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Editorial

Robert Wedgeworth

Many librarians have expressed concern about the "special" Institutional Subscription Rate currently being offered by Williams and Wilkins. Under the terms of this special rate, institutional subscribers may make single copies from journals published by Williams and Wilkins for users within the library. It does not include the right to make multiple copies or copies for purposes of interlibrary loan.

Notwithstanding its effect on user services, this practice has enormous implications for library acquisitions budgets should it become widespread. The inflationary spiral of the regular subscription rates for serial publications has already seriously reduced the buying power of library acquisitions budgets.

Librarians should be aware that the American Library Association has advised that several factors should be considered in coming to a decision on this matter. First, Williams and Wilkins bases its action, in part, on a Commissioner's Report which is not, to date, the decision of the U.S. Court of Claims. Second, the propriety of the Commissioner's Report is being strenuously contested in the Court of Claims by ALA, ARL, MLA, the federal government, and others. Third, general acceptance of the "use tax" concept of the Williams and Wilkins Institutional Subscription Rate may reasonably be expected to encourage other publishers to levy their own "use taxes" at ever-increasing rates. Fourth, libraries in which copies are made on coin-operated photocopiers not under library supervision and control, derive substantially no protection under the Institutional Subscription Rate which they do not already enjoy.

Each library must decide whether it will pay a premium for Williams and Wilkins' works notwithstanding the significant limits imposed on their use, and on the access to them, by the Institutional Subscription Rate.
Cataloging Nonbook Materials: Mountain or Molehill?

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The development of cataloging codes for nonbook materials is surveyed, with particular attention devoted to the absence of stated objectives, the problem of the integrated catalog, terminology, and examples, and some of the complications caused by the blanket use of title main entry.

The publication of a new code of cataloging rules for nonbook materials, Standards for Cataloging Nonprint Materials (AECT) presents an appropriate occasion to reflect upon past codes and the total cataloging picture for nonbook materials. Furthermore, since both this new code and Developing Multi-Media Libraries (Hicks & Tillin), a guide published in 1970, advocate main entry under title for all nonbook materials, that idea will be given special attention. Two other guides, Non-Book Materials, the Organization of Integrated Collections (CLA), and AV Cataloging and Processing Simplified (AV Cat), which have been published during the same period will also be considered. Quite aside from the cataloging problems of these materials is the lack of a satisfactory name to call them. The term "nonbook" has been chosen despite its negative tone, as "nonprint" is too restrictive and "media" is too comprehensive.

Any reasonable person looking at these publications, all purporting to treat the same subject, might wonder what the big problem is and why everyone seems to be "doing his own thing." Is cataloging nonbook materials so complex and so different from cataloging books that detailed guides are necessary? Are the materials so diverse that no general rules can be drawn up to cover the general conditions? Why is there lack of agreement among the codes in the basic cataloging methodology?

Cataloging rules for books have long been a concern of the American Library Association with the result that there has been strong leadership in this area and fairly wide acceptance of the rules published by the Association. Needless to say, there have always been local variations from the approved rules, but in recent times few catalogers have
felt the need or desire to devise their own rules for cataloging books. Acceptance of a single code for books has been further strengthened by the practices of the Library of Congress, its acceptance of one code, and the wide use of its bibliographic data.

The cataloging picture for nonbook materials has been very different from that for books, as there was a lack of guidance from ALA and the Library of Congress in the early days of the development of these new forms and their absorption into library collections. Academic librarians, who were the leading arbiters of book cataloging rules, could afford to ignore the situation as their collections usually did not include those forms of the "newer media" which presented the most difficult problems. Many other librarians, finding no help from the outside, have devised their own codes and have generally ignored or not attempted to understand instructions belatedly offered in the publications of the Library of Congress and ALA. This guidance was not comprehensive in treatment of all types of media, and was often more detailed and complex than required in school and public libraries. Although the Library of Congress began sale of catalog cards for films and filmstrips in 1951 and for phonorecords in 1958, many titles were not covered, and there was often a long delay between the issuance of the material and the availability of cards. Commercial processors did not start to offer coverage of nonbook materials until the 1960s, and like the librarians they often devised their own rules.

The Anglo-American Cataloging Rules (AACR), published in 1967, brought together in one work rules for books and nonbook materials. It included revisions of the rules for films, filmstrips, and phonorecords which had been issued by the Library of Congress in 1952 and 1958, as well as for other media not previously covered. However, there were still several forms not covered, and while it emphasized the strong relationship between cataloging books and nonbook materials, it was more a collection of separate rules for separate types of materials than a fully coordinated code.

Chapter 12, "Motion Pictures and Filmstrips," is currently being revised to broaden the scope to include other projected materials. A further impediment to the use of the AACR may be explained by the fact that certain specialists could not accept main entry based on authorship responsibility. For example, many map librarians prefer entry of maps under the area covered, with secondary emphasis given to "author."

Given these conditions, individual librarians have continued to devise their own do-it-yourself rules, but in the past few years media specialists of the Association for Educational Communications and Technology and the Canadian Library Association have sought to solve cataloging problems through group action, rather than by an individual approach. This is an encouraging step, as a code produced by a national association will certainly have a chance for wider acceptance and resulting standardization than the work of one person. Also, it should be more responsive to a variety of needs and situations.

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Before looking at the recent publications and some of their predecessors, it will be helpful to think about the basic objectives of the library catalog. These were first stated in modern library literature by Charles A. Cutter.7

OBJECTS

1. To enable a person to find a book of which either
   (A) the author
   (B) the title
   (G) the subject
   is known
2. To show what the library has
   (D) by a given author
   (E) on a given subject
   (F) in a given literature
3. To assist in the choice of a book
   (G) as to its edition (bibliographically)
   (H) as to its character (literary or topical)

Though these “Objects” of Cutter have been questioned in recent years, they have not been totally forgotten. As recently as 1961, the Statement of Principles8 agreed upon at the International Conference on Cataloguing Principles reaffirmed Cutter’s ideas as follows:

The catalogue should be an efficient instrument for ascertaining
1. whether the library contains a particular book specified by
   a. its author and title, or
   b. if the author is not named in the book, its title alone, or
   c. if author and title are inappropriate or insufficient for identification, a suitable substitute for the title; and
2. a. which works by a particular author and
   b. which editions of a particular work are in the library.

In both of the above statements if the word “book” is read as “item” the meaning may be extended to cover nonbook materials as well as books. The allowance for the use of title when author entry is not applicable is clear. By separating all nonbook materials into two categories, those in which authorship responsibility is clearly displayed and those in which authorship responsibility is diffuse, indeterminate or unknown, a pattern can be established which will form the basis of a cataloguing methodology. The bibliographic characteristics of books are analyzed in the same way, thus promoting uniformity and consistency in cataloguing all materials.

In addition to the general catalog objectives, there are other cataloging conditions and certain characteristics of nonbook materials which should be kept in mind in thinking about cataloging rules. As stated in the AACR, “The objectives of descriptive cataloging are: 1) to state the significant features of an item with the purpose of distinguishing it from other items; 2) to present these data in an entry which can be integrated with the entries for other items in the catalog and which will respond best to the interests of most users of the catalog.”9
In applying this statement to nonbook materials, there are no problems in distinguishing and identifying, as the physical features of such materials are usually quite distinctive. However, in order to show bibliographic relationships among different media, entries must be made with consideration of entries the works might have had when issued in book form. For example, to relate a microfilm edition of the *AAUP Bulletin* to its hard copy equivalent, the main entries for both forms should be the same. In fact, if they are the same the entries for both forms can be combined into one entry. Even if a library does not own both forms, consistent entries based on bibliographic characteristics, whenever applicable, should facilitate use of the catalog for all forms of materials. This will allow those catalog users who are capable of observing consistent patterns of treatment to benefit by this knowledge in their use of the catalog. The objective of constructing a catalog in which the entries for different types of media can be integrated can be met by coordinating the rules for main entry, by formatting the entries uniformly and by adding a medium designation to each entry. Thus, the entries for different media (including books) can be interfiled, the medium is clearly indicated, the use of a medium code in the call number becomes dependent only upon its use in physical arrangement of the materials, and the catalog can function as an integrated whole.

Other special factors which must be taken into consideration in cataloging nonbook materials are: (1) the complex nature of authorship of such materials, which in many cases leads to title main entry; (2) the diverse ways of stating the title on a work and its container, or the lack of a title, which necessitates special rules governing the choice of title for main entry; (3) the fact that nonbook materials are usually not browsable to the same extent as books and hence require brief summaries of content as an aid to selection; (4) the need to describe the works in terms of duration as an aid to selection; (5) the need to indicate maturity level as a further aid to selection; and (6) the need to describe any special features of the item pertinent to the type of playback or projection equipment which would be used.

With the basic objectives of the library catalog and the special conditions of nonbook materials in mind, the strengths and weaknesses of the existent codes for nonbook materials will be discussed as follows: objectives of nonbook cataloging; use of terminology in the nonbook codes; instructions and examples in the codes; the integrated catalog; title main entry; and present and future needs.

**Objectives of Nonbook Cataloging**

Though it was recognized by the framers of the *AACR* that a clear statement of the objectives to be accomplished by the catalog is important as a guide to developing rules which respond to user needs, neither that publication nor any of the nonbook cataloging codes contain such a statement. Not only are the objectives apparently ignored,
but only the most recent codes for nonbook materials include any basic rules of practice which apply to all media. AP Cat, a thick tome with the word “simplified” in its title, provides many examples of unnecessary repetition resulting from the lack of general rules. AECT and CLA both present general cataloging rules which strengthen their total effect. The failure to state objectives and generally applicable rules allows inconsistencies of treatment to be obscured. In one code where the main entry for games is under manufacturer, one can only wonder what the authors had hoped to achieve by bringing together all the games of one manufacturer. Did they think seriously about what purposes the catalog should serve? In order to produce effective cataloging codes we must constantly challenge our ideas by exposing them to the test of mutually approved objectives. When codes are revised the objectives should be questioned for relevance and practicality under current conditions. In all instances the codes for mixed media catalogs should be based on objectives which comprehend the nature and use of all forms of media, including books. Rules of practice should be derived directly from the stated objectives.

Use of Terminology in the Nonbook Codes

While most of the newer codes give very satisfactory definitions and do not commit errors in the use of cataloging terminology, this is not true of all the codes. For example, in Hicks & Tillin there is repeated use of the phrase “accession classification system.” While accession number order is an arrangement, or possibly a system, it is hardly a classification system. There is nothing “classified” about it. In another code there is confusion between the terms “cataloging” and “classification.” The fact that some instances can be found where the examples do not illustrate the instructions is further evidence of lack of understanding of terminology. A good example of that may be found in the Escambia County Manual where the instructions for “Card Sets” indicate that main entry should be under author, editor, or publisher, but the example given is entered under title. In Hicks & Tillin, where everything is entered under title, the examples for labels on filmstrip containers show call numbers composed of the filmstrip code “FS,” the Dewey classification 921 (collective biography?), and a Cutter number derived from the surname of the subject. Though this is sensible practice, it is not supported by any explanation in the text; the latter states “These letters are derived from the beginning filing word (disregarding a, an, the) of the main entry . . . .” which is supposed to be the title.

Instructions and Examples in the Codes

In addition to a terminology problem, many of the codes are hard to use because of inadequate instructions and lack of supporting examples. Some codes indicate that a conventional or uniform title should be used for recordings of musical works, but provide no in-
structions for the formation of such a title nor any reference to the AACR. Several codes specify entry of certain or all nonbook materials under title, but give inadequate instructions as to which of several titles to use or what to do when there is no general title. In AECT the rules for "Phonodisc" specify title main entry, but we are told simply to take the title from the disc. In the case of example 1, is the title Beethoven Trio for Violin ... or Trio for Violin ...? If it is the former, then will the title for example 2 be Robert Schumann Trio No. 2 in F major? Including the name of the composer as a part of the title makes a more meaningful entry, but when forenames interfere this advantage is lost. In the case of two or more works on the same disc the direction is "If there is more than one title on the disc, the title of these works should be given in a note." Which one gets the main entry? Which ones are "these works" that are to be mentioned in a note? Should added entries be made for the additional works, and if so, in what form? That is, if the main entry for example 2 above is Trio No. 2 in F major, should the added entry for Maurice Ravel's Trio in A minor, which is on side 2, also be in the title form? If the disc has a collective title on the slipcase, should this be ignored? The examples in AECT do not answer these questions.

In many of the codes the examples illustrate only the simplest manifestations of a certain form, thus avoiding the cataloging problems where help is needed most. In one code the instructions for "Recordings" read "Follow the general rules for library cataloging," whatever that may mean, and then it specifies its own rules. In another code the instructions for "Transparencies" read "Enter them under their most significant aspect, usually title, but occasionally under author, title, series or subject." There are four examples given all using title main entry, so a cataloger considering entry under another element

Example 1

Example 2
has no form to follow and no evidence for determining whether another element might be "the most significant aspect." The extreme of confusion may be found in the code where instructions for musical recordings specify main entry under title except "when a number of different compositions are recorded on one long-playing record without an 'album' title. In that case the main entry can be made under any unifying element that permits the record to be cataloged as a whole." The result is that Grieg's Peer Gynt Suite is entered under title, while Respighi's The Pines of Rome and The Fountains of Rome, having no album title, is entered under Respighi. A record with the title Arturo Toscanini Conducting the NBC Symphony Orchestra is entered as follows: Toscanini, Arturo, Conducting the NBC Symphony Orchestra. In this case the "unifying element" was picked out of the title, thus producing an entry that is neither title nor author, but a sort of hybrid. Furthermore, Toscanini would not be a "unifying element" unless other recordings under his direction are also entered under his name.

For the most part, AV Cat is the strongest in examples and instructions. The introduction of the use of cataloging worksheets for each type of material is noteworthy and should result in "simplified" and consistent cataloging. AECT and CLA are less generous with examples, and in the case of the former the lack of examples covering problems which are bound to arise leads to the impression that the rules were not tested on a representative group of materials. Hicks & Tillin devotes much space to problems of shelving and marking, but many cataloging questions which might be anticipated are not covered in the examples and instructions.

The Integrated Catalog

This topic has been discussed above in connection with cataloging objectives, leaving the question of the desirability of an integrated catalog to be treated here. Since the trend in libraries today is toward acquisition and use of diverse forms of media, the idea of separate catalogs for each form is totally unrealistic. Therefore, it becomes necessary to integrate forms which in some cases have little in common. We must try to find the significant characteristics of each form by which it may be identified and retrieved without attempting to force nonbook materials into a book cataloging mold, or vice versa. Title main entries for all nonbook materials, which is an impediment to the integration of catalog entries for books with their nonbook equivalents, is discussed below.

Title Main Entry

The lack of awareness of the requirements of an integrated catalog made up of entries for all sorts of media, including books, is particularly apparent in AECT and Hicks & Tillin, both of which give preference to title main entry for everything. Admittedly, alternatives are
given; but, there is no methodology outlined for the alternatives, and many librarians will follow the preferred rules on the basis of their regard for the publishers of these codes.

What are the arguments for and against main entry under title? In many forms of nonbook materials the authorship responsibility is unknown or so divided that it has little or no significance as a retrieval aid, and title main entry not only is appropriate but often is the only label by which a work may be known. Such works include motion pictures, filmstrips, games, kits, models, some phonorecords, etc.

Other nonprint materials which are actually representations of printed works cannot be integrated into a unified catalog unless the main entry is the same as for the printed material. If the new ALA filing rules are followed, the added entry for the author of a microfilm edition of a doctoral dissertation will file next to any main entries for the same work in hard copy form. However, under the subject heading the microfilm copy will be listed under title, while the hard copy will appear under author—an unfortunate separation. In filing systems which assemble main entries separately from added entries, there would be no collocation at all. Often a person who is looking for a certain work or information on a certain subject does not know whether it will be a book, a microform, or some other form. In fact, the library may have both the book and a microform copy of it. If they are not entered in the same way, the user may not be made aware of the fact that he has a choice of forms. Thus, the use of title main entries for nonbook representations of printed materials may diminish the effectiveness of the catalog. Entry under any rules other than those which would be used for cataloging the printed equivalent is a violation of the authorship principle, which if invalid for a photo-reproduction of a book is likewise invalid for the book. In the case of microform publication where no antecedent printed work exists, the practice of author entry is also valid if the work has bibliographic characteristics in common with printed forms.

The rationale for title main entry given in AECT is that “The extent and nature of the collaborative authorship of most audio-visual materials . . . makes author entry inappropriate.” This must mean that if author entry is inappropriate for most of the materials it must be inappropriate for all—whether or not they present problems of collaborative authorship. In Hicks & Tillin the concern is for the busy librarian who has neither the time nor knowledge to select proper main entries. If this is true, the librarian will probably have trouble selecting proper title entries and added entries as well, and his catalog, while quickly made, will be unreliable to use.

Another problem with title main entry for nonbook materials is that many titles are indistinct and meaningless without the association of an author’s name. The phonodisc shown above (Example 2) is inadequately identified by the title Trio No. 2 in F major. In fact, non-distinctive titles such as this do not even rate an added entry in the
AACR. What objectives of the catalog would be satisfied by bringing together all the musical compositions beginning with the word Symphony or Trio, or all the paintings entitled Landscape or Self-Portrait? Not all such works have even these descriptive words at the beginning of their titles. Nor is there any consistency in these terms in various languages. Meaningless titles are not limited to art and music, as illustrated by Six Nonlectures, a recording of the Charles Eliot Norton Lectures delivered by e. e. cummings. Many maps have titles such as Map of . . ., Aerial Map of . . ., Geological Map of . . ., etc.

Main entries under such titles do not result in meaningful catalog arrangement and place full burden of retrieval on the added entries. In Hicks & Tillin cognizance is taken of the fact that many works which they enter under title will be known best by the author, composer or artist. In these cases an alternative hybrid entry is created by inserting the personal name at the beginning of the title in the possessive form.2 Schumann's Trio No. 2 in F major is certainly preferable to Trio No. 2 in F major, but it does nothing to promote catalog integration. This method would result in the following sequence of catalog entries:

Schumann, Robert (as author or composer of music scores)
SCHUMANN, ROBERT (as subject)
Schumann, Theodor (author)
Schumann, Walter (author)
Schumann's Trio No. 2 in F major (possessive form entry)

Title main entry can also lead to confusion, or fail to create meaningful catalog arrangement when the same work has been issued under more than one title. A typical example of this can be seen in the case of art prints. One painting by Henri Rousseau has been issued under four different titles in English, to say nothing of the French titles which may have been used. The English titles are:

Jungle Sunset—Abrams catalog
The Virgin Forest—UNESCO catalog
Virgin Forest at Sunset—New York Graphic Society catalog
Jungle Scene with Setting Sun—Shorewood catalog

Few libraries would have more than one copy of this work, but with title main entries additional copies issued under other titles might be ordered inadvertently.

Title main entry, therefore, can be meaningful in some cases, is usable as a last resort in some other cases, and is a meaningless substitute for a sound entry in other cases.

Present and Future Needs

The four new codes discussed above all represent better treatments of cataloging nonbook materials than anything which preceded them. In 1970 the American Library Association adopted as an interim
guide the CLA rules, the code most closely geared to the AACR and soundest in cataloging methodology. We now need endorsement of a single code which includes the strong points of all the new codes, or a complete revision of the AACR to include all media. This revision might be accompanied by a manual containing examples and working methodology as exemplified in AV Cat. Committees of the ALA Resources and Technical Services Division, the Association for Educational Communications and Technology, the Canadian Library Association and the Library Association are presently attempting to reach agreement on cataloging nonbook materials. If agreement becomes a reality we will at last have a modus operandi which should satisfy the requirements in most situations.

However, this agreement may not come easily, as even the AACR, which presents a strong case for the integrated catalog, contains a contradiction of the principle of authorship responsibility. This problem is elucidated by Seymour Lubetzky in his recent publication Principles of Cataloging. Here he discusses two areas of nonbook materials in which the principle of authorship—"Entry should be under author or principal author when one can be determined"—has been avoided. His first concern is that performers, such as musicians, are in fact authors of works which display their artistry, unless they are performing the works of a single composer. The rule in the AACR which ignores performers reads as follows: "Two or more works by different persons issued under a collective title are entered under the title, unless the compiler is prominently named on the label or other source from which the title is derived. In this case entry is under the compiler." Performers would be well advised to see that they are called the compilers of the collected works they perform. Another area which concerns Lubetzky is that of motion pictures, and the same ideas could apply to filmstrips. Here the AACR prescribes entry always under title, although in some cases authorship responsibility is clear and entry under author is necessary for catalog integration. Lubetzky illustrates this by pointing out that books and recordings of Randall Jarrell's poetry would be entered under the author's name, but a film showing him reading or explaining his poetry would be entered under title. Thus, entry is determined by the form of the work rather than by the pattern of authorship. "These two exceptions—of works of performers and of works recorded on film—are calculated to impair the systematic structure of the catalog which the consistent use of a main entry based on the principle of authorship was intended to serve. This is especially detrimental at a time when the audiovisual materials comprising these two categories of works are on the ascendance, both in quality and importance, in the library." In producing a strong code which everyone can understand and use, we must be concerned with clearly stated catalog objectives, catalog integration, sound cataloging methodology, accurate terminology, and good examples. This can be achieved through the cooperation of
media specialists and qualified catalogers. Cataloging nonbook materials is neither a mountain nor a molehill, but a problem thoroughly susceptible to logical and effective solution.

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The Standardization of Cataloging Rules for Nonbook Materials: A Progress Report—April 1972

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A brief history of the development toward standardization of rules governing the cataloging of nonbook materials is given. The two remaining unresolved issues—terminology and main entry—are discussed and the various points of view concerning these issues are presented. This article was written in April 1972. By the time it is published, positions may well have shifted or changed altogether.

History

MEDIA BEGAN TO ARRIVE in school libraries some years ago. Because these collections were small and information retrieval demands uncomplicated, their satisfactory organization was fairly simple. The 1960s brought greatly increased educational budgets and large media centers. Libraries with more sophisticated patrons began to acquire nonbook materials and manufacturers, competing for enlarged budgets, produced an amazing array of media. The excitement surrounding acquisition of new types of materials gave way to dismay over their organization.

The first approach to the organization of media developed in response to the needs of a particular library. As centralized cataloging became more common, the need for nonbook cataloging standards increased. Such standards were drawn up at first at the school district, and sometimes the state level. Because groups worked in isolation tailoring rules to their own needs, the resultant standards were contradictory. Commercial catalogers were understandably reluctant to use any particular set of standards for fear that their cataloging would not be acceptable to a large clientele. Rather than selecting any existing method, each commercial cataloger developed his own. Cataloging chaos marked the media world in the 1960s. Inadequate or nonexistent cataloging rules impeded information retrieval and discouraged interlibrary loan of media.
Many librarians and media specialists recognized the need for national and international standards. In an attempt to standardize non-book cataloging procedures, three sets of rules were developed independently of each other during the second half of the decade. These comprised the Anglo-American Cataloging Rules, Standards for Cataloging, Coding and Scheduling Educational Media, and Non-Book Materials: the Organization of Integrated Collections.

The publication of the Anglo-American Cataloging Rules (AACR) in 1967 was a cataloging landmark. Amid general praise for its well-structured cataloging rules, there was some dissatisfaction expressed concerning Part III “Non-Book Materials.” The critics of Part III thought that it was unsatisfactory in its treatment of nonbook materials for two reasons. In the first place, it did not cover all media; secondly, it dealt with each medium without regard for its integration into an omni-media catalog. The AACR provided adequate cataloging for each medium when filed in a separate catalog. But since the rules of entry and description differed with each medium, the successful construction of an omni-media catalog was very difficult.

In 1968 the Department of Audiovisual Instruction (DAVI) of the National Education Association published Standards for Cataloging, Coding and Scheduling Educational Media. This book provided cataloging rules for the materials most frequently found in media centers. However, it ignored some generally accepted AACR precepts. The authors recognized this, and the book has been revised and published as Standards for Cataloging Nonprint Materials by the Association for Educational Communications and Technology (AECT), the successor to DAVI. These rules are based on title entry for all nonbook materials.

Non-Book Materials: the Organization of Integrated Collections, “Preliminary Edition” was published by the Canadian Library Association (CLA) in January 1970. It outlines cataloging rules for non-book items which form part of an integrated book and nonbook omni-media catalog. The rules for nonbook materials are structured as much as possible in conformance to principles set down in Parts I and II of the AACR. All materials, therefore, are subject to the same cataloging rules. Adaptations to these rules are necessary only when the nature of the material demands them. The book also attempts to standardize nonbook terminology. Following the guidelines on terminology laid down by the DAVI publication, letters of inquiry were sent to 250 media specialists in North America and Great Britain. One hundred replies were received. The resultant list in the “Preliminary Edition” was a synthesis of these opinions.

Interim Guide

During 1970 the ALA/RTSD/CCS Executive Committee and the Canadian Library Association Council both recommended that Non-Book Materials: the Organization of Integrated Collections, “Prelim-
inary Edition” “be accepted as an interim guide for the cataloging of nonbook materials, with the proviso that a permanent ALA/CLA committee be established to work on any necessary revision for the final edition and its supplements.” A Joint Advisory Committee on Nonbook Materials was established in 1971 with representation not only from ALA and CLA, but also AECT, the Educational Media Association of Canada, and the Canadian Association of Music Libraries. (See Appendix 1) This Committee is advising the authors of the “Preliminary Edition” on the content and format of the “1st edition.”

In the “Introduction” to the “Preliminary Edition” the authors asked for letters of comment. The response has been much larger than anticipated and indeed very helpful. Most comments emanated from librarians and media specialists in universities and schools and from teachers of library science; a few came from public librarians, none from special librarians.

One of the central aims of the authors of Non-Book Materials had been to create a set of cataloging rules which would facilitate the creation of an omni-media catalog. Such rules can be used for catalogs which are divided by medium, while rules constructed for individual media result in entries which are difficult to integrate. This expressed aim found general approval in most of the comments received. In the forthcoming “1st edition” of Non-Book Materials, the authors have given much consideration to the views expressed in these letters. This input and additional research has resulted in a rewriting of some sections, the enlargement of others, and the inclusion of new media.

The first drafts of the “Preliminary Edition” were written for school libraries, but it was quickly realized that school libraries could not isolate themselves bibliographically from the rest of the media community. The advent of centralized and commercial catalogers and media bibliographic tools means that cataloging for all media centers must be standardized. The “1st edition” of Non-Book Materials will be directed to the needs of all media centers.

International Concern

The concern about media retrieval has been growing steadily in the last few years, and many librarians and media specialists can take credit for alerting their professions to this need. Special mention must be made of Pearce Grove, who headed the very successful Institute on Systems and Standards for the Bibliographic Control of Media, for bringing forcefully into view the important role media can and does play in information systems.

This concern about bibliographic control has impelled the Descriptive Cataloging Committee of RTSD to reconsider Part III of the AACR in the light of an omni-media catalog. At the same time, the Cataloguing Rules Committee of the Library Association of Great Britain has established a Media Cataloguing Rules Committee which is
drawing up a new edition of Part III for the British edition of the AACR.

Much work has been done in an effort to produce a set of rules for cataloging nonbook materials within an omni-media catalog. As of April 1972, Part III of the AACR in both the American and British texts, is being rewritten. The authors of Non-Book Materials with the counsel of the Joint Advisory Committee on Nonbook Materials hope to publish a “1st edition” of their book in late 1972 or early 1973. There is collaboration between the parties involved in these various efforts. It is to be hoped that these three forthcoming works will all be based on the same cataloging principles even though each will be worded differently to meet the needs of its particular constituency.

Agreement has been reached on most of the rules pertaining to the cataloging of nonbook materials. Only two issues still remain to be settled—terminology and main entry.

Terminology

Terminology is closer to resolution, partly because most of the parties to this discussion have grown tired of argument and are willing to compromise. What are some of the problems in constructing a list of media designations? In the first place, general terms subject to different interpretations, such as film, record, media set, must be avoided. Secondly, the use of trade names such as microcard and videocassette should not be used so that producers of similar media are not placed at a disadvantage. Thirdly, consideration must be given to differences in English usage in Britain, Canada, and the United States in order to maintain international bibliographic control. We must decide either to avoid ambiguous terms or to have two parallel lists containing terminology in use on both sides of the Atlantic Ocean. The differences between Canadian English and American English do not present as big a problem.

At its 1971 summer meetings in Dallas, the Descriptive Cataloging Committee, which was attended by representatives of the Canadian Library Association and the Library Association, passed a motion urging the construction of a list of generic media designations. These designations are to follow the title in order to alert the catalog user to the nature of the material. Specific information about format would then be given in the collation. Such a list was prepared following the meeting and circulated to members of the committees involved in the AACR revision. These terms proved to be unacceptable, because many media could be placed in more than one generic designation.

The Library Association Media Cataloguing Rules Committee then discarded the idea of generic designations and produced a list of very specific terms which they called “physical form designators” to appear as first item in the collation. (See Appendix 2) The British text of the AACR will provide an option for those who wish to follow North American practice.
The authors of Non-Book Materials disagree with the use of very specific media designations. As new media and new formats for existing media are produced, new terminology would have to be constructed. This would lead to a proliferation of terms, difficult to standardize (given the long and tortuous standardization procedures). The list of media designations proposed by the authors and Joint Advisory Committee on Nonbook Materials constitutes an attempt to find a compromise solution. (See Appendix 3) The Descriptive Cataloging Committee of ALA has not yet accepted or rejected this list. The list is generic enough to provide for the inclusion of media which may be developed in the future, thus avoiding the need to erect new terminology, and yet specific enough to identify a particular medium. If further description of a particular item is needed, qualifying information may be provided in the collation.

Main Entry

The controversy over main entry is much more difficult to resolve. Because basic cataloging principles are involved, a compromise solution is more elusive. There are three prominent positions on main entry for nonbook materials: (1) entry under title for all nonbook materials, (2) unit entry without main entry but with several added entry headings, and (3) entry for all media in a manner consistent with Part I of the AACR.

AECT in its Standards for Cataloging Nonprint Materials, "Revised edition" is the leading advocate of title entry for all nonbook materials. Its rule for entry states:

According to widely-accepted cataloging principles, printed materials are generally entered under author or, lacking a specific author, under title. The extent and nature of the collaborative authorship of most audiovisual materials, however, makes author entry inappropriate. Entry under title is therefore recommended for all audiovisual materials.

Entry by title as proposed by AECT would undoubtedly provide more economical cataloging than entry by Part I of the AACR.

Opposition to the AECT proposal maintains that many nonbook materials have very clearly designated authors, and that in works of artistic creation the author-artist-composer assumes much more significance as a main entry than a nondistinctive title such as "Opus 5," "Mood 69," or "Quintet in A minor."

Under the AECT policy an omni-media catalog would have two sets of rules governing main entry—one for books, the other for nonbook items. This difference would be most marked when the catalog was approached by subject. The works of a particular person in book format would stand together under subject while his works on the same subject in other media would be dispersed throughout the subject file.

The Library Association Media Cataloguing Rules Committee is de-
developing the third position, that of unit entry. In a memorandum dated September 1971 titled “Unit Entry and the Determination of Headings,” Peter Lewis, the Committee’s chairman writes:

The preference for unit entry, in distinction from main entry, is because the latter puts too much emphasis on the construction of “one-shot” catalogues and listings, while the unit entry encourages the provision of multi-access catalogues. In the field of non-book media, on the one hand authorship tends to be diffuse and of smaller importance therefore in the retrieval of records, and on the other titles are frequently indefinite or incapable of standardised expression. We should therefore anticipate a variety of approaches to the catalogue by its users, and there is no merit in determining arbitrarily a single or principal approach, whether by author, title, performer or producer.

The unit entry consists essentially of a standard description of the item, i.e. what A.A.C.R. North American text calls “the body of the entry,” plus technical specification (= collation) and notes . . . Names and titles are . . . generated within the unit entry for use as headings. . . . The ranking order of priority of headings is established by analysis of the unit entry itself. . . . The kinds of heading, and their relative importance, are related, not to the medium, but to the work embodied in the medium.

As this concept has not been fully developed, and the British Committee has not produced sample cataloging to illustrate its position, it seems somewhat premature to advance a critique. Criticism of the British proposal is likely to hinge upon the fact that nonbook materials would be cataloged by an entirely different principle than books, namely, in the one instance that of main entry, in the other that of no main entry.

The authors of Non-Book Materials believe that all materials should be entered according to the same set of rules. It is possible to construct a new cataloging code so that all materials, for example, are entered under title. We think this idea is impractical and unrealistic for it is unlikely that many libraries would consider recataloging their book collections. The practical solution to the problems of entry in a multimedia catalog is to enter nonbook materials according to the precepts of Part I of the A.A.C.R. Not only is this a practical solution, but an eminently workable one as well. Many audiovisual works will be entered under title because of the diffuse nature of their authorship. However, many materials are issued with a clearly attributed author, artist, or composer. It is important that all the works of one person stand together in the catalog. Under the AECT and the British rules the works of one person will stand together when approached by that name, but materials on the same subject by the same author will not stand together when approached by subject. This makes the catalog less useful to the patron than it could be. The construction of a catalog should strive toward optimum usefulness to the library public within a range of economic feasibility. Selecting a main entry raises cataloging costs but not sufficiently to make it prohibitive. The resultant catalog is governed by one set of rules which once understood

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can be applied universally. The library patron then faces a single totally consistent catalog for all materials rather than one based on two or more sets of rules, or worse still, several apparently inconsistent catalogs.

In the forthcoming edition of *Non-Book Materials* there is one rule of entry which will differ from the *AACR*. The proposed rule states: “The works of more than one composer or author issued with a collective title are entered under that title unless the compilation has obviously been made to display the talents of a single performer or performing group. In this case, entry is under the name of the performer or performing group.” A similar rule has been written for works of more than composer or author issued as one item without a collective title. After much discussion it was decided that the performer in many instances is analogous to the compiler of a collection of works bound into one or more volumes. This ruling appeared to make possible a simpler, more user-oriented catalog without undermining the fundamental structure of the *AACR*. The case for this approach is made in Seymour Lubetzky's *Principles of Cataloging, Final Report. Phase I: Descriptive Cataloging* (Los Angeles, Institute of Library Research, University of California, 1969. p. 29-32).

In this era of union catalogs, centralized and shared cataloging, and international exchange of information, the media world needs an internationally accepted code for the bibliographic control of all materials.

**APPENDIX 1**

**Joint Advisory Committee on Nonbook Materials**

*Dr. Margaret Chisholm, Chairman*

*Representatives of the American Library Association*

Katharine W. Clugston, Head, Audiovisual Section, Descriptive Cataloging Division, Library of Congress, Washington, D.C.

David G. Remington, Director of Library Services, Bro Dart, Inc., Chairman, Audiovisual Materials in Libraries Committee (ad hoc), CCS/RTSD/ALA

Virginia Taylor, Materials Specialist, Audiovisual, Instructional Materials Services, Houston Independent School District

*Representatives of the Association for Educational Communications and Technology*

Margaret Chisholm, Dean, School of Library and Information Services, University of Maryland

William J. Quinly, Director, Media Center, Florida State University

Alma M. Tillin, Technical Services Librarian, Library Center, Berkeley (California) Unified School District

*Representatives of the Canadian Library Association*

J. McRee Elrod, Head, Catalogue Divisions, University of British Columbia Library

Lynn Jarman, Music Cataloguer, National Library of Canada, Ottawa; also represents the Canadian Association of Music Libraries

Nancy J. Williamson, Assistant Professor, Faculty of Library Science, University of Toronto

*Volume 16, Number 3, Summer 1972*
**APPENDIX 1 (cont’d)**

*Representative of the Educational Media Association of Canada*

C. F. Johnston, Associate Professor, Educational Technology, and Co-ordinator of Media Services, Faculty of Education, Queen’s University, Kingston, Ontario

*The authors of Non-Book Materials: the Organization of Integrated Collections*

Shirley Lewis, Director of Library Services, Co-operative Book Centre of Canada Ltd.
Janet Macdonald, Audio-Visual Librarian, North York Public Library
Jean Riddle Weihs, Course Director, Library Techniques, Seneca College of Applied Arts and Technology

**APPENDIX 2**

*Chart of Media Designations used by Prominent Parties concerned with the Standardization of Media Cataloging*

This table was prepared in accordance with the last public documents of each group received by April 1, 1972. The blank spaces indicate that the document in question did not make a specific statement about the particular medium.

<table>
<thead>
<tr>
<th>NBM (1970) ¹</th>
<th>AECT (1971) ²</th>
<th>LA (British) 1972²</th>
<th>JAC (1972) ⁴</th>
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</thead>
<tbody>
<tr>
<td>Aperture card</td>
<td>Microform</td>
<td>Architectural drawing</td>
<td>Microform</td>
</tr>
<tr>
<td>Art print</td>
<td>Art print</td>
<td>Art original</td>
<td>Picture</td>
</tr>
<tr>
<td>Art print</td>
<td>Art print</td>
<td>Art reproduction</td>
<td>Picture</td>
</tr>
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<td>Chart</td>
<td>Computer disc</td>
<td>Chart</td>
</tr>
<tr>
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<td>Diorama</td>
<td>Computer tape</td>
<td>Diorama</td>
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<td>Motion picture</td>
<td>Electronic video recording</td>
<td>Videorecord</td>
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<td>Chart</td>
<td>Filmstrip</td>
<td>Chart</td>
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<td>Filmstrip</td>
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<td>Flash card</td>
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<td>Globe</td>
<td>Globe</td>
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<td>Kit*</td>
<td>Unit-interdependent kits</td>
<td>Kit*</td>
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<td>Laboratory kit</td>
<td>Pack—not fully inter-dependent kits</td>
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<td>Microform</td>
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<td>Model</td>
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<td>Motion picture</td>
<td>Photograph</td>
<td>Photograph</td>
</tr>
<tr>
<td>Picture</td>
<td>Kit</td>
<td>Programmed learning</td>
<td>Model*</td>
</tr>
<tr>
<td>Relief model</td>
<td>Map</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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APPENDIX 2 (cont’d)

NBM (1970) ¹  AECT (1971) ²  LA (British) 1972³  JAC (1972) ⁴
Slide  Slide  Slide  Slide
Phonodisc (Audiodisc)  Phonodisc  Sound disc  Audiorecord
Phonotape (Audiotape)  Audiotape  Sound tape, cartridge  Audiorecord
Sound tape, reel
Realia  Specimen  Specimen  Realia
Stereoscope slide  Slide  Slide  Study print
Study print  Study print  Technical drawing  Picture
Transparency  Transparency  Transparency  Videorecord
Video tape  Videotape  Videotape
Wallchart  Chart

* Note comment in Appendix 3.
** To be cataloged under the medium designation which describes the materials.

APPENDIX 3

A List of Media Designations Proposed by the Joint Advisory Committee on Nonbook Materials and the Authors of Nonbook Materials

The generic designation, to be given in parentheses following the title, will be refined if necessary in the collation and notes.

The purpose of media designations is twofold:

i) To notify the user briefly and immediately about the type of material listed. Users interested in the type of material designated will be prepared to read further for more detail. Users not interested in this general type of material may move on to the next listing.

ii) To eliminate the proliferation of media designations which may develop if specific designations are used. It is anticipated that this list will be hospitable to future media.

A side benefit of generic media designations is the ability to produce a catalogue card which, exclusive of collation, can be used as a basic card for publications reproduced in various formats of the same medium.

The media designations are:

- **Audiorecord** includes sound recordings of all types, disc, tape, wire, roll
- **Chart** includes flip chart, wallchart
- **Computer record** includes all machine readable data files (it is quite possible that this designation will be changed shortly to machine readable data file)
- **Diorama** includes filmslip
- **Filmstrip** includes filmslip
- **Game**
- **Globe**
- **Kit** Two or more media, all significant but not fully interdependent, are catalogued as a kit. However, two or more interdependent media are catalogued by the dominant medium, with the less significant medium listed in the collation. A medium of minor or
trivial importance may be ignored when selecting the medium designation, e.g. an ephemeral audiodisc of bird calls attached to the cover of a bird book, or a piece of wampum dropped into a portfolio of Indian documents. These items may either be ignored or included in a note.

Map
Microform includes aperture card, microfilm, microfiche, micro-opaque
Microscope slide
Model may include relief model, though relief model may be included under map. The final decision has not been made.
Motion picture
Picture includes motion picture loop
Realia includes photograph, art original, art print, art reproduction, study print
Slide includes specimen, sample. This medium designation may be changed to “Specimen.”
Transparency includes stereoscope slide
Videorecord includes videotape, videocassette, videodisc, electronic video recording
This paper explains a numbering scheme for the processing of government documents, especially those housed in a documents collection. The proposal is based on the idea that a uniform standard numbering scheme is one of the necessary elements in the functioning of a large research documents collection. This scheme is a modification of the Library of Congress "J" class. The number assigned in the "J" class to the official publications of a governmental body is expanded to be used for all publications of that government. Further, the "J" schedule is enlarged to four and five digits so that publications of local governmental bodies and of international governmental organization can be included in the scheme.

Document Classification System—Background

The development of the Documents classification scheme that is presented here is related to certain concepts of documents and their present place in a large research library. The design of the scheme and the characteristics that it has stem from these concepts.

Governments are concerned with all human activity, and their publications are a record of this activity; and, as government publications, they are an "official" record. As such, they are, for research purposes, primary sources. The researcher accepts them as "authoritative" and usually does not question the information as he might if this same information were cited in a secondary source. The intrinsic merit of the publication is the fact of its authorship, i.e., that it is a government publication. Government publications must therefore be considered as separate viable entities, having an essential nature that differentiates them from other informational sources and requiring different acquisition and processing methods and to a certain extent different servicing methods.

The purpose of this paper is to present a proposal concerning only one of these differences: the processing methods. Although very much interrelated, acquisition and servicing require a much more extensive study. While no attempt is made to deal in depth with these topics,
the following points are proffered because they form a background to the design of the scheme:

1. In a large research library, at some point in the research process, the publications of a governmental unit must be interpreted to the patron, and he must be directed to their location within the library system. There should, then, be a documents collection or unit with staff having documents expertise who would indicate what the governmental unit has produced, what the library has, and where these items are.

2. The state of the art of subject servicing of documents is not good. Further, the inescapable conclusion is that no one library can with only its own effort, time, and money adequately provide subject indexing for all governmental publications. Until there is considerable improvement in subject servicing, no real answer can be given as to what documents should be fully cataloged and classified according to subject and then housed outside the documents area.

3. The technical problems—proliferation, varying importance and subject matter, variety of format and bibliographic characteristics—that libraries now encounter in their handling of documents tend to obscure the larger policy problem of subject servicing. If the scheme offered here can lessen these technical problems, perhaps a new dialog on documents will occur.

At the present, if a library is to maintain a large document collection as a manageable and useful unit, it adopts one of the following organizational patterns: a totally separate document collection, a partially integrated collection, or a totally integrated collection. The high cost of fully cataloging and classifying documents usually works against the total integration pattern. For the partial integration pattern, the desirable balance between the documents area and the rest of the library is yet to be found, and the totally separate pattern seems to be, at least on the surface, a better one. But both the partial integration and the totally separate patterns have negative features. One is the subject servicing problem and the other is a lack of a uniform standard numbering system for documents housed in the documents area.

Consider a hypothetical situation of a document collection whose present size is 500,000 pieces and which is growing by some 100,000 pieces a year. Further, unless the collection is separate, some 200,000 of the 500,000 may be outside the documents area, and of the incoming material anywhere from fifty to eighty percent will remain in the documents area. For the U.S. and the U.N., which comprise about sixty percent, the collection probably uses the U.S. Government Printing Office number and the United Nations number. The other forty percent has no numbering scheme. The numbers the collection may use for this forty percent are likely to be unique to that collection and the numbers may also be different for each group of documents. The result is a bewildering array of numbers, including items with no numbers and
which must be "underlined" to be shelved. Consequently, the control situation (i.e., the shelving, retrieving, and reshelfing) within the documents area is problematic.

The thesis of this paper is that a uniform standard numbering scheme will improve the control situation and thereby remove one of the negative factors in the functioning of a documents collection.

In addition to uniformity, other desirable characteristics for the system are the following. It should be related to the issuing unit since the intrinsic merit of the publication is the fact of its authorship. To quote Dale: "... it may be stated that collections of government publications ... are most easily accessible to the student and the scholar if they are classified on the basis of the archival principle of organizational structure." The system should provide a unique number for each document, and it should be distinctive so that the numbers can be recognized as government document numbers by other areas of the library. Also the scheme should incorporate whatever numbering system the government agency uses, since this would considerably ease the assigning of numbers.

**Document Classification System—Explanation**

The scheme is a modification of the Library of Congress "J" class. For this class, a number is assigned to governing bodies to be used for their "official" documents. In this proposed scheme, the number assigned to a governing body, e.g., J 301 Great Britain, will be used as the overall number for all publications of that government.

The second part of the number is derived from the "Table for Arrangement of Official Documents" and from the "Table for Arrangement of State Documents." The function of these tables is to "arrange" the publications within the overall number, to group them according to governmental function and, at the same time, to keep them in alphabetical numerical order. Up to this point, the scheme follows Library of Congress practice, but to accommodate all publications certain elements of the arrangement tables are expanded.

The "C" element from the official documents table is used by LC for "Collections as a single series by serial number or by sessions or dates, etc." For this scheme, the .C is added to the J number. Following the "C" would be the number assigned by the governing unit, e.g., the U.S. Superintendent of Documents classification number. Hereafter, in this paper, the number assigned by the governmental unit will be referred to as the "official number."

If there is no official number, the second part of the number is the "R" element from the official documents table which LC assigns to "Administrative. Departmental Reports." LC uses the "R" for only some departments. Although "R15" may be used for "Collections," LC puts "Other (War, Navy, Post Office, etc.) with subject." In this scheme the .R15 is added to the J number; the third part then becomes a Cutter number for the issuing subunit with the fourth part a Cutter.
number for the title of the item. Numbers for subunits and for titles of the publications would be assigned on the basis of the LC system of author notations.

For state documents, the second and third parts of the number follow this principle, but the elements are taken from the “Table for Arrangement of State Documents.” These elements are as follows (with author’s additions shown in brackets): “Table for arrangement of state documents—continued.

Executive documents other than sessional series
Governors’ messages.
Collections covering three or more administrations—continued.

(3) Other executive documents, e.g., Executive journal
[Administrative Departments]
(4) a. Secretary of State
b. Department of Justice
c. Other documents not elsewhere provided for by subject

[r] [Departmental Reports] [18]

The J number has uniformity and it is related to the issuing body. Because the numbers are assigned on a geographic basis, new numbers can be added. In some instances, the Middle East for example, the numbers have decimals and are not “whole.” This is not a problem for the system, but some governments have a “less than equal” number. However, the J number does allow for change of governments for the same geographic area, especially if the name of the country changes.

Another important factor is that the number is an established one and one which other areas of the library besides Documents could “recognize.” Also in the library profession as a whole, this number is now known nationally and internationally. Further, it is a distinctive number because LC has used this number (the plain J) only for “official” documents. It is feasible and possible for LC to use the J for other material, for example, Kennedy’s speeches published by a commercial publisher. For this example there is a significant connection with governmental activity and it may not pose too much of a problem for the documents area. However, for such material the library should probably use another number. In the library’s main shelflist, it should be indicated that the single J schedule is to be used only for documents.

As is indicated in the discussion of the arrangement tables (note especially the words marked by brackets) the J is being used in a manner not now considered by the Library of Congress. While the proposed theme does deviate from present LC practice, it does not really conflict with anything LC is now doing. Certain elements of the arrangement tables are simply expanded with others left as they are. Such items as legislative and parliamentary material which a library may now have with a J number are likely to be government documents and could keep their present number.
A noticeable difference is the notation format. Since the number is unique, this difference should not be a problem. A decimal point has been placed after the letter J to clarify the notation. A colon is used to break the number, so it may be written on two lines. The part before the colon is for the governmental body and that after is the number for the specific item.

**Document Classification System—Application**

A partial schedule of numbers for the system follows with annotations included to explain the number and to indicate the development of the system.\(^{14}\)

1. **J.11.R5:**
   - **vol. no./pt. no.**
   - **U.S. Congress.**
   - Congressional Record, proceedings and debates of the Congress. 43rd -

2. **J.35.J3:**
   - **cong./vol. no.**
   - **U.S. Congress. Senate.**
   - Journal.

3. **J.66:**
   - **Serial vol. no.**
   - **[Documents of Congress] 'The Serial Set.'**

4. **J.75.J2:**
   - **cong./GPO no.**
   - **U.S. Congress. Senate. [Committee]**
   - [hearing].

5. **J.75.R2:**
   - **cong./GPO no.**
   - **U.S. Congress. House. [Committee]**
   - [hearing].

The numbers J10 to J83 in the Class J, p. 35–39, have been assigned to congressional publications. Since these are large sets, their present J numbers can be used. The Congressional Record and hearings, which LC now classes in KF26 and KF27, do have Government Printing Office numbers and could be put here. The Serial Set does not have a GPO number, except insofar as its serial volume number is one.

2. **J.83.C:**
   - **United States**
   - [Collected documents].

   This, combined with the GPO number, would cover the greater part of U.S. documents. LC uses the J83 for:

   "Administrative documents, departmental reports, etc."

3. **J.87.P4.4c:**
   - **Pennsylvania**
   - State document number
   - [documents].

   P4 is the Cutter for Pennsylvania. In the "Table for Arrangement of State Documents," .0 to .3 are used for legislative and certain executive documents. These numbers can be incorporated into this proposed

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system. Items having these numbers would be a part of the documents collection.

Although it has not been used elsewhere, the Pennsylvania State Library at Harrisburg is using a numbering system for Pennsylvania documents.\textsuperscript{16} It could, theoretically, be incorporated into this proposed system at this point (4c) of the schedule.

(4)

J.87.P4.4r: Pennsylvania. [department]
LC author no. [title]
for subunit
LC author no. for title

If there is no numbering system being used by the issuing unit, then this number would be used. The LC author numbers would have to be assigned by the documents section. The importance of the 4c and the 4r is that if the issuing unit uses a number for some, but not all of its publications, then those to which a Cutter number must be assigned can be kept with those having an official number and in a single filing order.

Because most U.S. items have a GPO number, this situation would not arise for the U.S.; but for other national governments and for the United Nations, as is indicated later, this situation does occur. In that instance, the C and R15 from the "Table for Arrangement of Official Documents" would be assigned.

(5)

J.103.C: Canada. [Collected Documents].
official number.\textsuperscript{17}
J.103.R15: Canada. [Administrative Units].
LC author no. [Departmental reports].
for subunit
LC author no. for title

This is to be used for items either not having an official number (see J.103.C:) or not having a number that can be used.

(6)

J.1000 and J.2000 These numbers are to be used for local governmental units of the United States. The use of four digits is an expansion of the single J.

The Library of Congress assigns local units into the JS class. The JS is not incorporated into the Plain J scheme because this class number is also used by LC for publications about the area and for local government as a subject. However, the JS numbers for cities can be used as a
point of reference for the assignment of the J four digit numbers.\textsuperscript{18}

When applying these numbers to all local governments, more use will be made of Cutter numbers following the base number, which corresponds to LC practice for cities "not expressly provided for in the scheme."\textsuperscript{19}

The base number is determined by dropping the S from the JS number and then, for the three digit number add 1; for the four digit, change the one to two. The following examples indicate how this works.

\textbf{(7)}

J.2466.S7.3 Pennsylvania. (Borough) State College.

\begin{itemize}
  \item \textbf{Official number} J1466.S7 [Collected Documents].
  \item \textbf{Official number} J1261 [Collected Documents].
  \item \textbf{LC author no.} Administrative units.
  \item \textbf{for the subunit} Departmental reports.
\end{itemize}

J.2261.3 Pennsylvania. (City) Philadelphia. (JS1261)

J.2261.4 Pennsylvania. (City) Philadelphia.

The \textbf{.3 and .4 follow the same concepts applied to national and state publications. This second part is based on the divisions used by LC in the JS section for municipal documents (JS13). The divisions are as follows, the words in brackets having been added by the author:}

"JS13 United States. Cities, Towns, etc. A-Z

Under each:

\begin{itemize}
  \item (1) Mayor's report (with Department reports)
  \item (1a) Inaugural (and other addresses or messages)
  \item (2) Council proceedings.
  \item (3) Other serials. [Collected Documents]
  \item (4) Separate documents not elsewhere provided for under subject (by date)."
\end{itemize}

The "Tables of Subdivisions under States and Cities in JS" have not been followed because they are subdivided on the basis of subject.\textsuperscript{21} They, therefore, do not really function as a "table for arrangement."

\textbf{(8)}

J.3000 and J.4000 These are to be used for interstate authorities or administrative units such as: Penjerdal or New York Port Authority or Colorado River Commission.

J.3256.P4 Penjerdal would be:

\begin{itemize}
  \item \textbf{JS1256 Pawtucket to Peoria}
\end{itemize}

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Again LC J has been expanded. The number is determined in the same way the local unit number is determined.

(9) Numbers in this group are for local governmental units of other national governments.

J.5000 through J.8000 Development and assignment of the number is the same as for local United States. Numbers beginning with 1 change to 5; with 2 to 6; with 3 to 7, and 4 to 8. So:

J.5731 Canada (City) Calgary (JS1731)
J.7731 Great Britain (City) Manchester (JS3731)
J.7645 Great Britain (City) London (JS3645, Corporation of the City of London. Collections).

J.01000 through J.09999 This group of numbers is to be used for international organizations.

LC has assigned numbers to these organizations in the subject class to which the organization belongs. For example:

JX1977 United Nations (international law)
JN18 Council of Europe (constitutional history-Europe)
HD9698.5 International Atomic Energy Agency (atomic engineering).

As with JS, these are subject class numbers and therefore are not used only for the organization. Further, they would not be together in a single group, and LC has not assigned numbers to all (for example, the International Labour Organization).

For purposes of “classification” and machine manipulation of data, the Yearbook of International Organizations has assigned a “perpetual number” to each organization it lists. This number is combined with the J to form the number for international governmental organizations, e.g., J.01010—United Nations. The zero at the beginning is the “class” number for governmental organizations. With this number there is no need to establish a schedule of numbers. Because the Yearbook is a recognized and established reference work, its numbers seemed to provide a better base than the subject class numbers used by LC in its J schedule.

(11) United Nations [early series]

The .A can be used for the San Francisco Conference. The subarrangement is a modification of “Table for Arrangement of Official Documents,” p. 55 and p. 57. It is designed to fit the U.N. organizational structure. Other international governmental organizations would follow a similar pattern.
The HZ is used in the LC arrangement table for debates of a single chamber. Other U.N. organizations, such as the Security Council, should follow a similar pattern.

J.01010.R15

LC author no. for title

This is to be used for items not having a U.N. document series number (see J.01010.C) or those having a U.N. number which cannot be used. For some titles, the U.N. number places individual items of the title in a different place. For example:

J.01010.R15

U.N. Economic and Social Council.

E31

World economic survey. 1948-

W36

N.Y.U.N., 1948-

Document Classification System—Effects

For an established document collection, depending on its size, adoption of the scheme would require expenditure of staff and money. By including the GPO number as part of the classification, the changes for the U.S. would be routine: such as adding J.88.C to the check-in card, the publication and Poole's list. Other documents would require not only a J number, but also an LC author number for subunit and title. The numbers would have to be added to the check-in card and the publication. If the U.N. number, or any other "official numbering system," e.g., Canada, is used, the changes would be similar to those for the U.S.

To indicate the numbers that have been assigned, the document collection would need a shelflist in addition to a check-in card file. Elements, such as Poole's list for U.S. document numbers, already present in a document collection can be used for the shelflist. The published classification schemes of the United Nations and others can also be a part of the shelflist.

In comparison to the cost of changing a library's classification scheme from Dewey to the Library of Congress, conversion to this system would cost considerably less and is not as complicated or as difficult. Indeed, there may be necessary only a modicum of physical rearrangement of the documents area, if the collection now employs a system which is geared toward the "archival principle of organizational struc-
ture." Also, neither staffing patterns nor processing procedures of the documents unit would need to be significantly altered.

The major advantage in the use of the scheme lies in the improvement of the control factor, which in turn improves the entire organization, management and servicing of the documents collection. If it is accepted that probably one out of every three items acquired by a large research library is a document, then this improvement is a significant one for the library.

Because the single J is a common element to most research libraries, the scheme can be adopted and used on a national and international scale. If included by the governmental body in the publishing of the document, it could become an "international standard book number" for documents.

These possibilities would free a large amount of effort now required for organization and management which could be concentrated on the subject servicing problem. With more and better indexes and catalogs, the library might be able not only to determine what is the desirable balance between the documents area and the rest of the library, but also to achieve that balance.

REFERENCES

2. Ibid., Section II.B. Bibliographic Control. p. 29-33.
3. As is indicated by this statement of Childs: "That the patterns for government organization do not follow patterns for present library classification has been recognized to a modest extent in Class J of the Library of Congress Classification in the table for arrangement of official documents..." Childs, James B., "Government publications," Library Trends 15:585 (January 1967).
5. The July 1966 issue of Library Trends v. 15, no. 1, has comments which indicate the document numbering schemes presently being used. Note especially p. 55, last paragraph.
8. Ibid., p. 53-56.
10. Ibid., p. 55.
11. Ibid., p. 56.
12. Ibid.
13. Ibid. p. 43.
14. A complete schedule is being developed, but it would be too much for this paper, so it will need to be published separately. A list of J numbers for national governments has been compiled. Using the 2d edition of Class J and the Classification

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Additions and Changes especially List no. 150, a number was found for those
governments which are members of the United Nations.

15. Ibid., p. 39.
16. Pennsylvania State Library indicates their system is based on: Houk, Judith Ann,
Classification System for Ohio State Documents (Columbus, Ohio: Ohio State Li-
brary, 1962).
17. Canada, Dept. of Public Printing and Stationery, Documents Library, Outline of
Classification for Canadian Government Publications 1 v (Ottawa: 1961).
18. U.S. Library of Congress, Subject Catalog Division, Classification J. Political Science
(2d ed.; Washington, D.C.: GPO, 1924, reprinted 1966), p. 250 and following, be-
ginning at United States, Local, By City.
19. Ibid., p. 284.
20. Ibid., p. 243.
21. Ibid., p. 284.
23. U.N. Dag Hammarskjold Library, List of United Nations Documents Series (Bib-
1965]).
24. At present, ISBN’s seem to be strictly numerical and are not being set up for a
combination of letters and numbers. See: Lawani, S.M.A., “Standard book number-
ing, its development and implications for library technical services,” Unesco Bul-
Toward Some Standards for the Library Card Catalog Tray

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Commercial card catalog tray tests are unrelated to actual in-use wear. Specifications for card catalog trays for the new Elmer Holmes Bobst Library at New York University, detailed in this article, are designed to meet the most demanding of actual needs.

The Library Card Catalog is the most important item of furniture in the library. Prominent in location, almost continuously in use, subject to a wide range of demands and abuses, the card catalog tray is a piece of “rolling stock” that is entitled to the most demanding and intelligent evaluation before it is purchased. A card catalog tray purchased without the most carefully detailed and meaningful specifications will be an enormous drain on the resources of the library in the years to come not only in terms of the added expense required to replace and repair substandard equipment but more importantly, in staff time and effort required to turn an improperly designed and poorly engineered item into a less than adequate working tool.

Perhaps the most disturbing aspect of library card catalog tray installations is the apparent total lack of meaningful standards for such equipment. Commercial card catalog trays are usually subjected to a series of tests that are totally unrelated to the job the card catalog tray is to do. For example, the lengthy furniture finish tests for discolorations by foreign substances, effect of light on the finish, the amount of sand required to burn off the finish, and the effects of water or alcohol are really tests of the finish on the wood front or face of the tray, easily accommodated by complete and adequate finish specifications similar to those for table or desk tops, and not related to the effectiveness, utility, or durability of the card tray itself. These tests are primarily
appearance related and even here to a minor degree as such tests do not actually simulate real situations.

Likewise the series of recommended tests for tray strength have little, if any, relationship to the on the job performance of the tray. Tray bursting can be a fascinating amusement but has no relationship to actual tray use. Are the inside tray pressures ever such that a tray will burst in actual use? We seriously doubt this situation has or will ever occur. Similarly, while tray crushing is probably a measure of the basic soundness of tray construction, the number of pounds required to crush a tray, whether or not the tray has been soaked in water (to loosen the joints?) is relatively meaningless once it passes the outer limits of what can be expected in a use situation. The tray twist test is another wonder. We have never seen a librarian or a user twist a tray, and although again this test might be a measure of overall strength, it is not meaningful. The loaded tray drop test can be of some value, but we doubt it. Wood cases will separate at the joints or break if dropped. Wood fronts will break or split, usually along the screw hole lines, when dropped. Every librarian knows this and has a few such mutilated trays carefully stored away, usually in the bottom row of the card cabinet, with the split head pasted or taped together and the broken trays used as fillers in the difficult to reach part of the card cabinet.

The critical components of the card cabinet tray have been ignored or avoided, and thus a long series of tests result in a card catalog tray that is improperly designed and poorly engineered, difficult to use and far less than adequate for the job it is to perform.

The library card tray is composed of the following components:

- **Body**, or case that holds the catalog cards.
- **Tray head**, or face that serves to decorate the front of the tray and bring together the tray body and accessory hardware.
- **Label holder**, usually and most effectively combined with the **ring pull** or handle which together serve to identify the contents of the tray and the tray location in the card cabinet, and to provide a sure grip handle for pulling, pushing, and lifting the tray.
- **Guide rod**, serves to hold the cards securely in the tray and prevent unintentional dumping of cards.
- **Follower block**, serves to hold the cards upright in the case and prevent excessive wear on the cards.

Each component of a library card catalog tray requires careful detail. In the planning for the new Elmer Holmes Bobst Library at New York University, we have developed detailed specifications for card catalog trays that meet the most demanding of needs.

We decided on a card tray that will provide 15 clear inches of filing space. This results in an actual use situation tray load of 10 inches or approximately 1,000 cards. With a vertical row of 15 trays in an overall cabinet height of 72 inches, we achieve a practical card storage capacity of 15,000 cards in 96 square inches or 3/8 square foot. Higher card den-
sity can be realized by increasing the depth of the tray or by extending the vertical column of trays. Increasing the density of the card file results in a reduction of access, especially in the heavily used areas, as the individuals using the card file are brought close together and compete with each other for space in front of popular file areas. The capacity of the catalog may be greater but its usefulness is lessened.

A further increase in the vertical column of trays would result in trays beyond the reach of the average user and therefore difficult to use. This works a particular hardship on the staff who must maintain the cards and often are assigned specific areas of the catalog.

An increase in the depth of the tray places more cards in the same access unit or tray, thus increasing the number of cards one user ties up while using one tray. Increasing the depth of the tray also increases the total weight of the tray unit both empty and loaded with cards. For every inch of tray we add the capacity for 100 additional cards or approximately 12 ounces of cards. An empty cycolac tray with oak front and large brass ring pull label holder weighs 48 ounces or three pounds. Adding 1,000 cards gives us a loaded card tray weighing 168 ounces or 10 1/2 pounds. The same tray when loaded to full capacity with 1,500 cards weighs 228 ounces or 14 1/4 pounds.

The tray body must be smooth and free from burrs or rough edges that might scuff the cards. The sides of the tray must be high enough to provide support for the cards yet low enough to allow finger access to the sides of the cards for ease of use. A side rail 1 3/4 inches high provides support approximately 1/4 inch past the mid-line of the cards and seems the most comfortable and practical solution. Tray sides that are lower may allow the cards to wobble in the tray and suffer unnecessary wear. High tray sides prevent easy finger access from the side and result in excessive wear on the top of the cards. The inside tray width is a critical dimension as a tray too wide will allow the cards to shift sideways and make reinsertion of the guide rod somewhat difficult and time consuming. An inside width of 5 1/8 inches seems the maximum width acceptable. We had previously accepted a quantity of trays with an inside width of 5 3/16 inches, and they have proved to be less than satisfactory.

The tray we selected is injection molded of “Cycolac,” beige in color. “Cycolac” is a trade-mark of the Marbon Division of Borg Warner and is very similar to the material used in the telephone hand set. The channel and track for the follower assembly are molded into the tray bottom. This tray has eliminated many of the major maintenance problems of the old wood tray, including the corner joints and the difficulty in fastening the follower track and assembly to the tray body.

The tray head or front is a decorator item that requires good strength as well as appearance as it serves as an attractive door to the card files and brings together the components of the total tray as well. We selected 3/4 inch solid oak, matched and finished to meet the colors chosen for the overall building interior. The heads are predrilled for
the six ½ inch diameter tapped lugs of the ring pull label holder and for the ½ inch diameter ferrule that holds the guide rod and knob. Two 1½ inch diameter circles are routed to a depth of ¾ inch in the back side of the tray head and accept the locking knobs molded into the tray body for the purpose of assuring an exact match of tray head and body with a minimum of torque on the two screws that pass through the center of the cycolac tray knobs and fasten into the tray head. Two additional self tapping screws are used to assure positive locking and alignment of the tray head to the tray body.

The label holder and ring pull also is a critical item. Our choice is a unit 5½ inches wide by 1¾ inches high, with a left partition or box splitting the width 1½ inches from the left side, and accommodating two separate labels: the smaller or left side label which is 1½ inches high by 1¾ inches wide is used for the permanent color coded tray number; the larger right side label is 1½ inches high by 3½ inches wide and allows the use of IBM Orator type face (or type face at least as large) to identify the tray contents and permit easy scanning of the trays from a reasonable distance. We have found this large-size contents label the minimum size acceptable in our university situation where we require the capacity for at least three lines of label text for headings sometimes as complex and lengthy as holdings of United States Government publications.

The label holders must be attractive as well as functional; we have selected a statuary bronze finish with invisible fastening. It is cast bronze with six tapped lugs: the tray head is drilled as explained earlier, and the lugs are inserted into the wooden head and fastened from the rear. Initially we were concerned with this invisible fastening label holder, as the old tried and true method of keeping labels in the holder was for catalog service personnel to loosen the label holder screws, insert the label, add additional padding behind the label, slide the acetate cover in front of the label, and then tighten the screws. Needless to say, after several label changes the wood screws had chewed up the wooden heads, and the ring pull label holder soon pulled away from the tray head. To solve the problem of loose and lost labels we attach two small strips of 3M “Safety Walk” to the tray head in the label spaces of the ring pull label holder. “Safety Walk” is a heavy duty, non-slip surfacing with adhesive backing that is purchased in rolls ¾ inch wide by 60 feet long. The traction this material provides holds the labels in place very well, and the thickness of the “Safety Walk” provides enough tension to hold the acetate label covers as well.

The guide rod is the card tray “lock and key” so to speak and should be easy to operate and secure, yet inconspicuous and attractive. Statuary bronze knobs, matching the ring pull label holders were selected. A self-locking spring steel catch assembly in a tapered and stepped ferrule firmly positioned in a predrilled hole in the tray face allows simple one-hand operation by upward pressure. The nose or leading tip of the guide rod is rounded or bullet shaped to avoid
roughening of the cards as the rod is inserted in the tray and to permit ease of insertion of the rod. This small detail is frequently overlooked in catalog card trays, yet it is critical in daily use.

The card follower is a positive locking device, adjustable at approximately 1⁄4 inch intervals in the track molded in the bottom of the tray. Minimum card follower size 4 3⁄4 inches wide by 2 3⁄8 inches high is necessary to avoid bending of the corners of the rear cards in each tray. Card follower devices which rely on friction were found to be unreliable as well as difficult for our staff to manipulate. The follower block must be spring loaded to automatically engage in the teeth of the track in the tray base. Releasing the follower is accomplished by an upward pull on the flat trigger located at the back of the follower block. This type of assembly is extremely easy to use and practically maintenance free; yet, it provides good card support and almost automatically encourages staff to use the follower device in the best manner.

We believe we have developed a tray that is durable, functional, relatively low in cost, and recognized by our architects and designers as an attractive and effective piece of library equipment. The construction of our tray has not been planned, as often happens, by and for designers; it has been engineered by library oriented individuals for the use of persons employed in libraries. It is hoped that the specifications detailed here will serve as a basis for a standard for the industry to follow in the manufacture of card catalog trays.

REFERENCE


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Applying the Principle of Dealing With Exceptions

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Traditional library methods assume that each entry going into the catalog must be verified for correctness and relation to the local catalog. Some would make cataloging with Library of Congress copy a purely clerical function, using entries as received. Advocated here is a method for identifying exceptions—those main, added, and subject entries which are incorrect—and for dealing with them. Much of the quality obtained by verifying each entry can be retained even when this step is abandoned in the interest of speed, when check points are established to catch divergent headings as they enter the catalog.

Traditional methods in major libraries have involved the consideration of each individual entry to be added to the catalogs of the system to insure that the entry is consistent with forms already established. Faced with a sudden growth in acquisitions following a $3 million gift for book purchases, the Catalogue Divisions of the University of British Columbia (UBC) Library have been forced to develop alternate techniques which identify and deal with exceptions. Public service and technical service personnel alike were not willing to accept the anomalies which would result from uncritical acceptance of Library of Congress (LC) catalog copy. Since much current purchasing is of retrospective imprints a range of style in LC copy is currently handled as well as much material without such copy.

Two major types of changes were made in the 100-person UBC Catalogue Divisions in order to clear out the 20,000 volume in-Division backlog and increase monthly output so that a 60,000 volume brief-listed collection could be eliminated. As a result, monthly production has risen from 9,000 to 15,000 volumes; 187,000 volumes were added in one year.

The first type of change—only in part related to the concept of dealing with exceptions—is the shift of some duties from professional to clerical. The number of catalogers in the Divisions has fallen from

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twenty-six to eighteen with a corresponding rise in upper grade clerks. (For those making comparisons, one cataloger of eighteen in the Division and ten FTE clerks are engaged in preorder searching—a part of acquisitions rather than cataloging in many libraries.) An increased amount of precatalog searching, all card set revision, and filing revision are now clerical functions. A group of six senior clerical staff members with considerable experience in the system or with European or Asian library training and known as revisers check all completed card sets and filing. These time-consuming chores were formerly done by professional staff. The inclusion of the preorder search in the Catalog Division allows the initial search to be used to record the correct form of the main entry if it has been established in the official catalog, as well as other information concerning the relation of the item to the collection—copy, other edition, continuation, etc. This identifies at the earliest possible moment those items which may simply be added as volumes or copies.

The second type of change was more closely related to identification of exceptions, allowing most normal entries to be made with a minimum of inprocess verification. It is sometimes said half seriously that the basic common law concept of innocence until guilt is proved has simply been extended to catalog entries.

Catalog copy from various sources—LC, Canadian National Library, other cooperating Canadian university libraries—is retrieved from a file begun again each year and arranged by title.* Slips in the file represent books received for which no copy was in the file, obviating repeated searches. Our computer nudges us when we have kept a book waiting for copy three months; it is then given original cataloging. About 100 of the 6,000 titles cataloged per month wait the full period and during that time are available for loan to the public through a computer print-out and IBM circulation card.

Two drastic changes have saved much time and boredom in using catalog copy from this file—the abandonment of the practice of checking the shelflist and subject authority file or list of subject headings. The first—no shelflist check—is accomplished by accepting the call number as is on the LC card and adding to it the imprint date to insure against exact duplication of numbers.† No work slip or “temp”

* UBC is a part of the NPAC program (National Program for Acquisitions and Cataloguing) and a program of shared cataloging among ten Canadian universities. The Canadian National Library produces proofsips of material of Canadian interest received at the National Library.

† Where the LC call number is lacking or being changed, the cataloger Cutters to two digits using the LC brief author number table and adding imprint date. Again, shelflist is not checked. UBC changes LC’s medical numbers to NLM (U.S. National Library of Medicine, National Library of Medicine Classification, 3d ed. Bethesda, Md., 1964. Built on the unused letters in LC, QS–QZ and W, NLM has been found superior to LC for bio-medical subjects) and LC’s law numbers to Moys (Moys, Elizabeth M. A Classification Scheme for Law Books. London: Butterworths, 1968. Built on K, this scheme has been found superior to LC’s K in that common law topics are arranged by topic rather than by jurisdiction).

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is needed in the shelflist to reserve the number, and none is filed. (The
only work slip or "temp" to be filed is in the official catalog—a dupli-
cate of the public author-title catalog known as the "authority file"
and required because of the distance of the Catalogue Divisions from
the public catalogs.) Main entry verification catches cases where UBC's
Cutter number in literature differs from LC's. The series note is
checked for LC copy having analytic numbers. The absence of exact
alphabetical order within class on the shelf has created no difficulty.
Very occasionally two unrelated books have duplicate numbers ex-
cept for date, but exact duplication of numbers is extremely rare. Where
recataloging must occur, a "bump" system is used in which revised
cards with a reprint number in the code instructs the filler to remove
the original cards when filing the new cards. Cards being withdrawn
for some other reason are not pulled by going from drawer to drawer
of the catalog following the tracing. Instead the shelflist is reproduced
by Xerox to create a slip for each card in the set; these slips are sorted
alphabetically with the normal filing, the filler pulling the card cor-
responding to the slip, and discarding both. This has been found
through time study to be less expensive than having a clerk run back
and forth retrieving cards A to Z.

The second—no subject list or authority file check—is accomplished
by use of the highlighted tracing subject catalog. The subject portion of
UBC's divided public catalog has a guide card for each established
subject heading. The guides are 1/2 cm. taller than standard, plastic slip
covered, catalog cards.2 On each subject card the subject is highlighted
red at the bottom of the card and nothing is typed. If at filing no
guide or cross reference is found, the card is returned so that the
heading may be established or a cross reference may be made to
the established form. The form of the heading in the tracing (kept at
UBC on the shelflist) is not changed. The cross reference will guide
a subsequent card with the same outdated heading, or a slip withdraw-
ing the card, to the heading's new location. Thus the form of the sub-
ject heading on an LC card of any age is assumed correct until proven
wrong at point of filing, the exception being identified by the ab-
scence of a guide card (or cross reference to a guide card). The ex-
ception, and the exception only, is then dealt with.

The Richard Abel Company has provided computer produced cards
for UBC's main and branch catalogs for some titles. Computer pro-
duced subject cards, rather than having the heading typed on the top,
have the heading in capitals in the tracing. While there is no typing
saved here, the advantage remains of identifying exceptions—new and
erroneous headings—through the absence of guides.

New series, like new subject headings, are shown to be unestab-
lished in the system by the absence of a guide card (or cross reference
to a guide card) in the author-title catalog. All series statements are
traced; bibliographers and faculty seem happy with all series—even
publishers' series—traced. For branch libraries not wishing a particular
series listed in its catalog, a blue guide card prevents the filing of that series in that catalog. It is cheaper to make the card and throw it away than to check to see that it should not be made. Like subject headings, series entries are not typed but rather highlighted. Since no typing is involved it is less time-consuming to enter all series than to determine which are to be entered.

This subject heading and series highlighted tracing is the single most important time saver and remover of tedium from the procedure of cataloging from LC copy.† (Only personal name entries and series having analytic LC numbers must now be searched.)

The Location File is a public classed file which lists locations for all titles. There are over sixty possible locations in the system. Also listed there are holdings of serials continuations and incomplete sets—in other words, any information likely to require updating or changing. The holdings of sets were formerly entered on each card for the title—a process which was usually far enough in arrears to ensure an out-of-date catalog. Holdings of continuations were behind main entry, with other cards saying “For holdings see main entry.” All main catalog entries for a continuation or incomplete set now have the note “For holdings see Location File.” Added copies are indicated only on the shelflist with any new locations being ticked in the Location File. This means that a patron locating a continuation by main entry must as a second step consult a card under call number, but the call number is quite easy to find. The difficulty of the patron finding the continuation by some other entry and then having to find “main entry” when he doesn’t even know what “main entry” means is removed.

In the Continuations Section the use of a ticked card form in the serial record and in the public Location File is a much simpler method of recording new volumes than the former shelflist and main entry methods. The cards can be located more quickly by call number than by an alphabetic entry.

Original catalogers benefit from the changes already mentioned by being relieved of much revision and by no longer checking call numbers and subject headings before use. The most dramatic change in original cataloging, however, is the Xerox title page worksheet. A clear plastic overlay is placed on the Xerox machine which has on the left side the categories of information to be supplied in addition to that on the title page. A Xerox copy of the title page is then made through the right half of the sheet, the verso of the fly leaf being on the left. (A

† If the Library of Congress, as rumored, radically changes its cataloging practices, adapting the British text of AACR in some of its particulars, abandoning superimposition, and beginning afresh on subject headings, the ticked tracing subject catalog can survive the change with little strain. The extension of the guide card with cross reference practice to changed main and added entries might prove an alternate to extensive recataloging or separating entries for the same author in our author-title catalogs. Just as for series, such entries would require a guide at the beginning and at the end of the sequence (since the following entry would probably not have a guide card) as well as cross references from older forms of the headings which would still appear on the refiled cards.

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slip from the original multipart order attached to the worksheet gives the call number; when a title is being cataloged with an LC card, this slip alone would be used.) This produces a worksheet on which title and imprint information need only be marked, where formerly the entire worksheet was typed. (See exhibit A) Thus title-page information need be typed or written by catalogers only when there is an exception to using the information as found on the title page. A programmed instruction unit is used to teach typists to type the unit card from the marked title page.³

Filing is much more rapid in the two-way divided catalog than in the former dictionary one. Simplified filing rules have been written which call for the interfiling of main and added entries by title in the author-title file and the interfiling of types of subject entries in the subject file. In the author-title file all entries under a single author—personal or corporate—are arranged by title, ignoring the main entry in case of added entries. Arranging added entries by main entry seems futile; if the main entry were known, one could locate it by that entry initially. In the subject file London files as London, England along with London, Jack and London, Ontario; Chemistry, Analytic files between Chemistry—Addresses, essays, lectures and Chemistry—Congresses. A time-saver for those who train clerical workers is a program which teaches filing.⁴

Highlighting subject headings rather than typing them is, of course, a considerable simplification in typing. Another time-consuming clerical task has been completely eliminated: the rematching of books or workpaper and reproduced cards before card sets are typed. Now copy number and location information is coded in the lower left corner of the master card before reproduction, e.g., c. 1 main c. 2 sedg (Sedgewick being the undergraduate library). For the past four years, cards have been reproduced in sheets of ten by a commercial printer, who produced offset masters by photograpbing pasted sheets of LC cards and typed sheets of original cataloging. A 3600 Xerox for production of cards in sheets of four is now being used.

Just as cataloging is simplified by accepting unchanged more of LC practice, so the work of the Preparation Division is simplified by standardizing the product. The sixty locations within the system have been categorized as Reading Room, Subject Divisions, and Branches. Insofar as possible a set type of service and the number of cards are determined for each category—three rather than sixty situations to remember. This pleases some of the sixty as they start receiving services earlier begun for others at others’ request. It is also true that the more demanding branches now find the product less tailored to the particular likes and dislikes of the present staff of that branch. Of the sixty locations in the system, only two have refused to accept the new types of cards; both locations type subject headings on cards received from Cataloguing rather than returning cards for new subject headings to receive guide cards as do other branches. One branch has not divided its catalog.

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Grenzflächen und Stabilität von Dispersionen.

(Sonderausgabe aus Koloid-Zeitschrift & Zeitschrift für Polymere, Band 227)

Vorträge und Diskussionen


Hrsg. Herausgegeben von

Prof. Dr. H. Ebringer, Prof. Dr. F. H. Müller, Prof. Dr. A. Weiss

Mit 131 Abbildungen in 156 Einzeldarstellungen und 38 Tabellen

DR. DIETRICH STEINKOPFF VERLAG, DARMSTADT, 1968.
The idea which has underlain many of the changes described is that by considering entries as found on a title page or in LC, NUC or other shared cataloging copy as probably correct, and by establishing checks (such as guide cards) to identify those exceptions which are not correct, the library reduces drastically the number of individual cataloging decisions which must be made. This method has had the added advantage of creating cross references from discontinued subject headings, variant forms of series statements, and other forms of entry not used in the catalog.

Except for the absence of headings on subject and series cards, all changes have produced additional rather than less information in the public catalog. Many additional series are now listed. The division of the catalog necessitated additional cards, particularly title cards (and unfortunately duplicate cross references for entries used both as author and subject). The additional title cards, particularly, ease the work of public service staff. Highlighted tracing has produced no public service difficulty; the use of multiple guide cards facilitates subject searching. Unintentional ordering of duplicates has dropped due to the additional series entries and the higher quality searching done by LC catalogers searching part time, as opposed to fulltime searching which becomes monotonous to most workers.

The groundwork for these changes—the Location File, the move of searching from Acquisitions to Cataloguing, the commercial reproduction of cards, the separation of workpaper and books—was laid over five years. Most of the changes described were made within two years.

This great an amount of change in so short a time is, of course, unsettling to creator and consumer of the cataloging product. The resistance to change seems to be not so much an objection to the effects of the changes as a Toffleresque aversion to change itself, particularly a change in which the objector was not co-opted in some way. In the choice between efficiency and an ever more cumbersome decision-making process, the choice will increasingly be against efficiency. The surprised “You mean it’s already cataloged?” from someone seeking a title recently received, however, helps salve old wounds.

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An Integrated, User-Oriented System for the Documentation and Control of Machine-Readable Data Files

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The purpose of this paper is to offer a solution to the problems of documentation and bibliographic control of machine-readable data files. It is a solution which attempts to meet both the needs of the data user and the data librarian. It is designed to make readily feasible the conversion completely or in part to a computer-based operation and to tie in directly to an information retrieval system in the future. The four elements of this documentation and control system are: standard catalogue entries, data abstract or data description forms, content documentation codebooks, and records of physical and logical characteristics of the data set.

DATA ARCHIVES of all types are proliferating everywhere, but data librarians are finding themselves floundering in their attempts to organize and document their data holdings. No rules exist; no generally accepted plan appears in the literature. Elaborate information retrieval systems have been implemented at a number of institutions, but even these require a system for documenting and referencing the materials which support and relate to the data set itself. In any case these systems are not developed overnight. They are expensive and require substantial computer expertise. Some interim solution is necessary so that the data librarian can manage his holdings now.

The purpose of this paper is to present a solution to the problems of documentation and bibliographic control of machine-readable data files. At the outset, it should be noted that the authors do not intend to disparage any of the numerous efforts to establish user-oriented information retrieval systems, and, indeed, the establishment of such systems is in no way precluded by the procedures we propose. Nor would
we discourage a well-endowed facility from computerizing its documentation and bibliographic records. The procedures which this paper advances could be utilized equally well by a data librarian with limited holdings and no direct access to a computer or by one with substantial holdings and a means of retaining all relevant control records in computer-readable form. It is minimum operating standards for the local service data archive whose holdings may be extremely diverse or extremely homogeneous that we are attempting to develop. Toward this end four types of records have been identified which provide the necessary documentation and bibliographic control of computer-readable data files: standard catalogue entries, data abstract or data description forms, content documentation codebooks, and records of physical and logical characteristics. A description of each of these in terms of what they might contain, where they might be produced, and how they might be used follows some general remarks on the development of archives and use of data files.

Data Archives and Considerations on Developing Standards for Describing Their Collections

One of the manifestations of the information explosion is the enormous increase in all types of data now available in computer-readable form. The collection of data files and the formation of data archives have proceeded at a particularly rapid rate among social scientists.

Ralph Bisco has distinguished between different types of data archives on the basis of the amount of human interface between the data source and the data user. Some data archives are nothing more than data repositories while others provide a whole range of services including reference assistance in locating appropriate data and programming assistance in analyzing it. Bisco has further distinguished between general service archives which are in effect the data jobbers or wholesalers and local service archives which are the data retailers. Although the proposals included in this paper are specifically designed to meet the needs of the local service archive, they could most definitely be implemented by a general service archive. In any case they often assume the cooperation of the general service archives as well as of primary researchers and data collectors for their success.

Major archives now collecting and disseminating data include the Interuniversity Consortium for Political Research, the Roper Center, the International Data Library at Berkeley, and the Institute for Behavioral Research at York University. Data files are also available from numerous governmental agencies such as the U.S. Bureau of the Census and the Social Security Administration. Local Service archives normally hold data from one or more of these sources as well as some locally produced data sets.

The University of Iowa is now publishing SS Data: Newsletter of Social Science Archival Acquisition which should be a useful source of information particularly on the holdings of smaller archives. In other
Disciplines efforts have been focused on abstracting and referencing bibliographic materials published in hard copy and in making this data available in computer-readable form. Sets of "raw" data for use by secondary users are more likely to be available from individual researchers. The Directory of Computerized Information in Science and Technology (DCIST) published by Science Associates, Inc., contains abstracts of over 300 such data sets and includes the names and addresses of the individuals or organizations from which they can be obtained. A companion publication, The Directory of Data Bases in the Social and Behavioral Sciences (D DB), will contain over 500 data files and is scheduled for publication in 1972. In the humanities, brief abstracts are available in Calculi, edited by Stephen V. F. Waite of the Department of Classics at Dartmouth and in the journal Computers and the Humanities. Both titles list holdings of numerous individual researchers rather than those of archives, although funding has been obtained to expand the American Philological Association's Repository of Greek and Latin Texts in Machine-Readable Form at Dartmouth College.

Since the production of a usable data set is both expensive and time-consuming, it is imperative that resources be conserved by eliminating duplication of effort and, as a corollary, by making the availability of a data set widely known in the relevant user community. Most archives prepare hard-copy descriptions of their holdings for potential users. However, these listings do not seem to follow any common pattern for organizing or developing entries, which imposes certain limitations on their usefulness. (This same problem characterizes most of the publications mentioned above.)

Standards and new procedures should be established for recording and disseminating information about data collections. (It goes without saying that new methods are also needed for both accessing and using data files, but this matter is not the province of this discussion.) This goal assumes the development and acceptance of a system for documentation and bibliographic control which may be implemented by both general service and local service archives.

It is interesting to note that among individuals who have independently attempted to set up systems of bibliographic documentation and control for machine-readable data files there already appears to be substantial agreement on the necessary components of any such system. Decisions on the items to be included as part of each of the elements of this system are to some extent arbitrary, but once agreed upon they should be made as standard as possible. It is gratifying to note that both librarians and data archivists have expressed an interest in receiving guidance on these matters and a willingness to cooperate in developing compatible systems.

Still to be resolved is the important question of where given items of information should be located. An unpublished paper by G. R. Boynton, director of the Laboratory for Political Research at the Univer-
University of Iowa, an organization which along with other functions serves as a local service archive, has as its title "General Design Considerations for a Data Documentation and Retrieval System." Boynton lists six possible types of records for each study archived. The first three are a machine-readable codebook, a study description, and what this paper describes as a "record of physical and logical characteristics" of the data set; these are already implemented. The second three comprise the components of an information retrieval system, which is not yet implemented. Other not incompatible approaches to bibliographic documentation which the reader may find of interest are those advanced by Joan C. Troutman and by Guy Lauterbach. The ways in which these differ from those we propose will be indicated in the relevant sections to follow.

The needs of the user are also a prime consideration in determining the ways in which information about computer-readable data files should be made available. Perhaps one way of approaching the matter would be to identify levels of user interest and relate these levels of interest to the amount and type of information relevant to each:

1. How much information need we provide for the individual who is merely interested in knowing whether specific data sets or data files about specific subjects are available? Standard catalogue entries for authors, titles, and subjects should suffice.

2. How much information need we provide for the individual who is looking for the answers to specific questions, for specific variables? "Subject" references, printed or computer-readable abstracts of data sets and probably codebooks will be needed.

3. How much information need we provide for the user who knows he wishes to use a given data set? It is only for this individual that full documentation and physical description of the residence volume becomes necessary.

Components of a Proposed System for the Documentation and Control of Machine-Readable Data Files

These considerations indicate the need for four types of records for the documentation and control of machine-readable data files: standard catalogue entries; the data abstract (or data description form); content documentation codebooks; and the records of physical and logical characteristics of the data set.

Standard catalogue entries.—It is appropriate that academic and research institutions would want to record and provide access to files of data in machine-readable form in the public catalogue of their libraries where entries already appear for other media, such as books, pamphlets, serials, and also often for microforms, recordings, and motion pictures.

Entries for card or book catalogues are normally constructed on the basis of accepted cataloguing principles, currently those embodied in the Anglo-American Cataloging Rules. Regrettably, this code does not feature a body of rules by which standard entries could be prepared.

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for machine-readable data files. In response to a concern over this shortcoming, the ALA/RTSD/CCS Descriptive Cataloging Committee constituted in June 1970 a subcommittee whose charge was to identify the bibliographic characteristics of data sets and recommend methods for their description toward the end that a chapter could be drafted for inclusion in the AACR which would provide nationally accepted prescriptions for the cataloguing of this medium. Later that year an ASIS Special Interest Group on the Organization and Control of Non-Print Media formed to “help bring about a universally accepted system of cataloging and classification for all non-print media” and “to help develop standards for the specification of non-print media” among its proposed functions.

In this effort matters such as main and added entries and descriptions of the physical and bibliographic characteristics take some precedence over matters of subject analysis and organization for use. What persons or corporate bodies created the file? What title(s) have been ascribed to the file? What are the important dates which relate to a file’s creation, release, subsequent modification? How was the file distributed and by whom? What is the file size in terms of the total amount of data contained (e.g., the number of units observed, individuals interviewed, events studied, or nations documented coupled with the number of variables per unit)? What relationship does a specific file bear to publications from which it is derived or which derive from it?

Such questions as these have provided the focus of the twice yearly meetings which the ALA/RTSD/CCS/DCC Subcommittee on Rules for Cataloging Machine Readable Data Files has held since January 1971. Committee members have already drafted and, in some cases, revised papers on such topics as source of description, problems attendant on title transcription, the role of producers/distributors in the creation of a file, definition and measurement of file size, the information appropriate to a summary of contents note, the desirability of specifying restrictions on the use of data, and guidelines for noting publications from which a data file may issue or those which result as by-products of a data file. Whenever the subcommittee reaches consensus on a matter, it forwards its recommendations to the Descriptive Cataloging Committee which, in collaboration with the Library of Congress, the (British) Library Association, and the Canadian Library Association, will then undertake to formulate specific rules, that, hopefully, will enjoy international acceptance as standards for bibliographic description.

Meanwhile other attempts at providing such standards are materializing. Troutman’s seminal paper has already been noted. The system she recommends covers not only matters of entry and description, but also extends to considerations of subject work and classification. Moreover, she stipulates as additional requirements for the catalogue record statements concerning programs, documentation, formatting, fields, and a file’s physical characteristics. Lauterbach, on the other
hand, proposes a system which would supply catalogue users with substantially less information and requires only (1) the name and location of a file owner, (2) its author, (3) file name, (4) subject, (5) dates, such as the year a file was created, (6) record count, (7) fields per record, and (8) security provisions relating to a file's use. The Cataloging Committee of the Association for Educational Communications and Technology has incorporated under the heading "Computer tapes" a brief statement suggesting source of title and the components of physical description into the revised edition of its Standards for Cataloging Nonprint Materials. Meanwhile, in Great Britain, The Computer Media Working Party, a subgroup of the Media Cataloguing Rules Committee of the Library Association's Research and Development Committee, has issued a preliminary report. This document outlines a bibliographic description for machine-readable files which would contain traditional data such as a file's author and title in addition to statements concerning its "technical" characteristics and formatting, the minimum computer configuration for its utilization, accessory materials needed for search formulations, and the like.

Those libraries which seek to display holdings of data files in their catalogues will probably also endeavor to provide subject access to these files. For the most part, this activity will consist of assigning subject headings from the latest edition and supplements of the Subject Headings Used in the Dictionary Catalogs of the Library of Congress; the number of headings allowed for a title often depends on local policy but generally does not exceed four or five. These practices—assignment of headings from a generalized list in limited quantities—are dictated by the constraints of conventional catalogues based largely on Library of Congress supplied catalogue copy. It is, however, entirely feasible that any data center with sufficient resources might, in addition, devise far more sophisticated systems for accessing the often varied and complex contents of data sets.

The insertion of standard bibliographic records—perhaps someday generated by a central agency such as the Library of Congress—into the library's general catalogue then is the primary method of accessing an institution's data holdings. As such, it also offers a handy means by which to advertise acquisitions of this type of material. Perhaps, the public catalogue will produce the side benefit of easing somewhat that circular problem confronting all data librarians (and to a greater or lesser extent all archivists and reference librarians) which arises from underutilization of existing informational resources.

More importantly, the development of standards for cataloguing data sets also paves the way for the emergence of a national union catalogue for machine-readable data files. Already well-developed for book and booklike materials, including microform masters and manuscripts, such union lists are based on reports from a large number of participating institutions which describe holdings according to generally accepted cataloguing rules. A union list of machine-readable
data files would enable an institution to alert a far greater constituency than that attached to it of specific sets and would enable the individual researcher to locate easily relevant files beyond those held by the institutions within his immediate reach.

Standard catalogue entries, then, constitute the primary records by which computer-readable data files should be controlled and accessed.

*The Data Abstract or Data Description Form.*—The data abstract should specify: the title; originating organization, researcher, collector, processor; the source from which the data set is obtained; date(s) of study or data collection; the universe to which the data pertain; method of data collection; definition of data unit; number of data units; number of variables per unit; condition of the data; reference materials, related publications and sources of further documentation; relevant programs, and restrictions, if any, on the use of the file.

In addition there would be a summary which would indicate briefly and generally the content of the file including major subject areas it covers; any special features; clarification of title or dates, if necessary; and when applicable, a statement as to how often the file is issued or updated. Some general description of data field would also be included, e.g., fixed field, variable fields, text, etc. This represents a condensation of the material which Troutman divides into three sections: brief description, major subject areas, and fields of data. Other items of information might also be included if they contributed to the potential user additional information for making an intelligent decision about the relevance of the data set for his research or information needs.

This record would normally be a one-page summary which could be entered into a loose-leaf binder or it might exist in machine-readable form and be accessed from a time-sharing terminal. These records should be produced by the individual or archive with primary responsibility for making the data available.

*Content Documentation Codebooks.*—These would contain detailed descriptions of each individual variable included in the data set as well as its location in the file and its size and, therefore, constitute an essential reference for anyone wishing to use the data. Information about missing data, special flags to indicate parts of speech, special codes used for nonstandard characters, and the like would be mentioned. In the case of survey data, for example, a codebook should contain the location and width (deck and columns) for every variable or question and the code number and description for every response. Attached to this codebook might also be the original questionnaire, instructions to the interviewers and/or coders, and any other material which might be of use to the potential user. The quantity of documentation for a given data file will depend on the nature of the data, the variety and number of variables, and the presence of related published materials. Research data would normally require more docu-
mentation than text. Such documentation would hopefully be produced and distributed with the data file itself and could be either in hard copy or in machine-readable form.

*Records of Physical and Logical Characteristics of the Data Set.*—These records should specify volume number(s), (tape, disk or drum); file number(s); bit density (e.g., 800 bits per inch); tracks (7 or 9); parity (odd or even), if relevant; recording mode (EBCDIC, BCD, or binary); record format (fixed block or variable block); record length; block size; logical records; data set name; tape label; header label; and volume identifier, etc. There should be a separate record for each copy of the data set and for each volume if the data set comprises more than one volume.

The computer on which the volume was originally written and the original labelling information need not necessarily be a part of these records. Presumably one would seek to provide records only for data sets that are in compatible form. If the original volume were not in compatible form, an initial conversion could be made prior to describing and documenting it. The record of physical and logical characteristics would always be produced locally, preferably by the data library or computer facility at which the data is to be physically stored.

It is our contention that combining the data abstract with the record of physical characteristics as has been suggested in some proposals or the inclusion of this information on the catalogue cards loses sight of the desirability of producing these forms at different locations and of the fact that the data abstracts would be standard for all locations while the records of physical characteristics would always be unique to each of the locations storing the data file. The ephemeral nature of the physical volume on which the data file resides precludes the possibility of any permanent description of it. There are other reasons for keeping this record separate and not running the almost inevitable risk of contaminating the accuracy of the catalogue records and the data abstract. Good data management practice dictates that copies be made of all data sets in order to provide backup. There would then always be at least two copies of each data set, one with possibly different physical characteristics from the other. It is also possible to update or to correct data sets, to transfer data sets from 7 track to 9 track, from 200 b.p.i. tape to 1600 b.p.i. tape, or even from tape to disk. Any of these or similar operations would change the physical description of the data set, e.g., volume or tape number, file number, feet of tape used, number of tracks, and bits per inch. But none of these changes would necessarily affect the basic description of the contents of a given data set as it appears in the public catalogue or on the data abstract.

*Conclusion*

We have presented a practical plan for the documentation and control of data sets in computer-readable form, one which does not depend on the computer skills of the data librarian or on the computer.
systems available to him. It is a scheme which provides sufficient flexibility to allow for the variety of ways in which data libraries are organized and administered, recognizing, as it does, that a library may have full charge of the data as well as its accompanying documentation or it may only hold the catalogue records while the data itself is handled either by a central computer center or by some independent or departmental facility. It is a plan which can be implemented without extensive financing, which would contribute to the goal of bibliographic standardization, which would provide substantive support for both the librarian and the user, and which is fully consistent with eventual conversion to either total or partial computer control.

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7. Troutman, Standards for Cataloging, p.34.
8. Ibid, p.6-8.
The method of catalog card production chosen by a library relates directly to the annual volume of its card production. Seven methods of card production tried by the University of British Columbia Library are described and compared in terms of total cost per set of cards and their applicability to libraries of various sizes. Tables list separately labor, supplies, and equipment costs for the various methods, and the information includes timings for each operation as performed by a stated level of library staff. The conclusion emphasizes the need for libraries to share data about card production methods that they have tried.

**THE SELECTION OF A SUITABLE METHOD** of catalog card production is a problem faced by most libraries, and despite the inroads on library technology made by the computer, it will probably continue to be a problem for the majority of libraries for many years to come. Each library chooses a solution that appears best for it in terms of volume of output required, economy in relation to staff and equipment available, and the quality of the product desired.

Considering the universal interest in the problem, there is surprisingly little published data available on the costs and personnel requirements of the various card production methods. New procedures diffuse through the library community by word of mouth or through glowing but frequently undocumented journal articles, and the most expedient method of production for a particular library develops more or less by trial and error. It may well be the most efficient method of card production for that library at that time. But, lacking definitive data on times and costs of that and other possible methods, the library is in a poor position to evaluate in advance the possible effects of procedural changes or to consider alternatives to in-house card production in the form of commercial card services.

In the past two years, the University of British Columbia (UBC) has used, analyzed, and costed seven methods of card production. The data collected are presented below in the appendix. For ease of comparison with other libraries' production methods, the procedures have been broken down into discrete operations, each performed by an in-
dividual or a definable class of individuals. Each operation has been
timed and costed in terms of the average salary of the staff members
who normally perform it.* Supply and equipment costs are listed sepa-
rately. Administrative and supervisory costs, assumed to be approxi-
mately the same for all methods, are not included in the cost data. Of
course, the costs and, to a certain extent, the timings are peculiar to
the UBC library situation; they afford a means of comparing several
methods under the same conditions. In order to use the data for their
own cost predictions, other libraries would have to substitute their
salary and equipment costs and adjust for procedural differences in
their own systems.

Card production involves two separate operations: the duplication
of sufficient unit cards to make up a set; and, the completion, or
"finishing," of the set in accordance with the tracings and the require-
ments of the library system. Card duplication is the more expensive
operation of the two and also the one offering the widest variety of
possible methods. Variations of the standard "set finishing" proce-
dure are less common, probably because these variations directly affect
the users of the library. A unit card is a unit card, whether copied by
Xerox, printed, or typed by hand, but to the library patron a ticked
tracing looks vastly different from a typed heading. However, time-
and money-saving "set finishing" variations do exist and will be considered
following the discussion of unit card duplication methods.

Essentially, cards may be duplicated in two ways: individually or
simultaneously. Individual duplication includes any method in which
the cards of the set are produced one at a time—either line-by-line (as
in card-by-card typing, Flexowriter, IBM Magnetic Tape Selectric Type-
writer (MT/ST), or computer production) or one-up (as in Gestetner,
Chiang duplicator, or Xerox copy-flow production). The simultaneous
methods of duplication are offset press and Xerox where 4, 6, 8, or 10
unit cards may be laid out on a master and duplicated at once.†

The library's annual volume of card production appears to be the
major factor in the selection of its card production method. A survey
of the major Canadian university libraries conducted in July 1970 re-
vealed that, logically enough, the larger the card volume, the more
likely it is that the library will use one of the simultaneous methods
of duplication.‡ Eight out of nine institutions producing over 50,000

* At the time this article was written the American and Canadian dollars were
virtually at parity.
† Even larger masters can be accommodated on some presses, but their preparation
and transport are awkward. Ten-up is the largest number that can be handled by the
average offset press.
‡ UBC made this survey of fifteen libraries specifically to compare their outputs
of catalog cards per full-time-equivalent typist with UBC's own per-typist production.
This information was collected in order to evaluate the present typing staff and fore-
cast future staff requirements. Information on card production methods and annual
volume of cards produced was requested as part of the survey. No report was pub-
lished.
card sets/annum used offset press. Two of these have since switched to Xerox 3600. The ninth institution used Xerox, 8-up. Three out of six institutions producing between 22,000 and 50,000 sets/annum also used offset press, with the other three using Xerox 914, Xerox copy-flow, and MT/ST. When annual card production requirements dropped below 22,000 sets/annum, as in the public, school, and junior college libraries contacted, the Xerox 720 or 914 was by far the favored duplication method. Libraries with relatively small card production requirements tended to rely heavily on purchased cards or affiliation with larger institutions; but when they did make their own cards, they used a variety of individual duplication methods, including Flexowriter, Gestetner, Chiang duplicator, and even card-by-card typing.

The reasons for this pattern are based mainly on the relative costs of the production methods to the libraries in each group. Certain methods become economically feasible only when volume reaches a certain level; alternatively, sheer volume may make a certain method mandatory.

The offset printing method favored by libraries with large-volume card production requirements has certain characteristics that make it practical only in a large-volume situation. First, the equipment is expensive. Secondly, it requires a skilled operator who must be paid whether or not the press is in constant use. Few libraries can afford their own press; most use their university press or a commercial printer. However, it has been our experience that commercial printers prefer to avoid catalog card duplication; the small quantities, short printing runs, and precise cutting requirements make the work distasteful to them. In order to negotiate a favorable price, the library must either have an extremely large volume of card duplication or be able to bribe the printer with a large volume of noncard work.

Libraries using offset duplication produce their printing masters in one of two ways: either they type directly on a multilith master, or they have an Itek plate made from a typed or pasted-up master and run the Itek plate on a press. When using multilith masters, the library retypes all its card copy onto the masters; typing errors are corrected by erasing. A local printing firm charges one institution a flat rate of $1.22 for a 10-card master to run as many copies as required (usually about 9) and cut them. Preparing an Itek plate is an extra step in the duplication process, and the printing rate increases correspondingly. The aforementioned printing firm suggests that a flat rate of $1.80 for a 10-up master would be a reasonable rate for card duplication using Itek masters, giving a difference in price of about 6 cents/set. (In both cases, the library supplied the cardstock.) The Itek process has the advantage of flexibility, however. Because it is a photographic process, the original master can contain anything that will photograph well, including pasted-up Library of Congress (LC) or Canadiana proofsips, LC cards, revised catalog cards, and even photographs of LC, National
Union Catalog, or other book catalog entries, as well as original typing. Corrections to both typed and printed copy can be made easily with a correction fluid such as Snopake, or for large corrections, by simply pasting a new card over the error. For a library which has a substantial amount of printed or photographed card copy available, and no aesthetic objections to nonuniform catalog cards, using the apparently more expensive Itek process can actually save money in the form of typing time.

The Xerox 3600-I presents an attractive alternative to offset printing for the library whose card duplicating requirements are large. This machine can be adjusted to duplicate cards 4-up at the rate of one copy/second, and, as may be seen from the cost data in the appendix, can do so more cheaply than the commercial printer. The quality of the product is excellent for both typed and pasted-up masters. Because the machine operates so quickly, the staff time required to run it is not prohibitive, as it can be when the 914 or 720 are used for very large quantities. Also, the Xerox is so simple to operate that unskilled clerical staff or student assistants can do all the card duplicating with very little instruction or supervision.

Any method of simultaneous card duplication has a built-in problem: separation of the cards after printing. This can be accomplished by using perforated or slotted cardstock or by having the sheets cut after printing. Cutting can be done by a commercial printer at very reasonable rates if a precision cutter is not available in the library or its bindery.

The majority of libraries with a card duplication volume in excess of 4,000 sets/annum, but below the volume required to justify offset printing, also use Xerox, but favor the 914 or 720 model over the 3600-I. The 914 and 720 are the most versatile Xerox models from a library's point of view; they can be changed from paper to regular library cardstock and back again simply by adjusting their fuser temperature and feed controls. One enterprising public library fitted its 720 with a coin box and took advantage of the public's paper copying to subsidize its card production operation. The 3600-I, plus its Variable Weight Paper Feeder attachment, will accept paper and cardstock up to 9 pt. in thickness, but its normal paper dimension requirements are not suitable for library cards. For card duplicating, the machine must be adjusted internally and used exclusively for cardstock. To use Xerox economically, the volume of duplication must be large enough to cover the rental charge or minimum monthly billing. This minimum varies according to type of institution and machine model. Xerox rep-

§ A wet photographic process, producing black-on-white copy, has been used successfully by a number of institutions. A few have obtained satisfactory results from black-on-grey polaroid photographs.

‖ We were not aware of this capability when we rented a Xerox 914 to do the paper duplication of UBC's Catalogue Divisions. We later found that our 914 could do both paper and card duplication without internal adjustments.
representatives will recommend the most suitable model and explain its billing system.

Some libraries with card duplication requirements in the middle range duplicate their cards individually using Flexowriter, MT/ST, or the Xerox copy-flow method. The first two methods require that all copy be retyped in order to produce the paper or magnetic tape master. A major expense in both methods is the running time for the tapes; the larger the card set, the longer it takes to produce because each card is typed individually, line-by-line. Computer card production presents the same problem. UBC found that its Flexowriters had to be monitored closely during the running time, and because the sets are large (average 13.2 cards), the cost of the time spent by the operators in running the tapes made this method too expensive for us. Although UBC has no experience with the MT/ST, it would seem to share the difficulty of all individual as opposed to simultaneous production methods for large volume operations. However, a number of libraries have found it an acceptable method for fairly large volumes of cards. The Xerox copy-flow method involves microfilming the master, which can be a printed card or typed master, making as many exposures as there will be cards in the set. The microfilm is then enlarged and printed on cardstock. The equipment for this procedure is very expensive: a local duplicating firm investigating the process suggested $3.50 to $4 cents/card, including cardstock, as a suitable price. Because of the size of the average card set, this method was not considered economical for UBC. Other commercial copy-flow services charge as much as 6 cents/card.

The small libraries contacted favored purchasing their card sets from larger institutions or commercial card services. Some of these sets came ready to file; others, such as sets of LC cards, required that the call number be typed on each card in the set and the headings added by staff at the library. In costing the latter sets for comparison with in-house card production, it is necessary to add to the purchase price the cost of the staff time required to place the card order and to prepare the sets for the catalog, including checking the typing of the call number and any changes required on every card in the set. When unit cards are duplicated from a master, only the master need be proofread.

“Finishing the set,” adding the filing headings to the unit cards, is the second part of the card production operation. There is much less variation evident here than in unit card duplication. The majority of libraries, regardless of size, still use the traditional method of typing added entries and subjects at the tops of cards. But typing, and revision of typing, takes time and money. Large libraries, particularly, are looking for alternatives to typed headings which will also be acceptable to their users.

# Mail service is available from General Microfilm, 100 Inman Street, Cambridge, Mass., and from Xerox, 246 Portage Avenue, Winnipeg, Manitoba, Canada.

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One of the first short-cuts to be tried was the use of "ticked tracings" for subject cards. The ticked tracing principle and its application to series entries as well as subjects have been discussed in another paper.²

The typing of title added entries was eliminated at the University of Wisconsin-Milwaukee in 1967 by underlining the title in green where it appeared on the card.³ The University of Victoria uses a similar system, underlining in red, and reports that users have no difficulty with it even though title entries are interspersed with traditional typed headings. Lining out the main entry is also a possibility; this method is used in the official catalog at UBC.

Having eliminated the typing of subjects, series, and titles, the only remaining problem is that of regular added entries. Once again, the University of Wisconsin-Milwaukee produced a solution, the same solution arrived at independently by H. W. Axford at Florida Atlantic University: color highlighting.⁴ At Florida Atlantic, and now at Arizona State University, the highlighting method is used for all tracings, including subjects, series, and titles, as well as the regular added entries. For subject cards, the subject tracing is highlighted in pink, and at Florida Atlantic, a pink oblique stroke is drawn to the normal typing position at the top of the card. Regular added entries are highlighted in orange, and at Florida Atlantic, similarly connected to the top of the card by an oblique. The first word of the title is highlighted (underlined at U.W.-M.) in green where it appears on the card. The series statement (not the tracing) is highlighted in blue. None of these cards requires special guidecards because the highlighting itself draws the user's attention to the filing entry. Voilà, a simple, colorful solution, offering fast, effective relief from typing expense. Florida Atlantic found that by using this system, and in addition not moving the class number on LC cards up to call number position, they cut card production costs by seventy-one percent.⁵

There are undoubtedly many other time- and money-saving methods for both unit card production and card set finishing being used successfully in libraries throughout the world. And there are probably at least as many methods that were tried and found unsuitable for a particular library. Because card production is a problem shared by nearly all libraries, regardless of size and circumstances, it is to our mutual advantage to share the results of our experiments, both successful and unsuccessful. A method that is economically impossible for one library might be the best possible one for another library in different circumstances. But in order for any library to make a decision one way or the other, it must be aware of the equipment and personnel requirements of the method, as well as the costs and difficulties as determined by the experimenting library. It can then predict reasonably accurately and inexpensively whether or not that method, or a variant of it, would be suitable to its own conditions.

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REFERENCES

1. Ellsworth Mason reports that Hofstra University is completing a cost study of its MT/ST card production system for comparison with its manual system: College and Research Libraries 32:195 (May 1971).


5. Ibid., p.102.

APPENDIX

I. TIMES FOR PROCEDURES

Typing:

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Time (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typed stencil</td>
<td>5.4</td>
</tr>
<tr>
<td>Pasted stencil (LC cards, revised catalog cards, proofslips, etc., prepared for duplication)</td>
<td>1.7</td>
</tr>
<tr>
<td>Card set finishing</td>
<td>4.5</td>
</tr>
<tr>
<td>Checking sets (includes checking the set finishing, correction of errors, and sorting by destination)</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Total time/set of cards</strong></td>
<td><strong>8.6</strong></td>
</tr>
</tbody>
</table>

**Typed stencil:**

- 1.7 min. typing
- 4.5 min. finishing
- 2.4 min. checking
- **Total 8.6 min./set**

**Pasted stencil:**

- 5.4 min. typing
- 4.5 min. finishing
- 2.4 min. checking
- **Total 12.3 min./set**

Typing-related procedures:

- Counting (determining the number of cards required) 1.1 min./item
- Batching (gathering items requiring the same number of cards into stencil batches) 0.009 min./item
- Stencil checking (proofreading masters) 0.9 min./item
  - Typed stencils
  - Pasted stencils
- Use of Flexowriter (includes cutting the master tape, running it, cutting the cards out of the continuous stock, finishing the sets, and checking them) 12.9 min./set of 5.5 cards
  - Flexowriter tapes
- Use of Xerox 914 2 min./card
- Use of Xerox 3600 0.087 min./exposure

Other procedures:

- Pasting up card stencils 2 min./card
- Use of Xerox 914 2 min./exposure
- Use of Xerox 3600 0.087 min./exposure

* Average card set: 13.2 cards.
II. SUPPLIES AND EQUIPMENT COSTS/SET OF CARDS (13.2 cards/set)

A. FLEXOWRITER (Flexowriters are no longer used. These production and cost figures were taken for the month June 4–July 4, 1969, and are for two machines)

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cards:</td>
<td></td>
</tr>
<tr>
<td>Used 13.6 M @ $14.13/M</td>
<td>$192.17</td>
</tr>
<tr>
<td>Paper proof sheets:</td>
<td></td>
</tr>
<tr>
<td>Used 3.8 M @ $2.13/M</td>
<td>8.09</td>
</tr>
<tr>
<td>Paper tapes:</td>
<td></td>
</tr>
<tr>
<td>Used 7 boxes @ $3.00/box</td>
<td>56.00</td>
</tr>
<tr>
<td>Flexowriter ribbons:</td>
<td></td>
</tr>
<tr>
<td>Used 2 @ $1.13 each</td>
<td>2.26</td>
</tr>
<tr>
<td>Machines:</td>
<td></td>
</tr>
<tr>
<td>Monthly lease-purchase charge</td>
<td>334.00</td>
</tr>
<tr>
<td>Service contract</td>
<td>23.32</td>
</tr>
</tbody>
</table>

**TOTAL**                                             $615.84

Total number of cards produced: 12,867.
Cost/card: $0.0479
An average Flexowriter card set (5.5 cards) would cost $0.263 in equipment and supplies. An average regular card set (13.2 cards) would cost $0.63 in equipment and supplies, if made on the Flexowriter.

B. ITEK 10-UP MASTERS, RUN ON OFFSET PRESS.

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printing and cutting:</td>
<td>$0.1625/set</td>
</tr>
<tr>
<td>Cardstock:</td>
<td>$0.0543/set</td>
</tr>
<tr>
<td>Miscellaneous supplies (typewriter ribbon, paste, Snopake, master sheet): estimate $0.03/master</td>
<td>0.0030/set</td>
</tr>
<tr>
<td>Typewriter service and depreciation:</td>
<td></td>
</tr>
<tr>
<td>Servicing</td>
<td>$35.00/year/machine</td>
</tr>
<tr>
<td>Depreciation</td>
<td>100.00/year/machine</td>
</tr>
<tr>
<td>At 840 masters/year/machine</td>
<td>$0.0160/set</td>
</tr>
</tbody>
</table>

**TOTAL**                                             $0.2358/set

C. XEROX 914, 8-UP MASTERS

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure cost:</td>
<td></td>
</tr>
<tr>
<td>Average 13.2 exposures @ $0.046/exposure</td>
<td>$0.0759/set</td>
</tr>
<tr>
<td>Toner:</td>
<td></td>
</tr>
<tr>
<td>Average 13.2 exposures @ $0.0035/exposure</td>
<td>$0.0057/set</td>
</tr>
<tr>
<td>Cardstock:</td>
<td></td>
</tr>
<tr>
<td>$0.0453 per 8-up sheet</td>
<td>$0.0747/set</td>
</tr>
<tr>
<td>Miscellaneous supplies (estimate)</td>
<td>$0.0030/set</td>
</tr>
<tr>
<td>Typewriter service and depreciation:</td>
<td></td>
</tr>
<tr>
<td>At 840 masters/year/machine</td>
<td>$0.0160/set</td>
</tr>
</tbody>
</table>

**TOTAL**                                             $0.1753/set

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D. XEROX 3600-I, 4-UP MASTERS

Xerox costs:
- Monthly rental $50.00 divided by 7,000 sets/month
- Exposure costs:
  - Master @ $0.18
  - 13.2 copies @ $0.006
- Total
- Toner:
- Cardstock:
- Miscellaneous supplies (estimate)

**TOTAL**

III. LABOR COSTS/SET OF CARDS (13.2 cards/set)

A. FLEXOWRITER

<table>
<thead>
<tr>
<th>Operation</th>
<th>Time/item</th>
<th>Personnel</th>
<th>Rate of pay/hour (average)</th>
<th>Cost/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting</td>
<td>1.1 min.</td>
<td>Reviser (IV)</td>
<td>$3.39</td>
<td>$0.0627</td>
</tr>
<tr>
<td>Batching</td>
<td>.009 min.</td>
<td>Reviser (IV)</td>
<td>3.39</td>
<td>0.0005</td>
</tr>
<tr>
<td>Flexowriter operation</td>
<td>12.9 min.</td>
<td>Flexowriter operator</td>
<td>2.48</td>
<td>0.5289</td>
</tr>
<tr>
<td>Checking tapes</td>
<td>.9 min.</td>
<td>Senior professional</td>
<td>5.46</td>
<td>0.0819</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>14.909 min.</td>
<td></td>
<td></td>
<td>0.6740/set</td>
</tr>
</tbody>
</table>

**NB:** When they were in operation, the Flexowriters produced only short sets of 4 to 7 cards (average 5.5) as compared to the average set done by the typists (13.2 cards). The cost of using the Flexowriter operation would increase considerably if the regular sets were done on the machines.

B. ITEK TYPED STENCIL, 10-UP

<table>
<thead>
<tr>
<th>Operation</th>
<th>Time/item</th>
<th>Personnel</th>
<th>Rate of pay/hour (average)</th>
<th>Cost/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting</td>
<td>1.1 min.</td>
<td>Reviser (IV)</td>
<td>$3.39</td>
<td>$0.0627</td>
</tr>
<tr>
<td>Batching</td>
<td>.009 min.</td>
<td>Reviser (IV)</td>
<td>3.39</td>
<td>0.0005</td>
</tr>
<tr>
<td>Stencil typing and correcting</td>
<td>5.4 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.2052</td>
</tr>
<tr>
<td>Stencil checking</td>
<td>.9 min.</td>
<td>Senior professional</td>
<td>5.46</td>
<td>0.0819</td>
</tr>
<tr>
<td>Printing</td>
<td></td>
<td>(Done commercially; labor included in printing cost)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutting</td>
<td></td>
<td>(Done commercially; labor included in printing cost)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set finishing</td>
<td>4.5 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.1710</td>
</tr>
<tr>
<td>Checking, correcting, and sorting</td>
<td>2.4 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.0912</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>14.329 min.</td>
<td></td>
<td></td>
<td>0.6125/set</td>
</tr>
</tbody>
</table>

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### C. Xeroxed Pasted Stencil, 10-up

<table>
<thead>
<tr>
<th>Operation</th>
<th>Time/item</th>
<th>Personnel</th>
<th>Rate of pay/hour (average)</th>
<th>Cost/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting</td>
<td>1.1 min.</td>
<td>Reviser (IV)</td>
<td>$3.39</td>
<td>$0.0627</td>
</tr>
<tr>
<td>Batching</td>
<td>.009 min.</td>
<td>Reviser (IV)</td>
<td>3.39</td>
<td>0.0005</td>
</tr>
<tr>
<td>Stencil typing and correcting</td>
<td>1.7 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.0646</td>
</tr>
<tr>
<td>Stencil checking</td>
<td>.2 min.</td>
<td>Library assistant</td>
<td>3.61</td>
<td>0.0120</td>
</tr>
<tr>
<td>Pasting</td>
<td>.2 min.</td>
<td>Clerk (I)</td>
<td>2.04</td>
<td>0.0068</td>
</tr>
<tr>
<td>Cutting</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set finishing</td>
<td>4.5 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.1710</td>
</tr>
<tr>
<td>Checking, correcting and sorting</td>
<td>2.4 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.0912</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10.109 min.</td>
<td></td>
<td></td>
<td>$0.4088/set</td>
</tr>
</tbody>
</table>

### D. Xerox 914, Typed Stencil, 8-up

<table>
<thead>
<tr>
<th>Operation</th>
<th>Time/item</th>
<th>Personnel</th>
<th>Rate of pay/hour (average)</th>
<th>Cost/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting</td>
<td>1.1 min.</td>
<td>Reviser (IV)</td>
<td>$3.39</td>
<td>$0.0627</td>
</tr>
<tr>
<td>Batching</td>
<td>.009 min.</td>
<td>Reviser (IV)</td>
<td>3.39</td>
<td>0.0005</td>
</tr>
<tr>
<td>Stencil typing and correcting</td>
<td>5.4 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.2052</td>
</tr>
<tr>
<td>Stencil checking</td>
<td>.9 min.</td>
<td>Senior professional</td>
<td>5.46</td>
<td>0.0819</td>
</tr>
<tr>
<td>Using Xerox</td>
<td>.33 min./set</td>
<td>Clerk (I)</td>
<td>2.04</td>
<td>0.0112</td>
</tr>
<tr>
<td>Cutting</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set finishing</td>
<td>4.5 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.1710</td>
</tr>
<tr>
<td>Checking, correcting and sorting</td>
<td>2.4 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.0912</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>14.619 min.</td>
<td></td>
<td></td>
<td>$0.6237/set</td>
</tr>
</tbody>
</table>

### E. Xerox 914, Pasted Stencil, 8-up

<table>
<thead>
<tr>
<th>Operation</th>
<th>Time/item</th>
<th>Personnel</th>
<th>Rate of pay/hour (average)</th>
<th>Cost/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting</td>
<td>1.1 min.</td>
<td>Reviser (IV)</td>
<td>$3.39</td>
<td>$0.0627</td>
</tr>
<tr>
<td>Batching</td>
<td>.009 min.</td>
<td>Reviser (IV)</td>
<td>3.39</td>
<td>0.0005</td>
</tr>
<tr>
<td>Stencil typing and correcting</td>
<td>1.7 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.0646</td>
</tr>
<tr>
<td>Stencil checking</td>
<td>.2 min.</td>
<td>Library assistant</td>
<td>3.61</td>
<td>0.0120</td>
</tr>
<tr>
<td>Pasting</td>
<td>.2 min.</td>
<td>Clerk (I)</td>
<td>2.04</td>
<td>0.0068</td>
</tr>
<tr>
<td>Using Xerox</td>
<td>.33 min./set</td>
<td>Clerk (I)</td>
<td>2.04</td>
<td>0.0112</td>
</tr>
<tr>
<td>Cutting</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set finishing</td>
<td>4.5 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.1710</td>
</tr>
<tr>
<td>Checking, correcting and sorting</td>
<td>2.4 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.0912</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10.439 min.</td>
<td></td>
<td></td>
<td>$0.4200</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Operation</th>
<th>Time/item</th>
<th>Personnel</th>
<th>Rate of pay/hour (average)</th>
<th>Cost/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting</td>
<td>1.1 min.</td>
<td>Reviser (IV)</td>
<td>$3.39</td>
<td>$0.0627</td>
</tr>
<tr>
<td>Batching</td>
<td>.009 min.</td>
<td>Reviser (IV)</td>
<td>3.39</td>
<td>0.0005</td>
</tr>
<tr>
<td>Stencil typing and</td>
<td>5.4 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.2052</td>
</tr>
<tr>
<td>correcting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stencil checking</td>
<td>.9 min.</td>
<td>Senior professional</td>
<td>5.46</td>
<td>0.0819</td>
</tr>
<tr>
<td>Using Xerox</td>
<td>.287 min./set</td>
<td>Clerk (I)</td>
<td>2.04</td>
<td>0.0098</td>
</tr>
<tr>
<td>Cutting</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set finishing</td>
<td>4.5 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.1710</td>
</tr>
<tr>
<td>Checking, correcting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and sorting</td>
<td>2.4 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.0912</td>
</tr>
<tr>
<td>Total</td>
<td>14.596 min.</td>
<td></td>
<td></td>
<td>$0.6223</td>
</tr>
</tbody>
</table>

G. XEROX 3600-I, PASTED STENCIL, 4-UP

<table>
<thead>
<tr>
<th>Operation</th>
<th>Time/item</th>
<th>Personnel</th>
<th>Rate of pay/hour (average)</th>
<th>Cost/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting</td>
<td>1.1 min.</td>
<td>Reviser (IV)</td>
<td>$3.39</td>
<td>$0.0627</td>
</tr>
<tr>
<td>Batching</td>
<td>.009 min.</td>
<td>Reviser (IV)</td>
<td>3.39</td>
<td>0.0005</td>
</tr>
<tr>
<td>Stencil typing and</td>
<td>1.7 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.0646</td>
</tr>
<tr>
<td>correcting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stencil checking</td>
<td>.2 min.</td>
<td>Library assistant</td>
<td>3.61</td>
<td>0.0120</td>
</tr>
<tr>
<td>Pasting</td>
<td>.2 min.</td>
<td>Clerk (I)</td>
<td>2.04</td>
<td>0.0068</td>
</tr>
<tr>
<td>Using Xerox</td>
<td>.287 min./set</td>
<td>Clerk (I)</td>
<td>2.04</td>
<td>0.0098</td>
</tr>
<tr>
<td>Cutting</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set finishing</td>
<td>4.5 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.1710</td>
</tr>
<tr>
<td>Checking, correcting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and sorting</td>
<td>2.4 min.</td>
<td>Typist (II)</td>
<td>2.29</td>
<td>0.0912</td>
</tr>
<tr>
<td>Total</td>
<td>10.396 min.</td>
<td></td>
<td></td>
<td>$0.4186</td>
</tr>
</tbody>
</table>

**SUMMARY: PRODUCTION COST COMPARISON FOR CARD REPRODUCTION METHODS**

Based on UBC's average set of cards: 13.2 cards

**FLEXOWRITER**

- Supplies and equipment: $0.63
- Labor: $0.68*
- Total: $1.31/set

**ITEK TYPED STENCIL, 10-UP**

- Supplies and equipment: $0.24
- Labor: $0.62
- Total: $0.86/set

**ITEK PASTED STENCIL, 10-UP**

- Supplies and equipment: $0.24
- Labor: $0.41
- Total: $0.65/set

**XEROX 914 TYPED STENCIL, 8-UP**

- Supplies and equipment: $0.18
- Labor: $0.63
- Total: $0.81/set

* This is the labor cost for the average Flexowriter 5.5 card set. Sets of more than 7 cards were not made on the Flexowriter.

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<table>
<thead>
<tr>
<th>Description</th>
<th>Supplies and Equipment</th>
<th>Labor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xerox 914 Pasted Stencil, 8-up</td>
<td>$0.18</td>
<td>$0.42</td>
<td>$0.60/set</td>
</tr>
<tr>
<td>Xerox 3600 Typed Stencil, 4-up</td>
<td>$0.15</td>
<td>$0.63</td>
<td>$0.78/set</td>
</tr>
<tr>
<td>Xerox 3600 Pasted Stencil, 4-up</td>
<td>$0.15</td>
<td>$0.42</td>
<td>$0.57/set</td>
</tr>
</tbody>
</table>
The Schedule of Main Subjects Proposed for Edition 7 of the Colon Classification

P. Jayarajan
Documentation Research and Training Centre
Bangalore, India

In Edition 7 of Colon Classification (CC) ninety-nine new Main Subjects—including Partial Comprehensions—have been provided in its Schedule of Main Subjects. These are of the following five kinds: (1) Distilled Main Subjects, (2) Partial Comprehensions, (3) Fused Main Subjects, (4) Promoted Main Subjects, and (5) Truly new Main Subjects. But, none of these new Main Subjects has caused any change either in name or in the relative sequence of the forty-two Main Subjects in Edition 6 of CC.

Introduction

In her article “The Year’s Work in Cataloguing and Classification” (LRTS, Spring, 1971), Dr. Phyllis A. Richmond has stated about Colon Classification (CC) Edition 7 that, “This is probably the first time an important classification system has ever made such wholesale changes in its MAIN Classes.”

This statement causes some difficulties:

1. There has been no change in either the name or relative sequence of the Main Subjects in Edition 6 of CC;
2. I am assured by Dr. S. R. Ranganathan of the great respect he has for the scholarship of Dr. Richmond;
3. To reconcile the above two statements we must have recourse to exegetics—the laws of interpretation;
4. Such a reconciliation is possible by interpreting the term “changes” in a list to mean also “new additions” to the list, even without any change in the items already existing in the list; and
5. This is possible as there are many new additions, as shown in the succeeding sections of this article.

New Main Subjects

There are ninety-nine new Main Subjects—including new Partial Comprehensions—added to the Schedule of Main Subjects of the Edition 7 of CC. They belong to five groups as shown in Table 1:

Volume 16, Number 3, Summer 1972
TABLE 1

MAIN SUBJECTS AND THEIR KINDS

<table>
<thead>
<tr>
<th>Kind of Main Subject</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Distilled Main Subject</td>
<td>17</td>
</tr>
<tr>
<td>2 Partial Comprehension</td>
<td>26</td>
</tr>
<tr>
<td>3 Fused Main Subject</td>
<td>30</td>
</tr>
<tr>
<td>4 Promoted Main Subject</td>
<td>20</td>
</tr>
<tr>
<td>5 Truly New Main Subject</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>99</strong></td>
</tr>
</tbody>
</table>

*Distilled Main Subject*

1. **Definition**

   By “Distilled Main Subject” is meant an idea which has now gained the status of a Main Subject, though in the past it was mostly an isolated idea forming only a facet of Compound Subjects going with one or more Main Subjects. It is the result of the evolution of a pure independent discipline as a Main Subject out of the experiences in its appearance—in—action in diverse Compound Subjects.

2. **List of Distilled Main Subjects**

   The following is a list of the seventeen Distilled Main Subjects in Edition 7 of CC:

   5 Exhibitionology
   6 Museology
   7 Systemology
   8 Management Science
   9b Career
   9c Metrology
   9d Standardization methodology
   9e Specification methodology
   9f Research methodology
   9g Evaluation methodology
   9p Conference methodology
   9s Seminar methodology
   9t Commission methodology
   9P Communication theory
   9Q Symbolism
   A9C Microtechnique
   VX Historical source
   (as a pure discipline)

*Partial Comprehension*

1. **Definition**

   Sometimes a subject going with different Main Subjects is treated integrally or disjunctively in one and the same document. A Partial Comprehension has meaning only with reference to the Main Subjects recognized and enumerated in the Schedule.

2. **List of New Partial Comprehensions**

   The following is a list of the twenty-six new Partial Comprehensions in Edition 7 of CC:

   9Z Science (Natural and Social)
   1Z Agriculture and Forestry
   JZ Animal sciences

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   *Library Resources & Technical Services*
Fused Main Subject

1. Definition
By "Fused Main Subject" is meant a Main Subject formed by the fusion of two or more Main Subjects or Non-Main Basic Subjects, in such a way that each of them loses its individuality in respect to the Schedules of isolates needed to form Compound Subjects going with it. Such Fused Main Subjects were represented provisionally till now as Phased Complex Subjects.

2. List of Fused Main Subjects
The following is a list of the thirty Fused Main Subjects in Edition 7 of CC:

<table>
<thead>
<tr>
<th>9Z1</th>
<th>Pure</th>
<th>KZ</th>
<th>Medical sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>9Z3</td>
<td>Applied</td>
<td>LU5Z</td>
<td>Hospital and Sanitorium</td>
</tr>
<tr>
<td>A1</td>
<td>Pure (Natural science)</td>
<td>ΔZ</td>
<td>Fine Arts and Literature</td>
</tr>
<tr>
<td>A2</td>
<td>Applied (Natural science)</td>
<td>PW5Z</td>
<td>Typewriting and Shorthand</td>
</tr>
<tr>
<td>BWZ</td>
<td>Astronomy and Astrophysics</td>
<td>PZ</td>
<td>Religion and Philosophy</td>
</tr>
<tr>
<td>CZ</td>
<td>Engineering and Technology</td>
<td>PZZ</td>
<td>Religion and Ethics</td>
</tr>
<tr>
<td>DZ</td>
<td>Chemical sciences</td>
<td>QZ</td>
<td>Philosophy and Psychology</td>
</tr>
<tr>
<td>FZ</td>
<td>Biological sciences</td>
<td>RZ</td>
<td>Behavioral sciences</td>
</tr>
<tr>
<td>GZ</td>
<td>Molecular biology</td>
<td>RZZ</td>
<td>Psychology and Education</td>
</tr>
<tr>
<td>HZ</td>
<td>Geological sciences</td>
<td>TZ</td>
<td>Geography and History</td>
</tr>
<tr>
<td>UZ</td>
<td>History, Political science, and Economics</td>
<td>UZZ</td>
<td>History and Economics</td>
</tr>
</tbody>
</table>

Promoted Main Subject

1. Implementation in the Notational Plane
Some of the subjects which were deemed in the earlier editions of CC as Compound Subjects going with one or other of the then existing Main Subjects or as Non-Main Basic Subjects have been now promoted.
as Main Subjects. In the past, these had to be so treated because of the incompetence of the Notational Plane, in spite of the Idea Plane demanding their treatment as Main Subjects. Now the Notational System has been made more versatile; as a result it has been possible to give them the status of Main Subjects. The new feature in the Notational System making this possible is the concept of Emptying Digits—T, V, X—and Empty-Emptying Digits—U, W, Y—which taken together admit of any number of interpolations of co-ordinate Main Subjects between any two Main Subjects listed as consecutive in the earlier Schedule.2

2. List of Promoted Main Subjects
The following is a list of the twenty promoted Main Subjects in Edition 7 of CC:

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT</td>
<td>Statistical calculus</td>
</tr>
<tr>
<td>BX</td>
<td>Astronomy</td>
</tr>
<tr>
<td>DYD</td>
<td>Draftsmanship</td>
</tr>
<tr>
<td>FV</td>
<td>Foundry</td>
</tr>
<tr>
<td>FX</td>
<td>Welding</td>
</tr>
<tr>
<td>GT</td>
<td>Cytology</td>
</tr>
<tr>
<td>GTX</td>
<td>Histology</td>
</tr>
<tr>
<td>GV</td>
<td>Microbiology</td>
</tr>
<tr>
<td>JX</td>
<td>Forestry</td>
</tr>
<tr>
<td>LU5</td>
<td>Public health</td>
</tr>
<tr>
<td>LU6</td>
<td>Hospital</td>
</tr>
<tr>
<td>LU7</td>
<td>Sanitorium</td>
</tr>
<tr>
<td>LY1</td>
<td>Nursing</td>
</tr>
<tr>
<td>LY7</td>
<td>Anesthesiology</td>
</tr>
<tr>
<td>ΔV</td>
<td>Palmistry</td>
</tr>
<tr>
<td>ΔX</td>
<td>Astrology</td>
</tr>
<tr>
<td>PW1</td>
<td>Calligraphy</td>
</tr>
<tr>
<td>PW6</td>
<td>Typewriting</td>
</tr>
<tr>
<td>PW7</td>
<td>Shorthand</td>
</tr>
<tr>
<td>XX</td>
<td>Industrial economics</td>
</tr>
</tbody>
</table>

Truly New Main Subject

1. Additions to Edition 7
Due to literary warrant, a few Main Subjects have been added to the Schedule of Main Subjects in Edition 7. They were not all present in the earlier editions of CC in any form. These are only six in number.

2. List of Truly New Main Subjects
The following is a list of the six truly new Main Subjects in Edition 7 of CC:

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>3T</td>
<td>Reading material</td>
</tr>
<tr>
<td>3V</td>
<td>Reading method</td>
</tr>
<tr>
<td>3X</td>
<td>Notes writing</td>
</tr>
<tr>
<td>BTT</td>
<td>Operation research</td>
</tr>
<tr>
<td>BV</td>
<td>Cybernetics</td>
</tr>
<tr>
<td>SX</td>
<td>Applied psychology</td>
</tr>
</tbody>
</table>

Correction of Errors
In Edition 6 of CC, the number of Main Subjects, including Partial Comprehensions, is forty-two. In Edition 7, there is no change either in the inclusion of these forty-two Main Subjects or in their sequence. The only difference is that certain errors in the Numbers for Partial Comprehensions, due to oversight, have been corrected, as shown in Table 2:

1. No Wholesale Change
Except for the mentioned correction of three errors, it can easi-

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Library Resources & Technical Services
ly be seen that there are only ninety-nine additions in the Schedule of Main Subjects, and no change among the Main Subjects scheduled in Edition 6 either in their name or in their relative sequence. A noteworthy feature is that the ninety-nine new Main Subjects have been accommodated exactly in the places demanded by the Idea Plane in accordance with the Canon of Helpful Sequence regulating the work in that plane.

### TABLE 2

**CORRECTION OF NUMBERS FOR PARTIAL COMPREHENSIONS**

<table>
<thead>
<tr>
<th>Partial Comprehension</th>
<th>Edition 6</th>
<th>Edition 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Humanities</td>
<td>MZA</td>
<td>MZZ</td>
</tr>
<tr>
<td>2 Language and Literature</td>
<td>NX</td>
<td>NZ</td>
</tr>
<tr>
<td>3 Social Sciences</td>
<td>Σ</td>
<td>SZ</td>
</tr>
</tbody>
</table>

**REFERENCES**

2. ——— and Gopinath, M. A. "Development in the Use of Digits in Colon Classification." (Lib Sc. 6; 1969; Sec A8).
Reading List in Classification Theory

PHYLLIS A. RICHMOND
School of Library Science
Case Western Reserve University
Cleveland, Ohio

Introductory reading list covering most of the areas of modern classification theory. Includes definitions, bibliographic and nonbibliographic classification, recent views on classification, subjects related to classification, and miscellaneous background material such as scientific method, logic, statistical methods, etc.

Introduction

THIS READING LIST is designed to serve as an introduction to classification research literature, covering basic works in the field itself and in several related areas. The major viewpoints are presented. It is hoped that the reader will be encouraged to plunge in with original ideas of his own. To avoid distraction by discussion of variant fine points and philosophies, much of the critical literature about classification has been omitted. This can easily be picked up by consulting the appropriate sections of the major abstracting journals in library and information science. The field is wide open to new approaches and, in particular, to new methods for organization and description of the universe of knowledge. So much interest has been shown in classification during the last decade that it seems very unlikely that the two most recent great systematizers, Bliss and Ranganathan, have said the last word for the twentieth century in this field.

OUTLINE

I. Definition; what is classification?
   A. Classification as description
   B. Classification as division
   C. Classification as hypothesis
   D. Classification as scientific method
   E. Classification as a convenient ordering device
   F. Classification as coordination or grouping
   G. Classification as folk taxonomy
   H. Classification as an umbrella
   I. Classification as a structure

* 364 *
J. Classification as systematic concept coordination
K. Classification as a common sense arrangement

II. Bibliographic classification

A. General
B. Kinds of systems
   i. Universal classification systems (summary)
   ii. Enumerative systems
      a) Dewey Decimal Classification
      b) Universal Decimal Classification
      c) Library of Congress Classification
      d) Bibliographical Classification
   iii. Faceted classifications
      a) Colon (summary)
      b) Classification Research Group types
         (1) General
         (2) Specific
         (3) Later
         (4) Bibliography
      c) Faceted other than Classification Research
         Group types
   iv. Other

III. Types of nonbibliographic classification

IV. Recent views of classification

A. Criticism and goals
B. Purpose and method
C. Eclecticism: some ideas adopted by various classificationists
   i. Integrative levels
   ii. General systems theory
   iii. Other
D. Toward a philosophy of classification

V. Subjects related to classification

A. Notation
B. Linguistic approaches: terminology, language, linguistics, content analysis, stylistics
C. The subject approach, including latent structure in indexing
   i. Subject headings, descriptors, index terms
   ii. Thesauri
D. The classified catalog
E. Automatic indexing and classification
F. Automation of classification procedures and results
   i. Input (as part of cataloging automation)
   ii. Input/output (as a system of subject analysis)

VI. Miscellaneous background material

A. Scientific method, philosophy
B. Information science, née documentation
C. Cataloging codes

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D. Logic
E. Statistical methods
F. System analysis
G. Communication theory, symbolism
H. Evaluation
I. Computers and computer programming
J. Surveys, the future
K. Library automation

ABBREVIATIONS


(5) JASIS Journal of the American Society for Information Science.


(9) Lib. Quart. Library Quarterly.

(10) LRTS Library Resources and Technical Services.

I. Definition: what is classification?

A. Classification as description

B. Classification as division

C. Classification as hypothesis

D. Classification as scientific method
"Classification" (by A. Wolf) *Encyclopedia Britannica*, 14th ed.

E. Classification as a convenient ordering device

F. Classification as coordination or grouping

G. Classification as folk taxonomy
Berlin, Brent; Breedlove, Dennis E.; and Raven, Peter H. "Folk Taxonomies and Biological Classification," *Science* V. 154 (14 Oct. 1966), p. 273-75.

H. Classification as an umbrella

I. Classification as a structure

J. Classification as systematic concept coordination


K. Classification as a common sense arrangement

II. Bibliographic classification

A. General
Shera, Jesse H. “Classification as the Basis of Bibliographic Organization,” in University of Chicago Graduate Library

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Brief outline of principles. For a much fuller discussion, see his works: The Organization of Knowledge and the System of the Sciences (New York: Holt, 1929), and The Organization of Knowledge in Libraries and the Subject Approach to Books (New York: H. W. Wilson, 1939).


Commentary that has stood the test of time.


Medium difficulty.


Advanced. There is a third edition, but this one is satisfactory.


A very significant summary of the current situation with an excellent bibliography.

B. Kinds of Systems

i. Universal classification systems (summary)


Dewey, Brown, UDC, LC, Bliss, Colon described, fold out tables. Consult full schedules if the systems are not already familiar.

ii. Enumerative systems

a) Dewey Decimal Classification


The basics in considerable detail.

b) Universal Decimal Classification


Short, clear.


c) Library of Congress Classification


A survey for beginners.


Detailed consideration of some of the more difficult aspects of this system. No manual or monograph as yet covers the LC system in sufficient detail for practitioners or for advanced teaching.

d) Bibliographical Classification


Result of a life's work and based on theory worked out over several decades. cf. p. 2-179.

iii. Faceted classifications

a) Colon (summary)


One of the clearest explanations made by this master.


An early but easy-to-comprehend introduction to the principles of faceting.


Brief but succinct.


Basic ideas.


The 5th ed. is essentially the same. A 7th is in progress
as this list is being compiled. It will have major changes in classes.


A programmed text for self-instruction.


b) Classification Research Group types

(1) General


How to.

(2) Specific

Early examples.

Foskett, D. J., "Occupational Safety and Health Documents Classification Scheme," *Dorking Papers*, p. 115-36.


This has been replaced by a completely revised system called *Thesaurofacet*.

(3) Later


This scheme is still in the process of development.


Foskett, D. J. *Classification for a General Index Lan-

Explanation of basic contents of No. 1.

(4) Bibliography


c) Faceted other than Classification Research Group types


Faceting based on a three dimensional approach.

iv. Other


Aitchison, Jean; Campbell, Alan; and Ireland, Ralph, comps. Thesaurusfacet: a Thesaurus & Faceted Classification for Engineering & Related Subjects (Whetstone, Leicester: The English Electric Company, Ltd., 1969).

III. Types of nonbibliographic classification

Practically every discipline has its own way of organizing its field. In most cases the classification used can be determined from the list given in the major abstracting journals for that field. These listings vary from year to year as the field changes. The following are three samples of different types: detailed, polyglot, and contemporary.

Simpson, George Gaylord. The Principles of Classification and a


(Mathematical classification used by the American Mathematical Society) Mathematical Reviews, first issue each year.

IV. Recent views of classification

For a general overview of the field, the first two of the following should be read cover to cover. During the course of reading the following questions should be borne in mind: (1) which of the “conclusions and recommendations” of the first conference have been fulfilled? and, (2) have any of the “conclusions and recommendations” of the second conference been fulfilled?


Classification Research; Proceedings of the Second International Study Conference Held at Hotel Prins Hamlet, Elsinore, Denmark, 14th to 18th September, 1964 (Copenhagen: Munksgaard, 1965).


A. Criticism and goals


Compare the “final statement” with those of the Dorking and Elsinore conferences. This report is also in the Classification Research Group’s Classification and Information Control (Library Association Research Publication No. 1).

The Sayers Memorial Volume; Essays in Librarianship in Memory of William Charles Berwick Sayers. ed. D. J. Foskett and
B. I. Palmer (London: The Library Association). essays:
Farrandane, J. “Fundamental Fallacies and New Needs in Classification,” p. 120-35.
Foskett, D. J. “Classification and Integrative Levels,” p. 136-50.
Especially chapters 3, 4, 5.

B. Purpose and method
Pragmatic approach.

[Criticism and commentary on above] LRTS 9:392-416 (Fall 1965).

C. Eclecticism: Some Ideas Adopted by Various Classificationists
i. Integrative levels

ii. General systems theory

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On systems analysis.


Interesting philosophical discussion. Read with care as there are many good ideas for research here.


Very important for classification as input.

iii. Other

Annual Review of Information Science and Technology.

"Content Analysis, Specification and Control"
  v. 1, ch. 4, 1966 (Baxendale)
  v. 2, ch. 4, 1967 (Sharp)
  v. 3, ch. 4, 1968 (Taulbee)
  v. 4, ch. 3, 1969 (Fairthorne)

"Document Description and Representation"
  v. 5, ch. 6, 1970 (Artandi)
  v. 6, ch. 4, 1971 (Vickery)

The 1969 review by Fairthorne is especially pertinent.


D. Toward a Philosophy of Classification

Shera, Jesse H. Libraries and the Organization of Knowledge, ch. 7, 8, 9.

(Some of these cited above in their original place of publication, cf. IIA, IV, IVA).

Documentation Research and Training Centre. Annual Seminar, 4, 1966: The Universe of Knowledge, Its Structure and Development (Bangalore: DTRC, 1966), papers A (Richmond), B (teNuyl) and C (Ranganathan).


V. Subjects related to classification

A. Notation

Vickery, B. C. "Notational Symbols in Classification," J. Doc., 8:14-32 (1952); 12:73-87 (1956); 13:72-77 (1957); 14:1-11

Coates, E. J. "Notation in Classification," *Dorking Papers*, p. 51-64.


B. Linguistic approaches: terminology, language, linguistics, content analysis, stylistics


*Annual Review of Information Science and Technology*, "Automated Language Processing"

v. 1, ch. 6, 1966 (Simmons)

v. 2, ch. 6, 1967 (Bobrow and others)

v. 3, ch. 6, 1968 (Salton)

v. 4, ch. 5, 1969 (Montgomery)


Most of the linguistic approaches so far have been relatively unproductive because not enough is known of language processes themselves. This article discusses the ambiguity problem caused by the semantic stumbling-block.

C. The subject approach, including latent structures in indexing

i. Subject headings, descriptors, index terms


Interesting application of chain indexing procedures.


A valuable experimental study.


An experimental study which raises more questions about the effectiveness of Cranfield II indexing studies.


• 376 •

*Library Resources & Technical Services*
Not limited to conventional subject heading approach.
Austin, Derek, and Butcher, Peter. *PRÉCIS a Rotated Subject Indexing System* (London: Council of the BNB, 1969) + Supplement.
An automated depth indexing based on a classification approach. Advanced.

ii. Thesauri

Mandersloot, Wim G. B.; Douglas, Eleanor M. B.; and Spicer,

It is advisable to look at as many thesauri as possible, noting the gradual introduction of classification features in one guise or another.

D. The classified catalog


E. Automatic indexing and classification


To get the feel of this field, it is suggested that the work of M. E. Maron, “Automatic Indexing: an Experimental Inquiry,” Harold Borko, “Automatic Document Classification,” and John H. Williams, Jr., “Results of Classifying Documents with Multiple Discriminant Functions” (or equivalent) be read in the original.


The two articles above describe clumping and clustering procedures. The references in the footnotes should be read by those desiring further information about these and similar methodologies.


Advanced. Some input methods of interest in classification.


Helpful commentary by one of the leaders in the field.


Advanced. The bibliography in this book leads into much of the significant work of this type.


A mathematical non-semantic classification of index terms.

F. Automation of classification procedures and results

No system yet performs the human part of classification in a fully
satisfactory manner, but there are several interesting developments involving automation of either the schedules of the classification numbers, or the process of classifying documents with an existing system of some kind.

i. Input (as part of catalog automation)


ii. Input/output (as a system of subject analysis)


VI. Miscellaneous background material

A. Scientific method, philosophy


B. Information science, née documentation


*Volume 16, Number 3, Summer 1972  · 379 ·*


Indicative of the breadth of the field.


A major thought-provoking contribution.


Methods of communication—how, why. Very clearly written.


C. Cataloging codes


Dunkin, Paul S. *Cataloging USA* (Chicago: American Library Association, 1969), chapters 2, 5 and 6.

Emphasizes “why” rather than “what.”

D. Logic


E. Statistical methods

*Statistical Methods for Mechanized Documentation; Symposium Proceedings, Washington 1964,* ed. Mary Elizabeth Stevens, Vincent Giuliano, and Laurence B. Heilprin (Washington,
F. System analysis
There are a number of books on this subject, both from the library point of view and in general. While the subject is important and at least some sampling should be made of what is available to be read, it should be remembered that a system can be analyzed to death without achieving much insight into what should occur.

Brief introduction.

Library orientation.

G. Communication theory, symbolism
This is available also in paperback and is strongly recommended for an overall survey.

Available in paperback.

Interesting arguments and penetrating criticism.

Has sections of interest to classification.


H. Evaluation
A tremendous amount of material appeared on this subject in the 1960s. The appropriate chapters in the *Annual review of information science and technology* and the proceedings of the American Society for Information Science will give summaries and lead into further reading.


Note meaning of word “information” used here.

I. Computers and computer programming
For beginners.
For beginners. Subject approach.
Essentially a reference work, but has good introductory material.
Thorough.
A clear text.

J. Surveys, the future
Overview from European angle.
Oriented toward science and technology.

K. Library automation

Acknowledgement
I am grateful to Ruth M. Harper, who typed this list, for working diligently to keep the text in order and for making many helpful suggestions in the process.
In Edition 18, the editors of DDC again tried to steer a middle course between “the integrity of numbers” and “keeping pace with new knowledge.” An effort was made to keep the changes to a minimum yet without overly compromising the updating of the system. However, all the changes made were not caused by new knowledge. Many of them were made for structural reasons, i.e., in an effort to rectify irregularities which had developed in the scheme over the years. Two basic factors of the system, namely, classification by discipline and notational constrictions, have affected the nature and the form of many of the changes.

**Introduction**

The polar forces of the policy of the “integrity of numbers” and the need to “keep pace with new knowledge” are again in evidence in the new edition of *Dewey Decimal Classification*. The force of the “integrity of numbers” has been great. It has served as a restraining factor in the revisions of DDC, especially prior to the fifteenth edition. Between the second and the fourteenth editions, revisions and changes had been kept to a minimum. Dewey’s original injunction to keep the numbers stable was based not so much on philosophical or theoretical principles as on practical considerations, namely, consistency and economy. On the other hand, there is the increasing awareness that a classification scheme must be constantly updated to cope with new developments in knowledge in order to remain valid and workable. This, of course, is the major reason for the periodic revisions of the scheme. Added to this force opposing that of the “integrity of numbers” is an effort on the part of the editors of the recent editions toward structural improvement, i.e., an effort to maintain the hierarchical nature of both the classification and the notation. While no one has ever really denied the need for revision, the pains of adjusting to a new edition nevertheless remain and have become a familiar story. The ultimate test of a new edition, then, lies in how well the editors maintain the delicate balance.
To understand the nature and the extent of the changes made in the new edition, a review of certain aspects of the background of the Dewey scheme may be appropriate. Two factors that have played the most important roles in determining the nature and the directions of the revisions in the successive editions of DDC are probably the principle of classification by discipline and the hierarchical notation; and the two are closely interrelated.

Dewey based his classification scheme on a division by discipline rather than by subject and fitted the disciplines into his decimal notation. Ironically, the pure notation of DDC, with its universal language of the Arabic numerals and its hierarchical expressiveness and mnemonic features which account for its popularity and wide acceptance throughout the world, has also been the greatest limiting factors in its development.

From the beginning, DDC has been criticized for fitting all knowledge into the procrustean bed of nine classes, and Melvil Dewey himself admitted the theoretical absurdity of the division of every subject into just nine parts. Nevertheless, claiming practical advantages, Dewey proceeded to establish his classification scheme on this basis.

Nine of the ten classes in DDC are divisions which were recognized as disciplines in Dewey's time. Some of them are no longer considered today to be disciplines but rather areas of study each of which includes several academic disciplines. Based on the curriculum of a modern university, one would group such fields as Philosophy, Languages, Fine arts, and Literature as disciplines under "Humanities" which parallels other areas of study such as Social sciences and Physical sciences, each of which also includes various disciplines. But, in DDC, Philosophy, Languages, Literature, etc. are established as coordinates with Social sciences, Pure sciences, and Applied sciences. The fact that six out of the nine classes in DDC belong to the area of Humanities reflects the state of learning in the nineteenth century. Dewey gave each of them equal classification value as that of Social sciences, Pure sciences, and Applied sciences. Advancement of knowledge in all fields since Dewey's time has not been uniform in terms of either quantity or velocity. This phenomenon results in the unevenness in the scheme as it stands today. Classes such as 100 Philosophy and 200 Religion have remained fairly stable throughout the successive editions; while others, such as 300 Sociology (later changed to Social sciences), 500 Natural science (later called Pure sciences), and 600 Useful arts (later termed Technology/Applied sciences) have undergone tremendous development and expansion.

In addition to this unevenness, the limitation inherent in the nature of a hierarchical notation also creates special problems in later revisions. As Melvil Dewey implied in his introduction, both the arrangement of subjects and the notation of DDC are hierarchical. Hence, even though the numbers can be extended infinitely beyond...
the decimal point in order to facilitate the necessary expansions under an existing subject, no new numbers can be inserted between coordinate numbers when required for the accommodation of new subjects. This inherent problem is compounded by the fact that Dewey himself used up the available numbers too rapidly early in the game, as pointed out by Mr. Benjamin A. Custer, the editor of DDC. In the second edition, in which Dewey considered all the numbers “settled” and laid down his injunction of the “integrity of numbers,” he assigned topics to all 100 divisions and to all but twenty-one of the 1000 sections, nineteen of the twenty-one vacant numbers being in the 000 class, General works. Like his contemporaries, Dewey assumed that technology had reached its summit and there was nothing left to be invented. In establishing the scheme, he saw fit to occupy the available numbers even in places where he did not need to; for instance, he assigned 570, 580, and 590 to Biology, Botany, and Zoology respectively, making them coordinate topics while the latter two should have been subsumed under 570 according to the hierarchical principle, thus saving the numbers 580 and 590 for future use. 580 and 590 then could have been used later to accommodate new disciplines such as Biochemistry. Other similar examples are found in 220 and 620. Such a practice is unfortunate for two reasons: First, it violates the hierarchy of both classification and notation. Secondly, it blocks the way of the future editors. The advantage of shorter numbers in these places at that time is more than negated by the necessity of ever-lengthening numbers in other places later on. Furthermore, in providing period subdivisions under history and literature of the United States, Great Britain, France, and Germany, Dewey used up the available numbers far too rapidly, leaving very little room for future history. In each of the cases mentioned above, he used eight (-.1-.8 or -.01-.08) out of nine possible numbers to cover the history through the nineteenth century, leaving -.9 or -.09 to cover the twentieth century and after. As a result, the twentieth and later centuries become subdivisions of -.9 or -.09, resulting in a distortion of the notational hierarchy.

The factors discussed above resulted in several difficulties. Among these are the problems of logical collocation and insertion of new subjects and the ever-lengthening numbers in crowded areas (notably in the 300 and 600 classes). The later editors have striven in vain to solve these problems satisfactorily.

To remedy the situation, the really ideal means would be to reapportion many of the major classes and divisions. For instance, 100 Philosophy and 200 Religion could be combined to form one class, and 400 Languages could merge into 800 Literature, thus vacating entire classes for new disciplines and subjects. This move, of course, would be tantamount to drawing up a completely new classification scheme; while it would be theoretically possible, it is inconceivable in practice. Such a fundamental and drastic move seems to be out of the question at this time.
The major devices used in the revision of DDC to keep pace with knowledge have been expansion and relocation. To accommodate new subjects or proliferation of library material in a particular field, expansion of existing subjects by further subdivisions resulting in longer numbers has generally been employed. This device, sanctioned by Melvil Dewey himself in the introduction to the second edition, has been steadily used in the later editions, with the exception of the fifteenth.

The second device, relocation, also has as one of its purposes the accommodation of new subjects. If a new subject must be inserted in a certain place in the schedules where there is no gap in the coordinate numbers, one of the neighboring numbers already occupied by previously assigned subjects will have to be vacated in order to make room for the newcomer. This is largely due to the notational constriction of DDC. In a scheme like Library of Congress Classification (LCC) with its nonhierarchical notation, a new subject can be inserted anywhere in the schedules without disturbing the existing numbers, simply by extending the preceding number beyond the decimal point. Relocation for this purpose has taken place many times in DDC, although not always consistently. An alternative to vacating and reusing a number for a new subject is to make it a subdivision under an existing subject, thus sometimes putting a new subject where it does not really belong. Since relocation is in direct conflict with the policy of the "integrity of numbers," the editors have been cautious, sometimes probably too much so, in making relocations. Relocation of entire classes has never yet taken place in DDC. Even the relocation of divisions has been kept at a minimum by the editors since the second edition in which Melvil Dewey himself made quite a few relocations before he declared the numbers "settled." Relocation usually takes place in the third digit or after the decimal point.

Another purpose of relocation is for better collocation of subjects; it is usually necessitated by new knowledge or by new ways of relating knowledge. This practice is common to all classification schemes. A subject may at first appear to be logically arranged under a larger subject, but later development in the field or later understanding of the subject may make it appear more appropriate in a different place in the schedules, subordinated to, or coordinated and collocated with, other subjects. Many of the relocations occurring in the 100 class under topics relating to psychology were made for this reason.

Still another purpose of relocation is structural improvement, i.e., to maintain the hierarchical integrity of the scheme, both in the categorical arrangement of subjects and in the notation. Especially since Edition 17, there has been an increasingly strong evidence of the editors' desire to preserve, and often to improve, the hierarchical structure of the scheme. A large number of relocations of this nature took place in Edition 17. Changes of this kind are necessary although their practical value may not be immediately apparent. They are, so to speak, regulatory devices to check abnormal growths, keeping them
from spreading and multiplying in the future.

DDC has never been perfect; it still is not, and it probably never will be, but it is constantly evolving in an effort to adapt to the modern world. As a working system, it should have as its criteria adaptability and viability, not perfection.

**Dewey 18**

Now, in viewing the new edition of the *Dewey Decimal Classification*, one should bear in mind the principle of classification by discipline and the notational constriction discussed above, for these are the limits within which the editors had to work. The significant expansions and changes made in Edition 18 have been outlined elsewhere and need not be repeated here. The following is a discussion of some of the major changes:

**Expansions**

In Edition 18, many numbers are expanded considerably, although some areas which needed expansion are left as they were. Many of the timely topics which became popular in the recent years are expanded to accommodate the proliferation in literature. Among these are Ecology 574.5 and 301.3, Special education 371.9, and Engineering materials 620.11. Other continually popular subjects such as Sex 301.41, Marriage and family 301.42, and Literary anthologies 808.8 also underwent considerable expansions.

Many expansions in Edition 18 were made with the reuse of standard subdivision -04 for "general special" topics, e.g. 301.04, 620.004, and 721.04. This device, in my opinion, represents one of the greatest ingenuities of the editors. The placing of general special concepts, i.e., "subdivision of a topic according to a characteristic which has general applicability to other subdivisions of the topic which are based on different characteristics," tightens up the structure of the scheme by providing a logical subarrangement. The interposition of this kind of subdivision between two form subdivisions -03 and -05 is a necessity imposed by the notation and cannot be helped. The one possible problem is the inconsistency between this new way of accommodating general special topics and the former method of preempting the 0 series of standard subdivisions for this purpose. Furthermore, although the Editorial Policy Committee for Edition 18 decided to discontinue this practice while retaining those shifts appearing in Edition 17, it is interesting to note that in the phoenix schedules 340 and 510, general special concepts are nevertheless accommodated by preempting the 0 series rather than by using the standard subdivision -04, with the sole exception of 341.04.

Some of the expansions were made to accommodate new subjects or new aspects of existing subjects. The "hippies" now have a place in Religion and in Sociology. Extraterrestrial worlds have been fitted into various disciplines. Under standard subdivision -09, provision has been made for the twenty-first century. Two problems are involved in
this kind of expansion—the fitting of the new subject into the proper place in the schedules and the finding of the right number in that particular place. The placement of certain new subjects in Edition 18 raises questions as to their proper locations. For instance, Transportation engineering has been assigned the number 629.04, making it, if I interpret this correctly, a general special topic under 629. Other branches of engineering. It would seem that a more appropriate place for this subject would be in the vicinity of Engineering of railroads, roads, highways 625; or, if one insists on its general application, it should probably have been made a "general special" topic under 620.

In many places, expansion is accompanied by considerable reorganization of the subarrangement. Most of these changes prove to be great improvements. For example, 574.192 Biochemistry was expanded considerably to include topics such as Pigments, Organic compounds, and Physical, theoretical, analytical chemistry, which should have a place under Biochemistry. However, Metabolism is still left out. In the rearrangement of the subdivisions, distinctions and provisions are now made for various facets, Biochemical substances 574.1921-1927, Technique 574.1928, and Process 574.1929. Corresponding changes were made in 612.015, 581.192, and 591.192, Biochemistry applied to man, plant, and animal. This new arrangement in Edition 18 is far more satisfactory than the treatment of Biochemistry in LCC and even superior to that in the scheme used by the National Library of Medicine. The major weaknesses now existing are the overall placement of the discipline as a subdivision under Physiology and the resulting long numbers.

One criterion of expansion should be the degree of minuteness and specificity. This aspect is difficult to evaluate. Opinions will vary depending on the size of the collection and the purpose of using the scheme, whether for shelf arrangement of books or as a bibliographic or indexing device. To give an example, 808.803, Literary collections dealing with specific themes and subjects, with corresponding numbers in 809.933 and .90803 and .908 in Table 3, have been expanded to include seventeen new subdivisions. While this expansion will be very useful in a bibliography or index by providing for every conceivable theme and subject in literary anthologies and criticism, as a library classification scheme, it is of questionable validity in terms of literary warrant. The present arrangement provides an even closer classification of literature than the scheme used by the PMLA bibliography for indexing literary works and journals. On the other hand, subjects such as Library classification 025.4 which would seem to warrant subdivision underwent little expansion. Surely there is enough library material on the various systems of classification to warrant subdivision by classification scheme.

In other places, expansions and changes fail to rectify some of the basic weaknesses in the arrangement. For instance, 629.4 Astronautics
underwent a reorganization with expansions and changes and revised headings for many of the subdivisions. However, much of the overlapping and duplicate provision and the distortion of classificatory hierarchy still remain. 629.46 Engineering of unmanned spacecraft and 629.47 Astronautical engineering (for comprehensive works on spacecraft and works on manned spacecraft) overlap in many aspects. 629.43 Unmanned flight and 629.45 Manned flight could have been more logically subsumed under 629.41 Space flight. It is probably due to the fact that Astronautics 629.4 has been too recently relocated from 629.1388 (Edition 16), that the editors were hesitant in making too extensive changes in Edition 18.

Relocations

Edition 18 claims approximately four hundred relocations, about half as many as Edition 17. However, the figure does not include the numbers in 340 and 510 where the major relocations took place. The schedules for 340 and 510 will be discussed separately.

The majority of the relocations occurred in 300's, 500's and 600's. Most of them resulted in placing subjects where they really belong. Yiddish language and literature, formerly 492.49 and 892.49 as subdivisions under Hebraic languages and literature, now class in 497.947 and 889.09, as branches of Germanic languages and literature. Symbolic (mathematical) logic, formerly 164, now classes in 511.3. Primitive races, a sociological, cultural, rather than biological term, moved from 572.7 to 301.2. Laser technology, formerly 621.329, a subdivision under Light and illumination engineering, now classes in 621.366, a subdivision under Applied optics and paraphotic engineering. Steam locomotives moved from 621.13, a subdivision under Applied physics, to 625.261, a subdivision under Engineering of railroads, roads, highways.

Some of the relocations were caused by the observation of the principle of classification by discipline. Parochial welfare work now classes in 361.75, a better location than in 258, under Religion. Techniques applied to subjects class with the subjects. Hence, Technical drawing (formerly 744) now scatters in 604.2 (Technical drawing), 720.28 (Architectural drawing), and 526.86 (Map drawing). Technological infrared photography moved from 778.34 to 621.3673. However, this practice has not been consistent. For example, Medical records management, formerly 362.1, was relocated under 651.5 Office services—records management, rather than with the subject in 610, e.g., under 610.6. The latter location would have made it consistent with similar topics such as Records management for public administration which classes in 350.714 with the subject.

A more disconcerting kind of relocation is the restoration of numbers to subjects which had been only recently relocated from earlier editions. One example of this circular movement is the treatment of Offenders grouped by type of offense: from 364.38 (Edition 14) to
364.13-.17 (Edition 16) to 364.3 (Edition 17) back to 364.13-.18 (Edition 18). Bookbinding, starting out in 686 (Editions 2 through 14) and traveling through 655.45 (as an optional number in Edition 15), 655.7 (Editions 16 and 17), is now back in 686.3. Literature of Scandinavian languages 839.5, is restored from Edition 16, in spite of its violation of the notational hierarchy. Objections to this kind of relocation are not raised against the restorations, which in most cases are improvements, but in the original relocations themselves. The prevention lies not in restraining from restoration when needed, but in more careful consideration in the relocations made in the first place. Nevertheless, some of the changes of this type are understandable as resulting from changes in editorial principles from edition to edition, and from new developments in the knowledge of the field which entails realignment in the arrangement of materials.

Some of the restorations take the form of reduction of expansions. For instance, 614.351-.354, Cosmetics, specific kinds of drugs (Edition 17), were reduced back to 614.35 Drugs and cosmetics (Editions 16 and 18). Aerial photography and space photography are grouped back in 778.35, instead of being subdivided in 778.352 and 778.353 as in Edition 17.

In other cases, relocations were made to eliminate duplicate and overlapping entries by combining topics previously classified in separate places into one number. For example, 332.61 Securities exchanges and 332.64, Exchange of securities are now both placed in 332.64. Group behavior in opinion formation, formerly 301.154, and Control of public opinion, formerly 301.1523, are now both placed in 301.154 with a new heading, Social control thru indoctrination. Modern constitutionalism, formerly 321.7, and Representative democracy, formerly 321.8, are now included in the latter number with the new heading, Democratic forms (Modern constitutionalism).

Some of the changes were caused by the principle of hierarchical structure. Cyanophyta (Blue-green algae), formerly 589.8, as a coordinate subject with Specific types of algae 589.4, now classes as the latter's subordinate subject in 589.46. The number for Monastic buildings of orders of other religions changed from 726.7799 to 726.78, representing a change only in notation, but not in its location in the schedules, or on the shelves. The change was made for the sake of notational expressiveness. Changes of this kind, while their practical value is not immediately apparent, are needed for structural improvement.

Many of the relocations were made as a result of the reuse of standard subdivision -04 for "general-special" topics. For example, Hygiene for specific age groups, formerly 613.97, now classes in 613.04. Household finances and Household employees, formerly 647.1-.6, now appear as subdivisions under 640.4.

In general, vacated numbers resulting from relocations are not reused until a later edition. One exception to this practice is found in the vacating of the area notation .99 Antarctica to accommodate the
new area Extraterrestrial worlds. In this rearrangement, Antarctica, relocated in -989, still follows Arctic islands. The relocation is entirely due to the notational constriction, there being no available number after -99.

Phoenix Schedules

In Edition 18, two schedules, 340 Law and 510 Mathematics, were completely reconstructed. In establishing a so-called phoenix schedule, the policy of the “integrity of numbers” is suspended and the editors are no longer hampered by the notational constriction in rearranging existing subjects and in inserting new subjects. The new schedules, then, are a true test of the basic philosophy and principles followed by the current editors.

The basic plan of the new schedule 340 Law is stated in Dewey Decimal Classification Additions, Notes and Decisions: “Subdivision is first by major branches of law, then by jurisdictions, then by topics, such as labor, welfare, education, then by forms, such as statutes, cases, courts.” This plan provides a much more consistent and satisfactory arrangement. In the old schedule, there was no consistency; jurisdictions sometimes preceded, sometimes followed, the topics. Anglo-American bias is removed by treating the laws of other countries with equal classification value as those of the United States and Great Britain.

The classificatory hierarchy is clear, consistent, and logical; notational hierarchy is also maintained. With the exception of 341 International law, sections for Municipal law (public and private) follow a similar pattern: subdivisions .02-.09 are used for general subtopics and .3-.9 for specific jurisdictions. This practice is in keeping with the principle that the notation 0 represents a different basis of subdivision. This arrangement within each section conforms to the principle of progression from the general to the general special to the special. However, the same is not true of the over-all arrangement in the schedule. 347 Civil procedure, which applies to all branches of domestic law except Criminal law, and 348 Laws (Statutes), regulations, cases, which contain domestic laws of all branches, follow rather than precede specific branches.

The original ten-page schedule for Law in Edition 17 was expanded to occupy forty-three pages. Each topic is considerably expanded and rearranged. Many minute topics and subtopics are provided for. Of course, the price of closer classification in DDC is long numbers. The West Virginia unemployment compensation law now has the number 344.75402402638 and Indiana general corporation law, 346.77206602633.

The provision of 349 as an optional number for Law of individual states and nations is of dubious value. The purported advantages are (1) to give local emphasis and (2) to have a shorter number for laws of a specific jurisdiction. Both could have been achieved by using subdivision .1 as the base “Areas” notation for the jurisdiction requiring local emphasis, so that it would precede all other jurisdictions and
also have shorter numbers; 349 could then have been saved for future use.

A more fundamental revision appeared in 510 Mathematics. The basic structure of this schedule is completely revamped. 512 and 519 remain Algebra and Probabilities as in the previous editions, but the resemblance stops there. The contents of these and other sections are completely revised according to modern mathematical concepts with up-to-date terminology. The revision provides a more logical overall arrangement based on literary warrant. In previous editions, Geometry appeared in four sections, 513–516. It is now consolidated into one section 516 only. A new section entitled “Generalities” 511 is created, providing places for such topics as combinatorial analysis and numerical analysis of general application. In the previous editions, these topics must be fitted into specific branches of mathematics, whether they have specific application or not. Many new subjects in mathematics are incorporated. Classifiers will no longer be puzzled about what to do with a book on “spinor analysis.” In terminology, the new schedule is a great improvement over the old one, since it is based on literary warrant. Terms such as “Oblique projections,” “Porisms,” “Synthetic geometry,” and “Kinematic geometry” have disappeared from the schedules as well as the index.

The designers of the 510 schedule are more sparing in their apportioning of available numbers than the makers of the 340 schedule. Two out of the nine sections in 510 are left vacant for future use, while all nine 3-digit numbers have been used in 340. Among the subdivisions, there are also more gaps in the notation in 510 than in 340. The revisers of the 340 schedule, like Melvil Dewey, could not overcome the temptation of using up rapidly the available numbers. Perhaps they, too, considered the topics in law “settled” and there was no need to worry about newcomers. It is also interesting to note that centered headings are not used at all in the 510 schedule, a fact indicating a truly hierarchical structure.

These new schedules are much needed and long overdue. The obsolescent schedules were inadequate even in coping with library material in the early part of the century. The general reaction from the classifiers will probably be: “I like these new schedules, but I wish I did not have to worry about the material already classified in the same numbers with different meanings.” Librarians in general will be willing to make the necessary adjustments to the new schedules, but they will find the situation intolerable if too soon in the future it becomes necessary to make relocations due to structural weaknesses in the first place, as is now happening in the schedule 546 Inorganic chemistry which was only recently revamped in Edition 16.

Tables

The creation of five new tables in Edition 18 represents one of its greatest achievements. This is one drastic change which can be made
without compromising the policy of the “integrity of numbers.” With the exception of Tables 3 and 4 for Literatures and Languages each of which applies to a specific class only, these tables are used throughout the schedules wherever appropriate. Many of the repeated patterns in the schedules in previous editions have been consolidated in these tables. This device assures economy of entries in the main schedules, facility in number building, and greater consistency and viability. It further enhances the analytico-synthetic nature and the mnemonic features of the scheme.

Supplementary tables are not new in DDC. The Table of Standard (formerly Form) subdivisions is a familiar one. Edition 17 added the Areas Table, and there had been supplementary tables in still earlier editions. Edition 14, for instance, contained supplementary tables for Geographic divisions, Uniform subdivisions (Form, Viewpoints, and Miscellaneous), Languages and Literatures, and Philological divisions. Although the headings of the new tables in Edition 18 are reminiscent of the earlier ones, their contents and organization are completely new.

Tables 1 and 2 for Standard subdivisions and Areas remain basically the same as in Edition 17, with some expansions and a few relocations. The use of the Areas notation -1, discussed in Frances Hinton’s review of Edition 17, will continue to cause difficulties, especially the notation -17, Socioeconomic regions. Take, for example, a collection of Jewish literature. If it is considered a collection “by specific racial, ethnic, national groups,” the number should be 808.898924. However, the number recently assigned to two such collections on LC printed cards was 808.899174924. Both numbers were derived by following instructions given in the schedules and tables, the former by following the instruction given under 808.898, and the latter by following the instruction under 808.899.

The new tables are “floating” tables in a restricted sense. Tables 3 and 4 apply to classes 800 and 400 respectively. Tables 5, 6, and 7 are to be used only with those numbers from the schedules and tables to which the classifier is instructed to add. Mnemonic devices are employed whenever possible. The notations in these tables are derived from those in the related areas in the main schedules. Table 3 was extracted from the 800 class. Tables 4, 5, and 6 are based on and expanded from the 400 class; and Table 7 corresponds to the entire main schedules.

One point resulting from the creation of these new tables may be worth mentioning. The subdivisions for “Persons” are now scattered in three different tables, .092 in Table 1, .2 in Table 2, and the entire Table 7. It seems that these entries could probably be consolidated into one table.

Editorial Features

Edition 18 also shows considerable improvement in editorial features such as the introduction, the increased number of notes in the
schedules, and terminology. The introduction, though not easy to follow, is comprehensive and explicit. Its organization, with the decimal numbering system, is in itself a prime example of a hierarchical structure. The glossary and index to the introduction are helpful. For historical interest, a portrait of Melvil Dewey and a brief biographical sketch are included in volume 1.

Terminology is revised throughout the schedules and the index to reflect current usage. In general, Edition 18 adheres to one of the policies laid down for Edition 17, that "the terminology of a classification scheme should be based on literary warrant, that is, it should be the terminology used by the literature being classified." In many cases, archaic headings are replaced by contemporary terminology. "Library economy," one of Melvil Dewey's favorite terms, was changed to "Library operations." As mentioned above, terminology used in the new schedule 510 Mathematics is thoroughly updated. Some changes in the headings help to clarify them: "Government accountability" is replaced by "Malfunctioning of government." "The real" was changed to "The natural and physical as subjects of folklore." Other revisions make the headings more concise. "Anthropological and biological sciences" became "Life sciences." "Physics and chemistry of vital functions" are now called "Biophysics and biochemistry" to conform to the terms used in the literature. Where there are synonymous and alternative terms for the same subjects, both are included, e.g. "Marine biology (Biological oceanography)," and "Cytology (Cell biology)."

There is a substantial increase in the number of notes in Edition 18. The definition, scope, "class-here," and "class-elsewhere" notes are helpful and will be most welcome to the classifier. The definition note is important under 301.5, for instance, since the term "Institutions" is used here in the sense of normative patterns, instead of meaning organizations, as the same term was used for 301.4 in previous editions. It is essential to define a heading like "Holography" since the exact word is not listed in Webster's Third New International Dictionary and the related word "holograph" is defined there in an entirely different meaning. In many cases the citation order is made clear by the "class-here" and "class-elsewhere" notes. Example notes are helpful and necessary in some cases. Without such a note few people would place Library accounting or School accounting in 657.832 (Accounting) for enterprises engaged in welfare services!

Another great improvement in Edition 18 is the replacement of "Divide-like" notes by instructions to add to base numbers certain digits either from the tables or from other parts of the schedules. This facilitates number-building considerably. Those who found it difficult to go beyond the third step in the five-step sequence of the "divide-like" procedure can now rest assured that they will never have to go through the labyrinth again.

Library Resources & Technical Services
The relative index to Edition 18, while showing many improvements, still remains the albatross of DDC. The importance of the index has been pointed out by Mr. Custer:

Since the basic arrangement of the Dewey Decimal Classification . . . is by discipline or field of study, and any given subject (thing or concept) may be classified in many or all of the disciplines . . . it is the purpose of the relative index to bring together the various aspects of a subject to show their dispersion throughout the Classification.⁹

A great deal of the effectiveness of the scheme depends on the quality of the index. The editor, who repeatedly instructs the classifier to take a direct approach in classifying, i.e., “to determine first the correct main class, then the correct division, then the correct section, continuing until he has arrived at the most specific head that will contain the subject of his work,” is probably placing too much faith in the logical structure of the scheme.¹⁰ Since all the subjects in the schedules have not been placed in the “correct,” the most useful, or the logical places, the direct approach does not work all the time. The principle of classification by discipline and the weaknesses in the structure of the schedules place a great burden on the relative index which serves as a supplementary but essential tool to the main schedules. In order to be effective, the index needs to be comprehensive and specific. This probably accounts for the fierce objections to the first index of Edition 17 which was much less specific than that of the preceding edition. On the other hand, as pointed out in the introduction, “it is not feasible to include in the index every topic likely to be written about, or every possible aspect even for those topics that are included, and still keep it within a reasonable size.”¹¹ A truly exhaustive index is physically impossible. The test of an index, then, is not its fullness, but the nature and extent of its omissions, its consistency, and its structure.

If one cannot assume that he will find everything listed in the index, he is at least entitled to know what to expect. Consistency in the index of DDC still leaves something to be desired. Under a given topic, not all the applicable numbers listed in the schedules are always given. For example, under “Life-Origin” the numbers appearing under Philosophy 113.8 and Religion 213.5 are given, but not the one in Biology 577. Comparable topics in the schedules are not indexed consistently. National literatures that share the same languages with others are not always indexed. Brazilian literature, Swiss literature, and Argentine literature are indexed, but not Belgian, Austrian, or Australian literature. Standard subdivisions are not consistently indexed. In Table 1, -073 is assigned to “Students, learners, apprentices, novices,” but the notation is not given in the index after the first two groups.

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Index
“Persons,” the literature subdivisions -080351, etc., and the standard subdivision -092 are given, but not the area notation -2.

The introduction states that the index “contains an entry for every significant term named in the schedules and tables” (italics mine), but it is not clear what the word “significant” implies. Environmental law, or Law of control of environment as named in the schedules under 344.046, is not indexed, although it is presently one of the most proliferating fields. The notation 610 is given in the index after Medical sciences but not after Medicine, although the latter is also included under 610 in the schedules. Occupational ethics 174 is listed in the index, but not Professional ethics, although both terms are used in the schedules. Fund raising 361.73, Philanthropy 361.74, and Welfare work by foundations 361.76 are indexed, but not their parallel entries—Welfare work by religious organizations or Parochial welfare work 361.75, or Welfare work of international organizations 361.77. This kind of omission will cause a great deal of inconvenience, especially in the case of relocated subjects, e.g. Parochial welfare work.

One of the most disturbing examples of omission is found in the area of Law. In Edition 17, there was a list under 340 containing specific laws which the classifier was instructed to relocate from various subject classes to the broad number 340 without subdivision in anticipation of the phoenix schedule to be included in Edition 18, which was to incorporate these individual laws under various branches of law. In the index of Edition 18, not all of these relocated individual laws are indexed. Topics such as “Press law,” “Price control legislation,” “Insurance law,” and “Zoning laws” are found in the index, but not some of the others such as “Laws and regulations on area planning,” “Laws and regulations on engineering,” “Laws on wages,” “Building laws,” “Plumbing laws,” “Prohibition,” etc. For the classifier who is not a law specialist, the reclassification of the materials previously placed in 340 according to the instruction given in Edition 17 will create difficulties or will require much more time than is necessary. The difficulty is compounded in this case by the fact that the classifier is dealing with a brand new schedule. I myself, for one, after perusing the 340 schedule and looking under several other terms in the index, still failed to find the appropriate number for “Building laws.”

It is logical, but probably not practical, to omit terms which have been replaced by others due to revision of terminology. Many of the terms that appeared in the obsolescent schedule for Mathematics 510 in previous editions have disappeared from the index also. This omission will create problems in reclassification. Furthermore, the revision of terminology in the index is not consistent with that in the schedules. “Library economy” remains in the index, while it has become “Library operations” in the schedules. “Life sciences,” which replaces “Anthropological sciences and biological sciences,” appears in the index with a see-reference from “Biological sciences,” but none from “Anthropological sciences.”

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Many of the problems that are present in the formation of subject headings for a dictionary catalog exist also in the construction of an index to a classification scheme, such problems as direct vs. inverted adjective-noun headings and phrase-headings vs. headings with subdivisions or chain-indexing. The index to DDC is no exception. The explanation given in the introduction: “Unless relativity requires inversion, adjective + noun phrases are entered in direct form only,” fails to explain the inconsistency shown in the following groups of headings.13

Household
  appliances
  equipment
  finance

but

Utilities
  household management [“Household utilities” in the schedules]

or,

Industrial
  gases

but

Fats
  industrial
Oils
  industrial
Waxes
  manufacturing
    technology (In schedules: 665 Technology of industrial oils, fats, waxes, gases)

Many of the problems are perpetuated from previous editions, but remain unsolved in the new edition.

Errors still seem inevitable. The number given in the index for Law libraries is 026.43. In the index Canadian literature in English is referred to 820, while in the schedules, provisions are made under 810. In the latter case, since both numbers are logical, it is not clear which number the editors intended.

One cannot discuss the index of the new edition without mentioning also some of the definite improvements, the most important being the incorporation of many new topics. The use of terminology which reflects current usage has been mentioned above. In the revised index of Edition 17, cross references were limited to see-references from synonymous terms and a few see-also references used with standard subdivisions. In Edition 18, see-also references leading from general to

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specific topics are restored from the original index of Edition 17. Most of them are definite leads; others serve as reminders to the classifier to look under specific aspects, types, applications, etc. This syndetic device, a basic feature in a subject headings list for dictionary catalogs, should serve well in an index also. In this aspect, the editors are justified in claiming “the index of Edition 18 combines the good features of both indexes of Edition 17,” i.e., specific entry and cross references.\(^{14}\)

**Conclusion**

In general, the direction of revision of DDC is still toward greater definitiveness and specificity, that is, within the notational limits. Few numbers are reduced in length, while many are expanded. The traumatic experience of the fifteenth edition is one that the editors of DDC would probably not care to repeat, at least not in the near future.

There have been many changes in Dewey 18, most of which are definite improvements. On the other hand, major weaknesses, such as the separation\(^{15}\) of related areas, long numbers, and the form distinction in the 800 class, some of which have been the bases of the major attacks on the scheme, still remain. In these areas, the editors can do very little without risking major violation of the policy of the “integrity of numbers,” an overdose of which may prove to be fatal. Classificationists and theorists may find the changes too slow and too conservative. On the other hand, practitioners may find the changes too many and too rapid. Hopefully, as Mr. Custer assured his readers, “the great bulk of the backlog of needed changes that accumulated from 1885” has been dealt with.\(^{16}\) There will be fewer and fewer changes required by structural reasons, and future editions can concentrate on changes necessitated by new knowledge or new ways of relating knowledge.

Dewey 18, like its predecessors, will be praised and attacked, often about the same changes for different reasons. It is still far from being a perfect classification system, but the important thing is that it has worked for nearly a century. Each revision is a step in the evolutionary process that keeps the system fit for the modern world. Before the next edition is published, DDC will see its centenary. Although a hundred years old, Dewey still shows signs of vigor and adaptability, having survived even the stormy season of the fifteenth edition when it was pronounced by some to be dead. Edition 18 will prove to be yet another step forward. There are many improvements and most of the changes made were based on careful deliberation and sound reasoning. No doubt the changes in the new edition will cause inconvenience and there will be occasional complaints, but the story about the damsels from the cataloging room, clad in mourning and uttering Cassandriads of doom, is probably more a myth than a true representation of general feelings.\(^{17}\) There are reasons to believe that the majority of classifiers
understand and have come to terms with the need to change and have learned to live with the inconveniences as a small price to pay for a workable and up-to-date classification scheme. On the other hand, the editors of DDC have been most responsive to the reactions from the public. Surveys have been made in this country and abroad concerning the use of Dewey and its adaptability. In general, the editors have been considerate and cautious in their changes. The users' understanding and the editors' consideration are essential if Dewey is to remain a viable and workable system.

REFERENCES

9. Ibid.
11. Ibid., p.42.
12. Ibid.
13. Ibid., p.45.
I read with interest the review of the two books on nonbook material by Hans Wellisch in the Winter 1972 issue of Library Resources & Technical Services (16:104-7). As a longtime cataloger of maps I have to take exceptions.

First, since a vast majority of maps are produced on printing presses, "nonprint" does not seem to apply. As so often happens, however, a word in a special meaning is common to library people, geographers, and people in other branches of the sciences. For instance, "main entry" is a well-entrenched special use, a leftover from the days of handmade catalog cards where only one card listed the added entries.

I want to speak in defense of the Anglo-American Cataloging Rules for maps. Mr. Wellisch evidently was thinking of "single entry" when he favored "area entry" for "main entry." All agree on this. But the area entry is a subject entry, and is so used in the AA rules. Cataloging is descriptive as well as subject. An apt example is cited in the "National Geographic Society map of Europe." As stated, the title may be "unhelpful." Among the hundreds of maps of Europe, would not the searcher like to find the National Geographic entry without searching through all the entries for Europe? Not only is the suggested variation of title possible, but the same title might be used by more than one producer of maps.

The problem is not to make catalog entries for maps look like or be compatible with entries for books and other library materials. Rather, the problem is, what order of items of description is most useful? Obviously the name of the responsible authority is more important than the title he used. Granted that area is of supreme importance in locating a map in a catalog, the next most important item may well be a name rather than a title. (Of course, there will be many maps for which it is not known who is responsible, and many title entries will still be used.)

Another reason for the "author" entry—we map people call it "Responsible authority" is that revised issues of a map may be made with change of title, as "Map of . . .," "New map of . . .," "Improved map of . . .," "Revised map of . . .," etc. The authority entry puts them close together, and if "filing title" is used as for books in LC, right together. The amount of revision may be so little as to make them issues of the same map.

A third reason for the AA entry is that the authority is less subject to change (and consequent recataloging) than the area name. The authority change can be taken care of by cross references. A unit card with successive changed subject (area) heading will take care of "Congo Free State," "Congo, Belgian," "Congo (Leopoldville)" and "Zaire."

A fourth reason is that old and valuable maps are known by the names of the "authors." A Ptolemy, Ortelius, Waldseemüller, Mitchell, etc., map is prized, not for its geographical content, but for its value in the history of cartography. An antiquarian catalog would list each by the maker's name. There should be no basic difference in cataloging between 1972 maps and maps dating from the sixteenth, seventeenth, or eighteenth centuries.

I hope that people will read and consider these points, and not reject catalog cards for maps because they resemble cards for books, as do LC cards for the Army Map Service maps and others, and now LC GM-MARC cards for maps.—Charles W. Buffum, Bladensburg, Maryland.

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REPLY TO BUFFUM

On the use of the "nonprint" as a (mis)nomer of anything not in book form we seem to be agreed. “Main entry” is not a relic from handmade catalog cards, as shown by Lubetzky with whose views I happen to agree entirely. M.E. is the main bibliographical tag by which a document is identified, no matter how many unit entries may be made from it (none or many). It assumes particular importance in MARC and subsequent international cataloging.

About the folly of prescribing "title entry" for maps we also are agreed, and I am grateful for the additional arguments put forward by you.

Our disagreement seems to be about the “authorship” of the map. Here, I believe we have an irreconcilable conflict between the interests of librarians and custodians as opposed to the interest of users of maps. The example of the National Geographic and the A.G.S. shows that map users do not care a bit about the author or authority of the map—all they want is an accurate map of an area, and main entry by area, subdivided chronologically, serves this purpose best. If I wish to know all maps published by Rand McNally, I can ask for their printed catalog which is probably more accurate and detailed than the bibliographical entry. Whether authors’ names change more or less frequently than the names of areas is debatable and no statistically valid research has been done in this area, as far as I know. Unless such a study is being made, one assumption is as valid as the other; in any case, it is not much more difficult to make cross references to changes in area names than it is to make cross references to changes in authors’ names.

Lastly, on the issue of cataloging maps from older times exactly as those published now: this thesis is acceptable only if you consider that no difference exists between a stagecoach and a jet plane, both being vehicles to transport people and goods from A to B. I agree that a map by Waldseemüller has to be cataloged differently from a modern map, but I do not think that exactly the same rules have to be applied.—Hans Wellisch, University of Maryland, College Park, Maryland.

IN THE MAIL: TECHNICAL SERVICES AND SMALL LIBRARIES


If further editions of Mr. Corbin’s book are printed, I would suggest that it be entitled: A Technical Services Manual for Small Public Libraries.

The author fails to realize that many small- to medium-sized libraries are special libraries and collect government documents and technical publications. In fact, all libraries are confronted with purchasing materials from the Superintendent of Documents. Unfortunately, the book contains only one oblique reference to government documents, when at least one chapter should deal with their acquisition and control.—Maureen F. Fiorica, Library, Post Office Department, Norman, Oklahoma.

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Carl T. Cox, in his article "The Cataloging of Nonbook Materials: Basic Guidelines" (LRTS, 15:472-8) stresses the importance of consistency of methods in cataloging these materials, regardless of their physical form. The proposed guidelines and the examples of catalog entries constructed along these lines seem to make sense for the kinds of nonbook materials listed. There are, however, many more kinds of nonbook materials, and at least one very large and important group could not be usefully handled by application of "Guideline Two—Main Entry by Title," namely reproductions of art (paintings, drawings, or sculptures).

Main entry by the title found on the reproduction in hand would in many instances be either confusing, misleading, or meaningless. First of all, the title of a reproduction depends on the country of origin and is by no means always the original or the English title. Secondly, paintings or sculptures are known by various names and titles, and many works of modern art have no titles at all. To give a few examples: Goya's "Maja desnuda" (the original title of this painting) is variously known in English as "The nude Maja," "A gypsy nude" and "Maja nude"; one of Giorgione's most famous paintings is now known as "Tempest" but was earlier entitled "A soldier and a gypsy"; reproductions of a Greek statue are variously entitled "Nike of Samothrace" or "Winged Victory." There are literally thousands of pictures entitled "Virgin and Child" or "Crucifixion," or any other common religious theme, and modern art may have "titles" such as "Composition II" or simply "Without title." To catalog art reproductions by title when the artist is known would result in a disservice to users of a collection, especially if the entries are to be integrated in the catalog with other entries for written documents (such as reproductions of the work of Michelangelo with his poems). To expect the user of a collection to know by which particular title a reproduction of a work by a known artist is cataloged is putting the ease of the cataloger before service to the public. Significantly, the Catalog of Paintings and Sculpture of the National Gallery of Canada (Toronto, Toronto Univ. Press, 1959-61) has no less than eight indexes: by name of artist, by number, by former attribution, by name of person portrayed (for portraits only), and four subject indexes (religious, mythological, genre, and topography and landscape); it does not have a "title" index, and for good reasons.

The same arguments hold true for recordings of musical works by known composers, where entry by "Title" would result in chaos and frustration for the user (e.g. Beethoven's op. 27, no. 2, for "titles" of which see Anglo-American Cataloging Rules, p. 299).

I would suggest expansion of "Guideline Two" to read: "Author headings are preferred for works to which personal authorship can unmistakably be attributed (particularly for reproductions of the visual arts and music)." I understand that a similar wording will be proposed by the (British) Library Association in a set of rules for nonbook materials intended to replace the present AACR, part III.

The possible counterargument that added author entries may always be made at the cataloger's discretion would miss the point: the user should not be sent on a wild goose chase from a secondary entry to titles which may be little known, dubious, or even nonexistent (and therefore "substituted" by...
the cataloger!), when the name of an artist or composer constitutes a firm
and unmistakable point of entry and a unique clue to the identity of the
work sought.—Hans Wellisch, School of Library and Information Services,
University of Maryland, College Park, Maryland.

IN THE MAIL: MORE ON CIP

The late Joseph Wheeler most persuasively argued the case for CIP (LRTS,
Winter 1971, p. 6-12), emphasizing “that no local or regional library will
ever again need to make its own decisions on class number, subject headings,
and author form or wait to order and receive printed cards. These decisions,”
he continued, “should and can be made at the one logical place, the Library
of Congress. . . .” It may be, however, that such wholesale, enthusiastic ac-
tance of CIP—echoed by other contributors to the same issue—could seriously
endanger the very objective they all rightly seek: better service.

Given the disparate sizes and clienteles of libraries, together with critically
deficient classification and subject schema, preparing catalog cards can not
yet—if ever—be considered “a purely clerical job.”

Few would quarrel with the utility of basic, CIP-furnished descriptive
cataloging data. But smaller and specialized libraries—in particular—often re-
quire more information on their cards than LC ordinarily provides; e.g., com-
plete or partial content statements, which may then spawn extra analytics,
making additional elements of the specific work accessible through the cata-
log.

Debate regarding the inadequacy, if not outright bias and obsolescence,
of standard classification and subject schemes is now underway. Suffice it
to note here that until these schemes undergo extensive reform neither the
suggested LC/DDC class-notations nor LC subject headings should be un-
questioningly honored. Only the rare “clerk” would or could reject or alter a
preassigned classmark or heading. That’s the librarian’s, the cataloger’s, job.
And it still can’t be abandoned, although many cost-conscious seers claim it
“economical” to do so. Until DDC, for example, recognizes that studies deal-
ing with ethnology and socio-cultural anthropology belong in the 390s,
among the Social Sciences, CIP notations will continue placing them wrongly
and illogically in the 572s. Similarly, librarians sensitized to variously pejo-
rative, ambiguous, and laughably outdated headings like NEGROES; RACE
QUESTION; MIXED BLOODS; SOCIETY, PRIMITIVE; CHILDREN—DIS-
CIPLINE; HOTTENTOTS; LANGUAGES, MODERN; and WOMEN AS . . .
can no longer automatically accept such forms and so must themselves make
appropriate substitutions or revisions. Likewise, abundant material has late-
ly been published on themes like Gay Liberation and Workers’ Control for
which the orthodox schemes supply no suitable rubrics, thus demanding local
innovation. This is not to wildly damn nor dismiss CIP—merely to observe
that central cataloging, however well performed, can probably never displace
fully the need for “home” cataloging or reevaluation. CIP-type standardiza-
tion undoubtedly saves time and money. Further, it gets books onto the shelves
faster, a definite service “plus.” But there’s more to librarianship—especially
cataloging—than just dollars and speed. There’s also a qualitative, intellectual,
and even ethical dimension, which cannot be honestly delegated in toto to
any “center.”

Yes, let’s have CIP. It should appreciably reduce wasteful, burdensome

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entry-checking and furnish useful classification and subject-heading leads. But let us frankly acknowledge that final cataloging responsibility lies squarely and inescapably with individual librarians in individual libraries. Cataloging, in short, can be a creative, responsive art, not necessarily nor desirably limited to a relatively few, distant, and (being mortal) hardly infallible practitioners.—Sanford Berman, Library, Makerere Institute of Social Research, Makerere University, Kampala, Uganda.

NOMINATION DEADLINES

The Esther J. Piercy Award is an annual citation presented in recognition of a contribution to librarianship in the field of technical services by younger members of the profession. The recipient must be a librarian with not more than 10 years of professional experience who has shown outstanding promise for continuing contributions and leadership in any of the fields comprising technical services by such means as: (a) leadership in professional associations at local, state, regional, or national levels; (b) contributions to the development, application, or utilization of new or improved methods, techniques, and routines; (c) a significant contribution to professional literature; (d) conduct of studies or research in the technical services. The Award is donated and administered by the ALA-Resources and Technical Services Division.


Send nominations to Mr. Richard R. Centing, The Ohio State University Libraries, Columbus, OH 43210.

Nominations for the 1973 Margaret Mann Citation are invited and should be submitted by December 15, 1972, according to William F. Lindgren, chairman of the Margaret Mann Citation Committee. They should be sent to him at Colorado State University Libraries, Fort Collins, CO 80521.

The Margaret Mann Citation is awarded annually for outstanding professional achievement in cataloging or classification either through publication of significant professional literature, participation in professional cataloging organization activities, or valuable contributions to practice in individual libraries. The Citation is awarded by the Cataloging and Classification Section, Resources and Technical Services Division of the American Library Association.

The names of persons previously nominated but not chosen may be re-submitted.

This study was undertaken to investigate the different vocabularies used in the process of subject cataloging at the Library of Congress, namely, the terms used in the Subject Headings, the terms used to describe the symbols in the classification schedules, and the terms used in the indexes to the classification schedules. It also aimed to discover whether or not there is a method of unifying these vocabularies.

For the most part we find here three different ways of expressing the same concepts. While this is at times confusing, it is not so serious a matter as is the fact that many classification terms are not included in the index (not to mention, of course, in the list of subject headings). Over the years, many persons, especially students, have asked why the terms used in the classification schedules and the subject heading list are not the same. The fact that terms in the indexes to the schedules do not match those in the subject heading list has not elicted so much comment, perhaps because indexes are accepted as extracting key words from a text rather than abstracting the subject matter without reliance on the text. There are, no doubt, examples of special classification schemes and subject heading lists that have accomplished this coordination of terms. For instance in *A Library Classification for Public Administration Materials*, by Sophia Hall Glidden and Dorothy Marchus (Chicago: Public Administration Service and A.L.A., 1942), the index to the classification scheme serves as the subject heading list. There is some variation, however, between the structure of these terms and those used to identify the classification numbers. This is a highly specialized list in which the vocabulary is more easily controlled than in a general list, but it indicates that Dr. Immroth's goal is not unattainable, even though achieved by a different method.

Dr. Immroth's hypotheses are:

1. The indexes for individual LC classification schedules vary in fullness and do not represent a single logical development.
2. There is a discernible relationship, demonstrating a high percentage of identity, between the terminology of the LC subject headings and the LC classification.
3. The use of chain indexing will unify the vocabulary of the Library's subject cataloging so that an alphabetical array of the classification will be a list of subject headings and that a classified array of subject headings will be the classification schedule.

The first hypothesis appears to be valid. As will surprise no one who has used the indexes to the LC schedules, the findings show that each index represents a separate development and is not necessarily consistent with other indexes.
ly on the indexes or the Subject Headings for classification numbers.

The second hypothesis which was tested by means of a complex structural analysis consisting of three parts—graphemic, morphologic, and syntactic analyses—did not yield affirmative results. With regard to the sample, the hypothesis proved invalid. The author states, however, that “because of the limited size of the sample, the hypothesis cannot be rigorously refuted.” This might be an area for further study, using the author’s methodology which appears to be a valid one (if difficult).

For the testing of the third hypothesis, twenty-six rules for chain indexing were developed (with recognition of the work of others in this area, notably that of Jack Mills). These rules provide a graphemic, morphologic, and syntactic control (tested in the second hypothesis) for the vocabulary of the LC classification. The validity of this hypothesis is demonstrated by the application of these rules to a number of headings, the major one being “Shakespeare” which unfortunately is atypical. The examples presented show that the chain index headings unify the vocabulary and can be arranged in either a classified or an alphabetical array, thus using the same heading for the schedules and for the subject headings/index.

The chain indexing rules developed here have implications not only for LC subject cataloging, but also for other schemes, lists, and thesauri. The findings show that this procedure can generate the vocabulary for subject analysis and provide a method for analysis of a classification scheme. They also suggest that it may make possible the development of mechanized or automatic chain indexing.

No matter how one feels about chain indexing—and I must admit to belonging to that rather large group of U.S. librarians who regard it as a “British or Indian sport (in both senses of the term)” as T. C. Hines suggests in reviewing T. D. Wilson’s Introduction to Chain Indexing (Library Journal, Aug. 1971, p. 2471)—one cannot but be convinced upon reading Dr. Immroth that chain indexing has something to say to us, and we should listen. I am not sure, however, that we will. Chaining is a rigorous task. Furthermore, the resulting headings seem far removed from a “natural language” approach which, in spite of such unresolved questions as “what is a natural language” and “for whom,” still seems to be the “life style” for subject analysis in the U.S. But for the large research library, whether general or special, chain indexing appears to have much to recommend it, and without question, Dr. Immroth should be commended for a serious and provocative study, thoroughly and carefully researched. To use one of his favorite words, I “discern” a good future for him.

There is a fine bibliography, with a strong British flavor. Although containing some typographical errors which the publishers should have caught, the book on the whole is attractive and well made. It has no index.—Margaret Kaltenbach, School of Library Science, Case Western Reserve University, Cleveland, Ohio.


Anyone who has taught the Library of Congress (LC) classification both before and after the publication of Immroth’s Guide can easily attest
to its great value as an explicative manual. Until 1968 the only publication which had attempted to explain the use of the LC classification tables was Catherine Grout’s manual which came out in 1940. Then in 1968 appeared two important publications: (1) Immroth’s first edition, and (2) the Proceedings of the Institute on the Use of the Library of Congress Classification which had been held in 1966. These proceedings contain much useful information not given by Immroth, but the purpose is not the same. Immroth’s Guide remains virtually the only text on using the LC classification tables.

Now a second edition has come off the press. This reviewer was hard pressed to find additions, deletions or changes in the text. There are some, but they are very few. The entire book has been set in a new typeface, one that is smaller but darker, thus accounting for the reduced number of pages (the 1968 edition contained 356 pages). Another factor causing the decrease in the number of pages is that some of the LC tables have been photocopied instead of set in type. The bibliographies at the end of the chapters have been updated to include new writings on the LC classification as well as new editions of the tables. Perhaps the major difference between the two editions is in the rearrangement of the tables in the text itself; and a few more exemplary tables are included in this new edition.

New sections on “Institutions and Societies” and “Congresses and Conferences” in Class A have been added. Aside from these two new sections only four other items have been added to the index, and these (Benyon, E.; Buffum, C. W.; Folklore; and Textbooks) were in the first edition’s text but were not indexed.

Those who have the first edition will not gain enough new information to warrant purchase of this second edition. Classifiers, and anyone else interested in learning, teaching or using the LC classification need to have readily available this excellent and unique encridtion.—Donald J. Lehnus, School of Library Science, Case Western Reserve University, Cleveland, Ohio.

**INFORMATION SOUGHT FOR NEW EDITION OF DIRECTORY OF INSTITUTIONAL PHOTOCOPYING SERVICES**

The last edition of this directory was published in 1969 and contained a list of photoduplication services provided by selected institutions with significant reprographic facilities. It was the fourth and last edition compiled by Cosby Brinkley; the preparatory work on a new edition has been undertaken by Joseph Z. Nitecki, the current chairman of the Reproduction of Library Materials Section, which sponsors the project.

A data-gathering form is now being mailed to all the institutions listed in the last edition of the Directory and in the supplement printed in Sarah Thomson’s Interlibrary Loan Procedure Manual. The scope of the new edition of the Directory will be enlarged to include all reported photoduplication units offering reprographic services to other institutions. Therefore, all libraries not mentioned in either Brinkley’s or Thomson’s list are urged to request a copy of the questionnaire at once from: Joseph Z. Nitecki, Assistant Director of TSD, Paley Library, Temple University, Philadelphia, PA 19122.

*Volume 16, Number 3, Summer 1972*
The following abstracts are based on those prepared by the Clearinghouse for Library and Information Sciences of the Educational Resources Information Center (ERIC/CLIS).

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Sponsor: Office of Education (DHEW), Washington, D.C.

A library-oriented, concentrated course in the use of computers in libraries is a definite need in the profession. The profession is also in need of a course syllabus which can be used either in a formal college course or in an in-service training situation. One of the by-products of this institute will be such a syllabus. Preinstitute activities included a programmed instruction course to acquaint participants with terminology, theory, and logic of computers and to furnish all participants with a common store of background knowledge. Eight manufacturers' representatives presented their firm's hardware capabilities, library applications, cost and learning arrangements, and impending developments of interest to the library user. Fourteen papers on automating library technical processes, problems in library technical processes, systems analysis and flowcharting, and COBOL programming language are included.


Institution: International Labour Office, Geneva (Switzerland).

ISIS (Integrated Scientific Information System) was developed and is now being used by the Central Library and Documentation Branch of the International Labour Office, a U.N. agency located in Geneva. ISIS assists in the provision of library and documentation services, supports the management of the library's internal operations. ISIS is comprised of three major interdependent systems: control of bibliographic information, serials control, and a loan system. The system's interdependence lies in the fact that some modules, some programs, and some manual procedures are used by several systems. The Bibliographic Control System is at this time the most complex and fully developed of the three. This report also discusses a preliminary attempt to sketch out a pattern for control and evaluation of the system. Technical details regarding the computer facility, the programs, and the files used are in the Appendices.

Library Resources & Technical Services
A new approach to creating the double KWIC Coordinate Index consists of extracting potential main terms directly from the titles (or titlelike phrases) instead of from a KWIC index of the titles, and sorting and temporarily retaining the potential index entries in a KWOC type format until other conditions are examined. After all of the titles have been processed and the actual main terms have been selected, if the number of titles containing a particular main term exceeds an arbitrarily assigned threshold value, conventional double KWIC (permuted) subordinate entries are created. If the threshold value is not exceeded, KWOC-type (nonpermuted) subordinate entries are created. Other refinements which improve the overall quality of the index have also been introduced. This new approach facilitates gathering of statistics which will help to reduce the manual and intellectual effort previously required for selection of main terms. The system design for creating the modified Double KWIC Coordinate Index is discussed together with some operating statistics for producing such an index. The use of statistical relationships to create cross references between certain types of terms is also explored.

Leisinger, Albert H., Jr. Microphotography for Archives. 1968. 56p. ED 054 813. MF $0.65, HC $3.29.
Institution: International Council on Archives, Washington, D.C.
Microphotography for archives advocates the use of microfilm as a means of publication. The manual is an introduction for the archivist and provides definitions of microforms, microfilm, microfiche, microcards, and microprint. The uses and the advantages or disadvantages of both microforms and microfilm are presented. The manual also reviews archival operations, microfilm equipment, and storage and maintenance procedures of original negatives.

Institution: Royal Library, Stockholm (Sweden).
The work of the Committee on the Use of Automation in Swedish Research Libraries has differed from that of a normal study group by virtue of its heavy concentration on the practical aspects of library catalog work, the present status of which is the main theme of this report. The model presented implies total and simultaneous integration of all Swedish research libraries, a national model which to date has no counterpart elsewhere. A key feature of the project is the catalog scheme based on the MARC systems, which ensures the compatibility of the Swedish model with international systems. For purposes of method development, operation of the proposed data processing center, and training of the necessary qualified personnel, the Committee recommends that an independent institution for data processing in libraries be set up on the West German model.


Volume 16, Number 3, Summer 1972
Although a large part of a document retrieval system's resources are devoted to indexing, the question of how people do subject indexing has been the subject of much conjecture and little experimentation. This dissertation examines the relationships between a document being indexed and the index terms assigned to that document in an attempt to quantify the extent of "machinelike" indexing occurring when librarians and scientists index technical text. A number of possible relationships between the text and the index assignments are predicted and tested with two models: a multiple linear regression model and a Boolean combinatorial model. It is concluded that indexers in general do not index technical text in a "machinelike" fashion and that neither model is useful as a general predictor of human indexing.


Institution: Wayne Community College, Goldsboro, N.C.

The trend in community colleges, technical institutes, and some senior institutions is to merge the services of libraries, skills labs, media centers, and supportive instructional agencies into Learning Resources Centers (LRC). Many excellent reports have been written about the LRC concept, consequently, this report deals with the mechanics of classifying and cataloging book and nonbook materials within such a center. Specific details, with examples, are given of how the learning materials in the LRC at Wayne Community College were cataloged.


Institution: Documentation Research and Training Centre, Bangalore (India).

The four sections of the report cover the topics of cataloging, subject analysis, documentation systems for industry, and the Documentation Research and Training Centre (DRTC) research report for 1970. The cataloging section covers the conflicts of cataloging, recall, corporate bodies, titles, publishers series, and the entity name. The subject analysis section covers the formulation of basic subjects and isolates; compares "subject" with "system," compares natural and social sciences, and a case study. Management needs for information; management information systems; information needs for design engineers; and food, glass, ceramics, and textiles industry needs are covered in the third section and several case studies are provided. The research report section includes classification, cataloging, and computer-aided document finding system research.


Institution: Documentation Research and Training Centre, Bangalore (India).

The publication includes papers from the opening session, eighteen working papers on library cataloging, eighteen papers presented at group meetings and plenary sessions, and papers from the concluding session. The inaugural address: "Cataloging Enters the Spiral of Scientific Method" was presented by S. R. Ranganathan. The working paper topics covered terminology, authors, recall, names of governments, institutions, conferences, titles, publisher series, periodical titles, and multiwored names. A list of office holders, a time table, and an index are appended.

Simmons, Peter. *Collection Development and the Computer: A Case Study in the Analysis of Machine Readable Loan Records and Their Application to*
Book Selection. 1971. 63p. ED 054 817. HC $2.50 (University of British Co-
lumbia Press, Vancouver 8, Canada).
Institution: British Columbia University, Vancouver. School of Librarianship.
Sponsor: Donner Canadian Foundation.

At the Library of the University of British Columbia computer-produced circula-
tion records have been employed to study the use of library materials in three distinct
areas. There have been studies of use in relation to loan policy, studies of use by
defined groups of borrowers, and studies of heavily used materials. This report is an
account of a group of studies of books which circulated with unusual frequency. Since
these studies have had a direct effect upon the acquisition of library materials, they
provide the missing link that is helping to turn the U.B.C. Library into a closed-loop
control system: an integrated system that is able to alter its behavior based on accurate
information about the specific demands that are being made upon it. These studies,
therefore, permit the library to make the most efficient and effective possible use of
its limited funds.

Thomas, P. A. A Procedural Model for the Use of Bibliographic Records in
Libraries. 1970. 102p. ED 054 786. HC $4.62 (Aslib, 3 Belgrave Square,
London, S.W. 1, England).

The work reported here is the second stage of a study initially reported in Aslib
Occasional Publication no. 3 (The Use of Bibliographic Records in Libraries, by
P. A. Thomas and H. East). The earlier paper reported on an analysis of procedures
for classification of processes, applicable to all types of libraries, and a statement of
what data elements were necessary for each activity within each process. The schematic
diagrams of the earlier paper represented the unit activities that must be combined
to form an integrated system. In this paper the unit activities have been woven to-
gether into a procedural model, using a minimum number of forms and files adequate
to recording all the basic activities of a library. This model is not offered as a standard
to which libraries should adhere, but as a tool to aid in the design of systems of
bibliographic records. A worked example is presented, in which an imaginary library
operating under certain local conditions is described, and a forms system is designed
for it in accordance with the model.

Weeks, David C.; et al. Universal Decimal Classification; A Selected, Bibliogra-
phy "f UDC Literature. June 1971. 36p. ED 055 630. MF $0.65, HC $3.29.
Institution: George Washington University, Washington, D.C. Biological Sciences Com-
munication Project.
of Medicine, Bethesda, Maryland.

The 384 references in this bibliography represent a selection of recent literature
(post 1960) on the Universal Decimal Classification (UDC). More selectivity is applied
to earlier literature, and only the more significant items; generally of substantial im-
portance, are chosen from publications earlier than 1950. The objective is to assemble
a list in English and other languages that would present a well-balanced record of
the nature of UDC as a major ordering system among the established classification
systems. Publications of the UDC (full or abridged) individual schedules, and amend-
ments are not included.

Westby, Barbara M. Shared Cataloguing. 1969. 16p. ED 054 816. MF $0.65,
HC $3.29.
Institution: Dublin University College (Ireland). School of Librarianship.

The National Program for Acquisition and Cataloging (NPAC) authorized under
Title IIC of the Higher Education Act of 1965 is called the Shared Cataloging Pro-

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gram. Under this Act the Library of Congress is authorized to: (1) acquire for its own collections all materials currently published throughout the world that are of value to scholarship and (2) to provide cataloging information of these materials and to distribute this cataloging information by printed cards and other means (i.e. in MARC format). The inclusion of non-American titles in the shared cataloging efforts of the Library of Congress was needed because, without it, research libraries could buy catalog cards for only fifty percent of their book purchases. The magnitude of this global network program is summarized and the international possibilities for the use of the Library of Congress automation projects are discussed.

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**U.S.B.E. REPRESENTATIVES**

In order to insure receipt of mailings and any other information pertinent to active participation in the affairs of the newly reorganized U.S.B.E., member libraries who have not already done so, are urged to forward as soon as possible the names of their official representative to the attention of: Ms. Alice Dulany Ball, Executive Director, The United States Book Exchange, Inc., 3335 V Street, N.E., Washington, D.C. 20018.

**LRTS ANNOUNCES**

*LRTS* proudly welcomes a new assistant editor, Dr. Ellen Altman of the School of Library Science, University of Kentucky. Dr. Altman, who has been editing the ERIC/CLIS Abstracts, will assume responsibility for all literature reviews as well.

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