that his credentials are open to question. Be that as it may, I found this book to be an excellent survey of the "status of the art." The book

Mechanical Engrg.
June 1964

International Permanent
Exhibition of Publication
July / Aug. 1964

Methods of Information Handling. By Charles P. Bourne. 1963, John Wiley & Sons, Inc., New York, N. Y. 241 pp., bound. $7.95.

A practical account of the tools, equipment, and methodology that can be applied to the problems of information processing, storage, and retrieval. The chapters follow a logical progression from basic methods of file organization to methods of coding, notation, and machine language representation, then through various manual systems, and computer systems to microfilm and micro-image equipment. There is a wealth of information in the book, and with emphasis on machine oriented systems. There are numerous illustrations of the hardware and of the end products of various forms of information handling, and extensive references.

Battelle Tech. Review
June 1964

3940 Methods of **Information Handling.**— Provides an illustration of the **tools, equipment, and methodology** that might be applied to problems of information processing, storage, and retrieval. The chapters start with the bases of file organization and move on to methods of coding, notation, and machine language representation; then through various manual systems, and into the more complex equipment such as tabulating and computer systems, and finally microfilm **and micro-image equipment.** – Charles P. Bourne. 241 pp. 1963. John Wiley and Sons, New York. (Z699 B66m Over.)

DK 381.893

Charles P. Bourne: Methods of information handling (Metode tehnike (vođenja) informacija)
John Wiley & Sons, New-York. USA, 241 str. 28×22.

Autor vrlo detaljno razrađuje sve aspekte tehnike informacija, bibliografske tehnike, razne sisteme komercijalnih, upravnih i drugih arhiva, klasifikacije i označavanja, sisteme ručne i strojne obrade kartica, Computer-sisteme i drugu suvremenu tehniku evidencije kartoteka. (ISIP)

АКАДЕМИЯ НАУК СССР

ЖУРНАЛ ВЫЧИСЛИТЕЛЬНОЙ МАТЕМАТИКИ и МАТЕМАТИЧЕСКОЙ ФИЗИКИ

Том 5

Но в общем авторам удалось преодолеть эти традиции и создать вполне современный курс программирования. Книга написана людьми весьма высокой квалификации, и фактических ошибок в ней почти нет (хотя, например, на стр. 106 в пределах одного выражения встречаются переменные y и $y[i]$, что недопустимо в АЛГОЛе).

Остается пожелать, чтобы Е. А. Жоголев и Н. П. Трифонов продолжили успешно начатую работу над курсом.

С. С. Лавров

УДК 681.142.2 (02)

Ch. P. Bourne. *Methods of information handling*. London, John Wiley and Sons, Inc., 1964, 241 pp., ill., 100 sh.

Ч. Бурн. *Методы обработки информации*.

Книга входит в общую серию книг об информационных системах. Эта серия, не являясь энциклопедией в области информационных систем, группирует современный материал по отдельным проблемам передачи, хранения, обработки и т. п. информации для целей профессионального обучения.

В настоящем выпуске рассматриваются вопросы о хранении, кодировке, выборке текстовой и графической информации в больших информационных системах.

В гл. 1 ставятся проблемы обработки информации в целом по различным направлениям (в библиотечном деле, в коммерческой и правительственной документации и т. д.). Приводятся цифры и примеры, характеризующие объем информации и стоимость ее обработки.

В гл. 2 рассматриваются методы организации сбора и хранения информации для любой системы поиска (ручной и автоматической). Описываются методы индексации

PROJECTS

COLLEGE & RESEARCH LIBRARIES

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Book Reviews

Bourne, Charles P., and Trudi Bellardo Hahn. *A History of Online Information Services, 1963–1976.* Cambridge, Mass.: MIT Pr., 2003. 493p. alk. paper, $45 (ISBN 0262025388). LC 2002-40789.

My first thought when asked to review this book was: why should any of us care? In this age of monthly system updates, annual software migrations, and library users who were born using computers from birth, is there any reason why we would have any use for a history of online retrieval systems? Would this book underscore my lament about our profession—that we tend to be down in the dross of the digital cutting room instead of blazing trails and bleeding some edges? Curiosity getting the better of me, I delved into the book.

It is written like many technical reports with two columns to a page. The font is Times Roman with long paragraphs and large blocks of text. This is not the kind of book to skim through lightly. Delving does not really work. The book will not capture your interest if you randomly scan the pages. So I started at the beginning, which is inspired, and I was hooked. The prologue begins with a black-and-white still from the movie *Desk Set* in which Katharine Hepburn is the head librarian of the Federal Broadcasting Corporation's Research and Reference Department. Miss Watson's wits are pitted against an engineer's invention call EMERAC—the Electro-Magnetic Memory and Research Arithmetic Calculator. Oh boy, I thought, we have not come very far. Didn't I just read an article this summer in *D-LIB Magazine* where Cornell University Library's digital reference staff were competing with Google's new expert service, Google Answers, to see who did a better job? But I had taken the bait and switched to fast forward. Although the machines change, in fact, the issues remain the same.

History is important; we all know that. Those early systems engineers pioneered the fledgling online retrieval systems without which we surely would not have the Internet today. At what point, I wonder, does the staid past become interesting, instructional, and inspirational—witness the history of flight and the Wright Brothers? Whatever the verdict for the history of online information systems, the Charles Bourne and Trudi Bellardo Hahn book will retain its landmark status. This is a compelling and thoroughly documented piece of retrospective research. The authors should be commended for having the tenacity and patience—and a sense of the importance of the long-headed view—to have spent the past few years interviewing the early pioneers, studying their work, and sorting out myth from fact.

The book is intentionally a basic chronology of online systems and information retrieval. The authors' qualifications for writing this book are impeccable. Both have biographies that bear this out, albeit from different vantage points. Charles Bourne was an early systems pioneer and former vice president of DIALOG Information Services. Trudi Bellardo Hahn is manager of Library User Education Services and Adjunct Professor at the University of Maryland's College of Information Studies. Both have written copiously on this topic.

The authors have chosen to focus not just on "a description of tapes, disks, terminals and telephones, and search

algorithms." They have included the human element as well. You can understand what motivated these "online pioneers," what made them keep going in the face of extraordinary technological, sociological, and economic obstacles. The starting date was selected because the authors' research indicated that the first online bibliographic retrieval system appeared in 1963, developed by Stanford Research Institute at Menlo Park. The year 1976 marked a watershed as online retrieval systems were poised for a major leap forward with the development of ILO/ISIS, the first online system to allow search terms entered in one language to retrieve records indexed in another language.

The enormous wealth of information within these covers is made accessible to the reader by the authors' exceptional discipline and organizational skills. Online milestones are documented in boxes throughout the text as well as together in an appendix. The book is generally organized chronologically with a final summary chapter. A comprehensive bibliography is provided as well as homage paid in the introduction to the major sources used and people interviewed. The authors have thoughtfully placed the glossary at the beginning of the book where it is much handier. There is also a useful index.

Obviously, the target audience for this book will be library school students and documenters of the history of early online retrieval. However, almost everybody will find something of interest, something they did not already know. For instance, although I spent sixteen years at SUNY Albany, during the 1980s and 1990s, I was unaware of the crucial role played by SUNY and its Biomedical Communication Network, or that it eventually evolved into the commercial BRS Search Service. One can always point to a few omissions in a work of this breadth. The development of the MARC record seems underplayed to someone coming from a cataloging background. Although RLIN was not developed until 1978, I was surprised to see no mention of the formation of RLG in 1974. However, in reading here about the role of OCLC, I was reminded why. OCLC is described as "a major contributor to" rather than "a pioneer in the technology of online search systems." OCLC and RLG—with many others—were the organizations that took these early inventions to the next level for cooperative library use.

This book is about four themes: "systems, services, funding, and pioneers." In weaving these strands together, the authors have successfully answered my question of who should care and why. They also fulfill their promise in the book's introduction to bring forward "fundamental truths ... about user-oriented systems and services, dependence on sources of funding, and people who are innovators and risk takers." I look forward to volume two!—*Gillian M. McCombs, Southern Methodist University.*

Drahos, Peter, with John Braithwaite. *Information Feudalism: Who Owns the Knowledge Economy?* New York: The New Press, 2003. 253p. alk. paper $25.95 (ISBN 1565848047). LC 2002-41069.

The corpus of readings, of relevance to librarians, addressing the debate over information and intellectual property rights grows daily. Newspaper and magazine articles, Web logs, and monographs abound as their authors consider the legal, social, cultural, and moral entanglements of governmental, corporate, and individual interests in accessing and using information and defining what constitutes public knowledge. In *Information Feudalism*, Peter Drahos and John Braithwaite—authors of *Global Business*

A History of Online Information Services, 1963–1976. By Charles P. Bourne and Trudi Bellardo Hahn. Cambridge, Mass.: MIT Pr., 2003. 493p. cloth $45 (ISBN 0-262-02538-8)

The present-day librarian can be excused for rarely, if ever, thinking about the early days of online searching. Many are too busy keeping a wary eye on emerging technologies, vendor pricing schemes, and explosive online growth. But before the Internet boom of the late 1990s there occurred the remarkably similar events of thirty years earlier, the emergence of online bibliographic search systems of the 1960s and early 1970s.

Bourne and Hahn have spent twenty years researching the topic and the results are impressive. The book is organized around five roles: hardware and software developments, early service characteristics, formal evaluations, funding, and the online pioneers themselves. The stated goal is to assemble a cohesive chronology of the design, development, and evaluation of the first online systems. While the authors admit that many pieces of the story will never be known, they have succeeded in assembling an exhaustive retelling of a time when computers were new enough, and mysterious enough, to literally paralyze a new user with fear.

While a debilitating fear may be considered extreme, Bourne and Hahn give enough background details to perhaps justify the response. For example, the early 1960s computers required to run the SAGE system weighed in at 250 tons, occupied an

acre of floor space, featured almost 60,000 vacuum tubes, and used up to three million watts of electricity. In 1967, during the installation of a single remote terminal at the Ames Research Center Technical Library, workmen had to remove part of an exterior wall and use a crane to hoist the machine to its new second floor office. Software of the time also required accommodation. The online system MEDLARS, a precursor to MEDLINE, suffered from lag times of fifteen to forty seconds between entered commands. But for all that, early online experiments were surprisingly sophisticated. Systems using Boolean operators, left and right truncation, cited reference searching, wild cards, and more were all available by the late 1960s.

Demand for services caught many pioneering services by surprise. Like the Internet, the impending success of online searching was not apparent to even the most discerning. One professor, speaking at a conference on the small potential of growth for online services, asked, "After all, how many bibliographies can the world absorb?" (371). But by the mid-1970s, enthusiasm for the service was occasionally intense. Bourne and Hahn tell a story of one trainer's experience while conducting a class in Corvallis, Oregon: "About 25 [participants] jammed into a training room designed for ten people. The earliest to arrive grabbed one of the few terminals and would not let go. With the noise, heat, and congestion, an exasperated and sweaty [trainer] could not make himself heard or understood." Online services at the time were not designed to handle large numbers of simultaneous users. Because of their popularity, the service's lag times were severe during peak operating hours. To compensate, MEDLINE began raising fees to curb demand. User groups reacted angrily, predicting that the number of searches would decrease, which did occur and was precisely the point.

Then, as today, systems with superior usability tended to succeed. DIALOG emerged as a leader because of its intuitive system of commands. That may seem odd to the contemporary Internet surfer until Bourne and Hahn show you that one competing system, MOLDS, featured thirty-four commands, many of them appearing very similar: "find, extract, define, chain, fetch, and select" (73). If the modern librarian is suspicious that some online services may be harboring anti-user tendencies, there are precedents for that type of behavior. For example, the English online system RIOT featured an automatic cut off that stopped users' searches if they were selecting too few items to be printed from the displayed result sets. "The point of this feature was to economize on computer search time. [They] did not want searchers to use expensive computer resources to browse for serendipitous discover of references" (109). Despite all of this, enthusiasm for online services was high, even though with services like MEDLARS users could expect a turnaround time of several weeks for the final search results to be returned.

Librarians played a key role in the emergent online industry. In order to understand the new medium, online services conducted many studies using interviews, questionnaires, focus groups, and so on. Even LEXIS, the online service with the stated goal of "crack[ing] the librarian barrier" (302) by enabling attorneys to do the searching themselves, found that the majority of users were librarians. This is because searches were expensive and, without the precision brought to bear by experienced information professionals, inefficient. For example, connecting to MEDLINE at one point cost an institution $45 an hour. Despite this, librarians were loyal allies who trained searchers and used and promoted the online services themselves, even while fearful of the potential for job loss due to the new technology.

There is nothing in the literature today with the breadth and depth of Bourne and Hahn's history of early online services. The value of the work stems from the devotion the authors have for the subject and their evident empathy for the spirit of the times. Occasionally, however, some punches are pulled unnecessarily. For example, a list of harsh ground rules for searchers using DIALOG is attributed to a government agency who is "mercifully [kept] anonymous" (401). Such omissions are a disservice to scholars, but are luckily not a common occurrence. What is common is a thorough retelling of who did what and why during this exciting time. Readers of this book will certainly come across stories which resonate with direct correlations to the recurring difficulties faced by information professionals today. One significant insight is that librarians, who may perceive themselves as at the mercy of changing technology, benefit substantially from the exponential growth in available information that online services bring.—*Steve McCann (steve_mccann@ncsu.edu), North Carolina State University, Raleigh.*

A History of Online Information Services, 1963–1976. By Charles P. Bourne and Trudi Bellardo Hahn. Cambridge, Mass.: MIT Pr., 2003. 493p. cloth $45 (ISBN 0-262-02538-8)

The present-day librarian can be excused for rarely, if ever, thinking about the early days of online searching. Many are too busy keeping a wary eye on emerging technologies, vendor pricing schemes, and explosive online growth. But before the Internet boom of the late 1990s there occurred the remarkably similar events of thirty years earlier, the emergence of online bibliographic search systems of the 1960s and early 1970s.

Bourne and Hahn have spent twenty years researching the topic and the results are impressive. The book is organized around five roles: hardware and software developments, early service characteristics, formal evaluations, funding, and the online pioneers themselves. The stated goal is to assemble a cohesive chronology of the design, development, and evaluation of the first online systems. While the authors admit that many pieces of the story will never be known, they have succeeded in assembling an exhaustive retelling of a time when computers were new enough, and mysterious enough, to literally paralyze a new user with fear.

While a debilitating fear may be considered extreme, Bourne and Hahn give enough background details to perhaps justify the response. For example, the early 1960s computers required to run the SAGE system weighed in at 250 tons, occupied an

acre of floor space, featured almost 60,000 vacuum tubes, and used up to three million watts of electricity. In 1967, during the installation of a single remote terminal at the Ames Research Center Technical Library, workmen had to remove part of an exterior wall and use a crane to hoist the machine to its new second floor office. Software of the time also required accommodation. The online system MEDLARS, a precursor to MEDLINE, suffered from lag times of fifteen to forty seconds between entered commands. But for all that, early online experiments were surprisingly sophisticated. Systems using Boolean operators, left and right truncation, cited reference searching, wild cards, and more were all available by the late 1960s.

Demand for services caught many pioneering services by surprise. Like the Internet, the impending success of online searching was not apparent to even the most discerning. One professor, speaking at a conference on the small potential of growth for online services, asked, "After all, how many bibliographies can the world absorb?" (371). But by the mid-1970s, enthusiasm for the service was occasionally intense. Bourne and Hahn tell a story of one trainer's experience while conducting a class in Corvallis, Oregon: "About 25 [participants] jammed into a training room designed for ten people. The earliest to arrive grabbed one of the few terminals and would not let go. With the noise, heat, and congestion, an exasperated and sweaty [trainer] could not make himself heard or understood." Online services at the time were not designed to handle large numbers of simultaneous users. Because of their popularity, the service's lag times were severe during peak operating hours. To compensate, MEDLINE began raising fees to curb demand. User groups reacted angrily, predicting that the number of searches would decrease, which did occur and was precisely the point.

Then, as today, systems with superior usability tended to succeed. DIALOG emerged as a leader because of its intuitive system of commands. That may seem odd to the contemporary Internet surfer until Bourne and Hahn show you that one competing system, MOLDS, featured thirty-four commands, many of them appearing very similar: "find, extract, define, chain, fetch, and select" (73). If the modern librarian is suspicious that some online services may be harboring anti-user tendencies, there are precedents for that type of behavior. For example, the English online system RIOT featured an automatic cut off that stopped users' searches if they were selecting too few items to be printed from the displayed result sets. "The point of this feature was to economize on computer search time. [They] did not want searchers to use expensive computer resources to browse for serendipitous discover of references" (109). Despite all of this, enthusiasm for online services was high, even though with services like MEDLARS users could expect a turnaround time of several weeks for the final search results to be returned.

Librarians played a key role in the emergent online industry. In order to understand the new medium, online services conducted many studies using interviews, questionnaires, focus groups, and so on. Even LEXIS, the online service with the stated goal of "crack[ing] the librarian barrier" (302) by enabling attorneys to do the searching themselves, found that the majority of users were librarians. This is because searches were expensive and, without the precision brought to bear by experienced information professionals, inefficient. For example, connecting to MEDLINE at one point cost an institution $45 an hour. Despite this, librarians were loyal allies who trained searchers and used and promoted the online services themselves, even while fearful of the potential for job loss due to the new technology.

There is nothing in the literature today with the breadth and depth of Bourne and Hahn's history of early online services. The value of the work stems from the devotion the authors have for the subject and their evident empathy for the spirit of the times. Occasionally, however, some punches are pulled unnecessarily. For example, a list of harsh ground rules for searchers using DIALOG is attributed to a government agency who is "mercifully [kept] anonymous" (401). Such omissions are a disservice to scholars, but are luckily not a common occurrence. What is common is a thorough retelling of who did what and why during this exciting time. Readers of this book will certainly come across stories which resonate with direct correlations to the recurring difficulties faced by information professionals today. One significant insight is that librarians, who may perceive themselves as at the mercy of changing technology, benefit substantially from the exponential growth in available information that online services bring.—*Steve McCann (steve_mccann@ncsu.edu), North Carolina State University, Raleigh.*

infertile soil of Democratic Dixie. Historian Richard Abbott—whose posthumous work had to be finished by a colleague—analyzed more than 400 southern G.O.P. papers between 1865 and 1877, the most comprehensive and in-depth study ever of this unusual (and previously disparaged) newspaper niche. The obstacles facing southern Republican editors during this time were formidable: social ostracism and harassing libel lawsuits, even and mobs who destroyed printing presses and murdered editors. In addition, subscriptions and advertising were hobbled by a black readership that was predominantly poor and illiterate. And even political patronage for printing patronage, the long-time staple of nineteenth-century party newspapers, proved to be a double-edged sword because it fomented rivalry among different Republican newspapers and provided fodder for allegations of corruption by hostile Democrats. Still, Abbott argues that these brave editors helped challenge southern intolerance at a crucial time, proselytizing for free speech as well as racial reconciliation, helping to create solidarity and community among the region's racial and political minority. (*Mark Feldstein*)

35:403
A HISTORY OF ONLINE INFORMATION SERVICES, 1963–1976 by Charles P. Bourne and Trudi Bellardo Hahn (Cambridge, MA: MIT Press, 2003—$45.00, ISBN 0-262-02538-8, 493 pp., photos, notes, chronology, bibliography, index) combines the effort of a pioneer in this field (Bourne) with an academic researcher (Hahn). While there have been historical accounts before, this is by far the most extensive survey, documented with both archival sources and many interviews. What is interesting is how rapidly we lose historical reference–even with all the effort that went into this impressive volume, the chronology and text make constant reference to how specific events or developments "may" have been firsts—nobody really knows anymore, and yet the events discussed are largely in the past three or four decades. This is a story of hardware, software and effective means of applying both. Chapters discuss the very earliest attempts at online information retrieval in the early 1960s, further experiments and prototypes (mainly at universities) in the mid-1960s to the early 1970s, experimental systems developed in nonacademic labs in the same period, Lockheed's DIALOG and related systems in the 1960s, SDC ORBIT and related systems in the same period (and into the early 1970s), computer searching for the legal profession from 1964 to 1972, State University of New York biomedical communications over the whole period covered in the book, the public view of the online industry, building that industry, and summing up the whole story. All of this seems amazingly slow and cumbersome by today's standards, of course, but the developments described are the essential backbone of what have become today's many online systems. Both authors have library backgrounds–Bourne was an official with DIALOG while Hahn is with the University of Maryland. They have provided a valuable baseline historical survey of a field still rapidly expanding and changing. (Chris Sterling)

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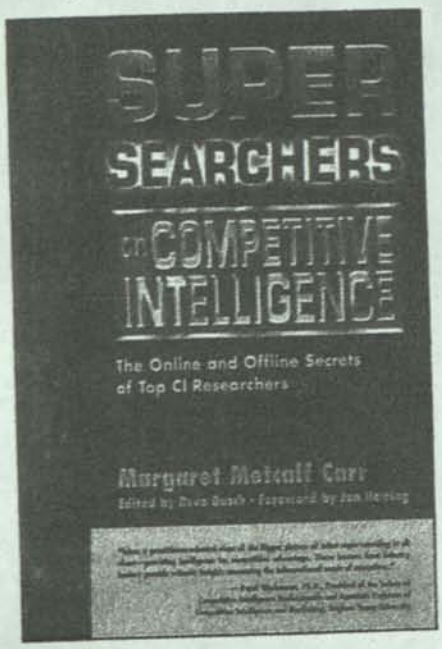
Super Searchers on Competitive Intelligence: The Online and Offline Secrets of Top CI Researchers
by Margaret Metcalf Carr

ISBN: 0-910965-64-1
Published: 2003
Pages: 332 pp.; softcover
Price: $24.95
Available from: CyberAge Books, Information Today, Inc. 143 Old Marlton Pike, Medford, NJ 08055-8750; 609/654-6266; www.infotoday.com.

Even the top experts in this field can't agree on a single definition of competitive intelligence. However, after reading this book by long-time independent information professional Peggy Carr, you will have a greater understanding and respect for those in the profession. Unlike most of the super searchers interviewed in this popular series, few of the 15 experts interviewed for this book come from a traditional library or information science background. However, most of the skills and processes they use are the same. They just seem to focus on both the overall process and the analysis of the data collected more than traditional information specialists.

A word of warning to those of you in the academic world—you may not like some of the premises in this book. The nature of competitive intelligence is that company A wants to preserve and enhance its own information flow and interpretation, while preventing any-



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ema to many librarians. [illegible] "open access" discussion in this world.

I think all librarians can learn from this book. Most of the interviewees stressed the importance of personal contacts, a methodical approach to and definition of the problem, and a major emphasis on providing an answer, not just a list of citations or sources. These are skills that all librarians should develop. As information is turned into a commodity, it is intelligence and knowledge that people seek as an answer, not just information, and this book focuses on the skills and processes to get the answer.

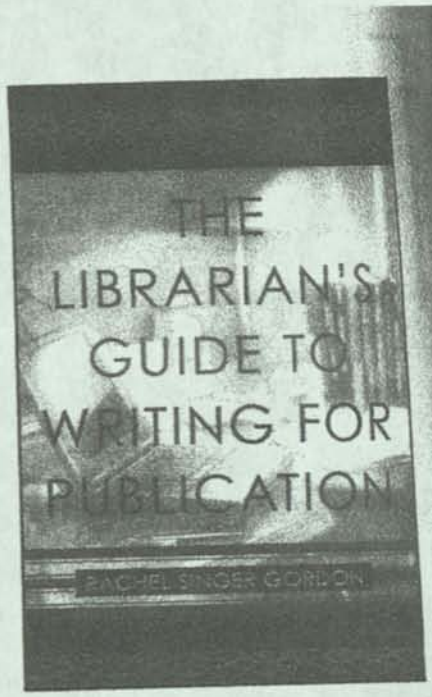
The Librarian's Guide to Writing for Publication
by Rachael Singer Gordon

ISBN: 0-8108-4895-3
Published: 2004
Pages: 202 pp.; softcover
Price: $34.95
Available from: Scarecrow Press, Inc., Rowman & Littlefield Publishing Group, 4501 Forbes Blvd., Suite 200, Lanham, MD 20706; 800/462-6420; www.scarecrowpress.com.

Publish or perish—we've all heard this phrase, but many librarians seem reluctant to take the plunge. Well, this book is a lifeline to those dithering on the edge but not quite knowing how to dive in and swim.

The author, an experienced writer herself, has also surveyed 99 published librarians (through an online survey) to come up with the expert words of advice presented in this book. She also includes interviews with several publishers, representing journals, books, book reviews, newsletters, and online publications. This provides many viewpoints (although the publishers, including Information Today, Inc.'s book publisher, are confined to an appendix) and gives a good representation of what you need to do to get started in getting published.

I think the important point to take away from this book is that all editors are looking for good content and are open to new ideas. You have to write



about something you are passionate about and present it in a clear, concise, and readable way. The author provides tips for helping you present your ideas to the appropriate editor in a way that increases your odds of being published. She also stresses the importance of following guidelines and helping your editor—words my editor will no doubt relish.

A couple of chapters focus on book publishing, including writing a detailed proposal, the publishing process, and the marketing efforts that you must make to ensure a successful book. We are not talking runaway best-seller, million-copy books, but professional titles in which author participation can still help the sales process.

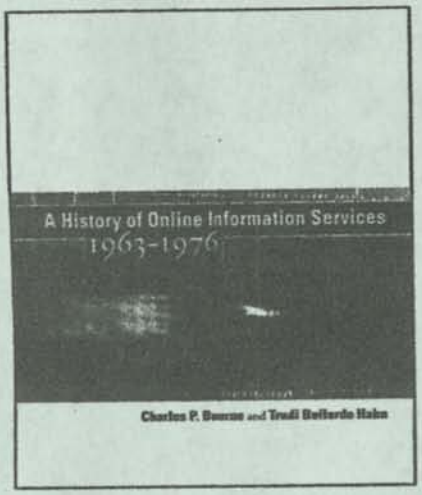
If you want to publish, but haven't taken the first step yet, get this book. You will feel less intimidated by the entire process and will get some valuable tips that I wish I had learned years ago.

A History of Online Information Services, 1963-1976
by Charles P. Bourne and Trudi Bellardo Hahn

ISBN: 0-262-02538-8
Published: 2003
Pages: 493 pp.; hardcover
Price: $45.00
Available from:
The MIT Press, 5 Cambridge Center, Cambridge, MA 02142-1493; 800/405-1619; http://mitpress.mit.edu.

Wow, what a lot of work went into this encyclopedic book! The authors have gone to great effort to document the beginnings of the online industry, searching for the facts and statistics, as well as the personal stories of the pioneers of the day.

The first few chapters detail many of the early efforts in computerized information retrieval. These are the days of large mainframes, high storage costs, punch cards, and batch mode searching. However, many of the search and retrieval ideas were sophisticated and are still very much in use today. The authors have included "milestones" to highlight significant firsts, such as, "SRI demonstrated the first online bibliographic search system in 1963." These are amalgamated into a timeline at the end of the book.



The middle chapters are devoted to the development of the first commercial search services: Lockheed Dialog, SDC ORBIT, and SUNY Biomedical Communication Network/BRS. The fact that these services developed at all is amazing, given the constraints of the parent companies or organizations. There were only a few people who believed that online searching was the way of the future.

I particularly liked the next two chapters describing the birth of the online industry—one from the public point of view and another from the inside perspective. Enough time has gone by that many of the frantic tales can be told. In particular, current users of the online systems can begin to understand how and why things are the way they are today from reading how things got started. Pricing was a guessing game from the start (and still is, to some extent). Roger Summit couldn't imagine mounting more than 128 databases. Dialog ran out of user passwords. Computer time was valuable, so some systems ignored words of three letters or less, title words, and few allowed even searching of abstracts, let alone full text. Telephone connections were expensive and difficult. How far we have come, and how quickly we forget.

This work does a great service to those of us in the industry. Let us not forget from whence we came. All library schools and those interested in the history of information retrieval should have this book.

Deborah Lynne Wiley [deb@consultnw.com] is principal of Next Wave Consulting, Inc.

Comments? E-mail letters to the editor to marydee@xmission.com.

Book Reviews

A History of Online Information Services, 1963–1976. Charles P. Bourne and Trudi Bellardo Hahn. Cambridge, MA: MIT Press, 2003. 493 pp. $45.00. (ISBN: 0-262-02538-8)

A complex myriad of online information sources and services are currently accessible to knowledge workers worldwide. Those who have a computer equipped with a modem or Internet access can avail themselves of bibliographic, scientific, and full-text databases in a staggering number of disciplines. These online services, fueled by technological advancement, are in a constant state of change. Innovation occurs so quickly that it is difficult for knowledge workers to remember any other technological reality but the present. In such an environment, the origin of online information services often goes unconsidered.

A History of Online Information Services, 1963–1976, by Charles P. Bourne and Trudi Bellardo Hahn, sheds light on the pioneering efforts of those who made current online information services possible. Michael Buckland states in the book's foreword that Bourne and Hahn's volume is the first history of the early online years. It covers the appearance of the first online information retrieval system in 1963 and concludes during 1976 when several commercial online information services, including DIALOG and LEXIS, became forerunners in the nascent online industry. Although developments in computing technology and communication networks were important to early online efforts, these topics are not discussed in the book. However, there are cases when offline computing technologies, such as database searching with punched cards, are reviewed if they are important to the development of online retrieval systems.

Bourne and Hahn's history is divided into 11 chapters. The introduction in Chapter 1 reveals the book's four main themes: "systems, service, funding, and pioneers" (p. 10). Chapters 2 through 4 review early research, development, and experimentation in online systems that took place at universities, commercial organizations, and government facilities. Chapters 5 through 8 discuss the development of important online information retrieval systems including Lockheed DIALOG, SDC ORBIT, the State University of New York Biomedical Communication Network, and legal literature systems by Data Corporation, Mead Data Central, and others. Chapters 9 and 10 recount the public's view of online services and tell the stories of online searching industry pioneers. Chapter 11 concludes the book with a summary of the previous chapters.

Throughout the volume, the reader is presented with many acronyms and abbreviations used to represent technologies, organizations, and government departments and agencies. Fortunately, the authors created a useful acronyms and abbreviations guide that appears at the beginning of the book. The guide, though, "does not include online systems, databases, or publications" (p. xi). The acronyms and abbreviations for these items are normally spelled out in the text and can be found using the book's index. However, a comprehensive acronyms and abbreviations guide would make the book easier to use, especially if one is reading over a long time period or non-sequentially.

Bourne and Hahn also highlight the milestones of early online systems throughout the book by offsetting them in text boxes. These milestones are usually "firsts" (the first online full-text search system, the first online system to include document ordering, etc). The milestones are also gathered at the end of the book by year.

Bourne and Hahn's history shows how far the modern online information industry has evolved since the 1960s, yet much from that era still remains. Online system commands and capabilities from the 1960s will doubtlessly look familiar to current information professionals. For example, an early online system created by System Development Corporation (SDC) called TEXTIR was the first to use relevance ranking. Another system called TIP, created by the Massachusetts Institute of Technology (MIT), had special programs to allow citation-based searching. It could retrieve documents that shared citations in common with another document, or it could list all publications that cited a particular paper. TIP also was the first online system to use Boolean logic, right and left truncation, and "wild card" character searches. Many of these features appeared on other online systems during that time.

Even though these search commands were similar to current online systems, technological barriers impeded their effectiveness. The most difficult hurdle for early online systems was the availability of inexpensive computer storage media. Many online research projects had to share hardware and communication equipment with existing computing programs, which limited the amount of indexing the projects could do. As a result, many systems did not index authors, titles, and other parts of bibliographic citations, although sometimes the sections not indexed were viewable. For example, an early system created by SDC entitled BOLD could display the abstracts for bibliographic records, but the abstracts were not searchable. Because of indexing limitations, some systems, like SDC's MICRO, provided expanded versions of bibliographic citations on microfiche next to their search terminals.

The availability of online time for early systems was also problematic. Online system use was often restricted to certain times during the day, and if more lucrative computing projects needed resources, online project time was co-opted. Even worse, when online time was available, many systems were limited to preset amounts of computer processing time and power. For example, in the early 1970s, the United Kingdom Atomic Energy Authority's Culham Laboratory developed an online system entitled RIOT. It would automatically cut off user searches if they were not printing a certain number of records, thus preventing users from browsing through records and using up valuable computing resources. Even when online time was available, sometimes telecommunication problems were so bad

that the online systems would go down or users would have trouble accessing the systems.

Given the number of hurdles the first online retrieval systems had to face, it is a wonder that any survived the developmental stage. The eventual success of some systems can partly be attributed to funding by governments and private organizations. For example, the National Library of Medicine funded development of MEDLINE and its predecessor MEDLARS. The National Aeronautics and Space Administration (NASA) also helped fund early development of the DIALOG software. This software was eventually placed in the public domain where several other organizations, such as the U.S. Department of Justice and the Library of Congress, made copies of the software and modified it for their own database projects. Private companies such as Mead Data Central (MDC), responsible for the success of LEXIS, and Lockheed Missile and Space Company, developers of the commercial version of DIALOG, also reaped the benefits from heavy investment in online information retrieval projects.

Even though funding made online projects possible, they would have failed without the dedicated effort of individuals who championed their cause. The stories of some of these individuals is revealed in Chapter 10, "Building the Online Industry: Behind the Scenes." Bourne and Hahn state that the early online industry was "characterized more by trial-and-error and seat-of-the-pants risk taking than by methodical planning" (p. 353). Companies such as Dialog, SDC Search Service, and Bibliographical Retrieval Services (BRS) were pioneers in their field, but often they did not know the best way to price, market, and support services. Capital was scare, so employees sometimes staffed telephone support lines and wrote documentation when they weren't performing their regular duties. Some people spent countless hours on the road performing database demonstrations designed to drum up new clients for their services.

Overall, Bourne and Hahn's book is richly detailed and extensively documented. In the book's introduction, the authors provide a good overview of other online system histories, but they also write about a lack of archival and secondary sources in this area. This explains why it took the authors 15 years to gather information for this volume, most of it derived from technical reports, newsletters, and personal interviews. From a research standpoint, the authors have done an excellent job.

However, while no one can take issue with the book's level of scholarship, the presentation of the research could have been more effective. The majority of the book is written in a straightforward, factual manner that is difficult to read as an historical narrative. Except for Chapter 10, there is very little writing in the book that engages the reader and captures the human side of the online information retrieval story. A quote from W. Boyd Rayward on the back of the book's dust cover calls the work "encyclopedic," and in many ways the book as it exists would have worked better as an encyclopedia. Even the book's layout, with double instead of single columns, hints at its reference-like qualities. To be fair, though, it is entirely possible that Bourne and Hahn may have wanted to create a book with a human interest angle, but the lack of documentation may have prevented them from creating such a work.

In short, *A History of Online Information Services, 1963–1976*, does a commendable job of encapsulating the significant people, organizations, and events that helped shape early online information services. Given the problems Bourne and Hahn had in gathering historical evidence for their book, it makes one wonder about the implications for future historical work in the online field. One can only hope that organizations are archiving enough historical material to be able to write the post-1976 online story.

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Research Questions for the Twenty-first Century. Edited by Mary Jo Lynch. Library Trends, Vol. 51(4) 499–709, Spring, 2003. University of Illinois, Urbana-Champaign: Graduate School of Library and Information Science. $28.00. (ISSN: 0024-2594)

For students of library and information science (LIS), whether professional or novice, interested in considering research areas specifically relevant to libraries, this issue of *Library Trends* offers critical and crucial topics for consideration. Eleven noted researchers in the field were asked to choose any area of librarianship and develop research questions for the next five to ten years. In addition to stating the questions, authors were asked to detail why the questions were important, review previous research that could be built upon, and indicate appropriate methodologies. The results are a rich tapestry of research areas and questions in the areas of school, health, public, academic, digital, and global information librarianship.

Although Lynch opens the issue with the confusing and undefined phrase of "analog library service" and a positivistic definition of research, she establishes the need for the research volume. This issue substitutes for a failed research proposal that would have focused on setting a research agenda for the LIS field, as well as presenting an analysis of research trends and future options. Indeed, each essay does build on the assumption that "research is essential" (p. 499) to the sustainability of libraries in the digital age.

Delia Neuman's essay, "Research in School Library Media for the Next Decade: Polishing the Diamond," raises a number of areas for critical thought for school library media specialists. She presents a diamond analogy where four major research questions form the points leading to a center focused on student learning. "For the next decade and beyond, the most important research area for the school library media field involves establishing and documenting the direct relationships of library media programs and library media specialists to that central education focus [of student learning]" (p. 504). Neuman's four research questions are:

- What are the contributions of library media programs to student achievement?
- What are the roles of the library media specialist in today's schools?
- How do students use electronic information resources for learning?
- What has been the impact of the Information Literacy Skills for Student Learning on library media programs? (p. 504)

Neuman develops a research agenda based on student learning and knowledge construction, rather than on teaching methods. Perhaps, library media specialists should be considered as part of a collaborative instructional team including user behavior researchers, teachers, administrators, and other experts from various disciplines. The use of the term "student achievement" raises

A History of Online Information Services, 1963–1976.

By Charles P. Bourne and Trudi Bellardo Hahn. Cambridge, Mass.: MIT Press, 2003. Pp. xiv+493. $45.

This is an important and encyclopedic contribution to the histories of information processing and information science. It is the story of the development of on-line information services—the ancestors of systems such as ProQuest, Westlaw, LexisNexis, and Dialog, which have become ubiquitous during the last decade with the rise of the Internet.

Charles Bourne and Trudi Bellardo Hahn focus on the formative years of information services. As they succinctly explain, the story begins in the early 1960s, when computers offered a technological solution to the problem of manually searching extremely large numbers of information sources. Early solutions typically involved a user sending a search query via post, and the results of the search being returned by post a few days later. The computer systems usually stored indexes, not documents; the texts that searches located had to be printed from microfilm sources. By about 1970, the development of time-shared computers, large-capacity storage disks, and computer networks provided the capability for real-time searching and downloading of full-text documents.

The book is long and very detailed, consisting of five hundred wide-format, double-column pages. It opens with a list of more than two hundred abbreviations and acronyms of "associations, organizations, government agencies, and specialized terminologies," which gives a hint of the complex history that follows. Indeed, this is much more of a reference work than a historical narrative for a reader with a general interest in the subject. However, such complexity is also a strength. There are lots of histories of different aspects of the on-line world, from airline reservation systems to the Internet. Apart from a few honorable exceptions, these books tend to treat their subjects as *sui generis* rather than the outcome of a Darwinian struggle among many competing technological solutions to a widely perceived problem. Bourne and Hahn provide an antidote to such teleological tendencies; here we see scores of players fighting to have their visions adopted.

The book is structured as a series of overlapping chronological narratives. The first one-third covers early experimental systems and prototypes.

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Beneath the welter of acronyms and details, Bourne and Hahn explicitly address a set of research questions: the comparative roles of technological push and pull; the bibliographic nature of the information provided; the role of evaluation in shaping the services; and the relative importance of private and government funding. Some of these questions will be of interest to historians of technology in general, others
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MARTIN CAMPBELL-KELLY

Dr. Campbell-Kelly is reader in computer science at the University of Warwick, where he specializes in the history of computing. His most recent book is *From Airline Reservations to Sonic the Hedgehog: A History of the Software Industry* (2003).

A History of Online Information Services, 1963–1976.

By Charles P. Bourne and Trudi Bellardo Hahn. Cambridge, Mass.: MIT Press, 2003. Pp. xiv+493. $45.

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Encyclopedic as this book is, it is also somewhat frustrating, because it tells only half a story: a relatively brief thirteen-year period in the development of information services, when on-line information was scarce and expensive. Today it is ubiquitous and cheap. We do not learn how this transformation came to pass. This book has the same kind of limitation as would a history of transport that leaves out the airplane, or a history of data processing that leaves out the personal computer. Excellent as it is, it would have been even better if it also told this later story, or even promised to tell it in a second volume.

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