

The Classified Catalogue as an Aid to Research

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Very little is known about the effectiveness of library subject catalogues as tools of research. We know that they are indispensable from a theoretical point of view, and from general observation of their use and the results of a few studies we can conclude that they are generally compatible with the library use habits of readers.

Some of the general conclusions which have been drawn from studies of the subject catalogue are: that there is no significant difference between the amount of author catalogue use and subject catalogue use; that the non-specialist ordinarily will make more use of the subject catalogue than the specialist; and that most of the use of the subject catalogue is for materials in English and of fairly recent date.¹

If the second of these generalizations is true, namely that subject catalogue use is primarily by non-specialists, a discussion of the classified catalogue as a research tool may be a somewhat sterile exercise. On the other hand, we can remind ourselves that the importance of research isn't determined by popular vote, so even a minority use should justify its consideration. In any case, classification and classified catalogues have a high degree of relevancy. This was my reason for agreeing to discuss the subject of the role of the classified catalogue in research.

In evaluating what I have to say about classification, one general caveat must be observed. My remarks on classification will relate exclusively to its use in the classified catalogue. While some points might have relevance to the classification of books for shelving, others might have differing relevance or no relevance whatever. No effort will be made here to indicate when there is or is not a common ground in problems of shelf classification and the classified catalogue.

A second caveat is that the limitations of my experience with the classified catalogue probably lend my judgements on its problems and potentialities much less validity than they should have. I am aware of the existence of several other classified card catalogues in current use, but I have had no opportunity to examine them. All of what I have to say is derived from experience with the classified catalogue of Crerar Library. This being the case, I should begin with a brief description of this catalogue.

The first librarian of Crerar, Clement Walker Andrews, was a

chemist by first profession, and prior to accepting appointment to establish a new library of science and technology in Chicago (in 1895) had been serving as librarian of the Massachusetts Institute of Technology. He was, then, by both profession and experience, science-oriented. He was working, also, in a period when there was an active and rising interest in classification. Whether these factors were the cause or only coincidences, he decided that the subject catalogue at Crerar would be a classified catalogue; and he chose to base it on the flourishing classification system developed by his contemporary, Melvil Dewey.

The catalogue consists of a classified section with an alphabetical subject index filed as a separate section immediately before the first sections of the classified catalogue. The labels on the catalogue trays are class numbers. In the trays, cards are arranged by class numbers in the upper left corner of each card (call numbers are on the right); guide cards indicate breaks between classes (but not all of them); and within each class, the cards are arranged chronologically by date of imprint with the latest date first, followed progressively by earlier dates toward the back of each tray.

A crucial part of the classified catalogue system is the numerical index, a classified card file maintained in the Catalog Department on which a record is kept of every verbal heading in the subject index which refers to each specific class number. In effect the subject index in reverse, it provides guidance to the cataloguer in the development and maintenance of the subject index.

The late Harriet Penfield, for many years chief classifier at Crerar, once wrote that Mr. Andrews considered the basic factors in the classified catalogue to be "(1) time, (2) geographical, and (3) alphabetical sub-arrangements, and these have been built into the catalogue from the first and are characteristic of it." This is quoted from some manuscript notes Miss Penfield prepared at my request before her retirement.² Further quotation will serve to round out a general picture of the catalogue.

Of first importance also was more adequate provision of schedules, for the Library grew very rapidly, and both the L.C. and D.C. schedules were very meagerly developed in the nineties. Accordingly, the *Brussels Classification* was adopted for most sections of the social sciences [no longer included in Crerar collections], and the *Zurich Consilium Bibliographicum* for 59 Zoology and some parts of Biology Other expansions were worked out or adapted from other sources very early, and from time to time later as needed, though if another edition of D.C. was promised soon we tried to wait Sometimes, too, we have not liked a new D.C. expansion any better for our purpose than our own and have made no effort to adopt it in whole or in part. We also have avoided the over-elaborateness of some of the later D.C. editions.

The general pattern of the catalogue was continued along its original lines through most of the first six decades of the Library's history. But by 1950 we had reached the conclusion that the catalogue should undergo a thorough review. Obviously this would be a major undertaking, and might take a long time. Yet it was realized that a beginning must be made. Substantial progress has been made in a decade,⁹ but there is still a vast amount of work to be done—made doubly difficult by the fact that the frontier of science and technology is constantly changing at a rate that exceeds our capacity to keep fully abreast of it.

One of the evidences of need for change in current policy was the statement just quoted from Miss Penfield's notes, namely: "We also have avoided the over-elaborateness of some of the later D.C. editions." This statement, we believe, reflects a serious misconception of the principle of the classified catalogue. It equates use of classification in the catalogue with classification for the shelving of books. Very strong reasons can be advanced for brief notation in shelf classification, but they are not applicable to the construction of the classified catalogue. They lead, in fact, to basic violation of the principle of specificity in any type of subject indexing. And it is essential to keep in mind that classification for use in a classified catalogue is not classification of books, but subject indexing by means of class symbols.

Support for the position taken came from a number of what we referred to as test cases. These involved random selection of an index entry followed by analysis of what was found in the classified catalogue. Two test cases will be described.

TEST CASE ONE

Index Entry

Corn oil
665.3 (Chemical technology)

Classified Catalogue

665.3 (Vegetable fats and oils)

This section was comprised of some 193 cards, including the following subjects, not in any systematic order, and the index entries referring to 665.3. The number of cards follows each subject; an asterisk indicates that there was an index card, but no reference to 665.3.

(General) 96, including 5 on waxes	Olive oil 21
Cocoa oil 11	Palm-oil 9
Corn oil 4	Peanut 1
Cotton seed 16	Peppermint 2
*Flaxseed 2	Soybean 12
*Kaoline 1	Sunflower seed 1
Karite 2	Turpentine 4
Maize 2	Wormwood 1

Numerical Index

Index entries recorded in the Numerical Index were checked and grouped under three headings, excluding entries discovered through examination of the cards in the classified catalogue under 665.3.

Recognizable Synonyms

Absinthium, see Wormwood
Cocoanut-oil, see Cocoa-oil
Corn
Corn, Indian
Eupatoriaceae (Wormwood)
Indian Corn
Saponification
Shea-butter, see Karite

Entries for which no titles were identified

Argan
Castor-oil
Colza
Forest products
Rape plant
Rapeseed
Wax-palms
Zea mays

General Index Entries

Fats, Vegetable
Oil seeds
Oils, Vegetable
Vegetable fats
Vegetable oils

What is wrong with this picture? First, and most important, a classified catalogue based on this pattern produces, in much too large numbers, references comparable in part to what the machine men call "false drops." Under the class, 665.3 (Vegetable fats and oils), there are catalogue entries for 193 publications. The index entry for "corn oil" refers us to the class, 665.3. Here we find *four* books dealing with corn oil and *one-hundred-eighty-nine* false drops.

There are at least three other undesirable conditions illustrated. (1) For three subjects—the oils of flaxseed, kaoline and peanuts,—there are titles listed under 665.3, but this class is not referred to on the index cards for these oils; (2) for a number of special kinds of vegetable oils there are index entries referring to 665.3, but no titles for these oils in the classified catalogue; and (3) three index entries

are disclosed to be cross-references—a negation of the advantage offered by the classified catalogue of being able to use in the index any number of synonyms for a subject as *direct* references to the appropriate section in the classified section of the catalogue.

The one thing right about the picture, and this a very important rightness, the general index entries for vegetable fats and oils referred to 665.3 where the reader finds, or should find, all monographs in the collections which relate to this general class.

The ultimate solution to the primary wrongness of the picture can only be, in terms of class notation, a specific class number for each type of vegetable oil and fat. Another possibility is alphabetical arrangement of the different oils under 665.3. This solution is effective only in the absence of synonyms, except by the admission of cross references in the index; but it does offer an immediate partial relief for the difficulty. Still another possibility is to incorporate terms as modifiers of the class number referred to by index entries, in order to eliminate the necessity of cross references in the index. If this were done the index entry for Coconut oil could refer to “665.3: Cocoa oil (Vegetable fats and oils):” and the specific titles on this subject would be readily located by the subordinate guide card, cocoa oil, under the general class guide card, 665.3 Vegetable fats and oils.

TEST CASE TWO

Here we examine a section of the classified catalogue in which there has been completed an extensive revision. Prior to the revision, plastics were classified under a general number for “gums, resins and plastics,” similar to the type of general class described under Test Case One. In revising plastics were separated from gums and resins and distributed under an expanded classification schedule.

In the alphabetical index to the classified catalogue, index entries for subjects which have undergone such revision are on a different colored card stock than older entries. The index now contains 125 entries under Plastics or subdivisions of the general subject, referring to 100 different class numbers in the classified catalogue. Four of these sub-classes, in addition to the general entry Plastics, were chosen for examination.

Index Entries

Plastics

016.678 (Bibliographies)

313.678 (Statistics)

678 (Manufactures)

Plastics—Accessory materials—Solvents

678.042 (Plastics technology)

Plastics—Additives

678.04 (Plastics technology)

- Plastics—Additives—Dyes
678.047 (Macromolecular materials)
- Plastics—Additives—Plasticizers
678.049 (Macromolecular materials)

Classified Catalogue

1. 678 Plastics (Manufactures).

Under the general class number are filed eighty-nine titles. Even here, there are some titles with special aspects presented, such as chemistry of polymers or machinery for moulding plastics. Cards for such titles normally appear, also, under other classes. For example, some titles recorded here are also found under 541.74 (Polymerism).

2. 678.042 Plastics—Accessory materials—solvents.

Two books (different editions of the same title).

3. 678.04 Plastics—Additives.

One book dealing principally with solvents. Probably, should have been classed under 678.042. Some questions might be raised on the appropriateness, either of the parenthetical reference in the index entry, or of the position of solvents in the classification schedule.

4. 678.047 Plastics—Additives—Dyes.

One book.

5. 678.049 Plastics—Additives—Plasticizers.

One book.

In this test case we find that most of the deficiencies exposed in Test Case One have been corrected. Particularly important, it is now possible for the user to go directly from index entries to class numbers which cover only material related to the subject of the index entry.

One of the aids for which we early felt a need was a manual of practice for the construction and maintenance of the classified catalogue. We struggled with the problem for a time on our own, but finally requested financial assistance for the project from the Rockefeller Foundation. A grant was received, and editors were engaged to write a guide. Dr. Jesse H. Shera and the late Margaret Egan worked closely with the Crerar staff and the results of their work appeared as a publication of the American Library Association.⁴ It received one blistering review and a number of favorable notices. It represents one stage in the work on improvement of the classified catalogue which we were pleased to see realized. Its availability eliminates the necessity of repeating here much additional information needed fully to understand the characteristics and functioning of the classified catalogue.

There are a number of additional comments which can be made to throw light on the classified catalogue as a research tool, and on some of the considerations which should be taken account of to make the catalogue fully effective: (1) need for information on use of the classified catalogue, (2) up-to-date classification schedules, (3) perspective of the Library's holdings in any particular subject through the classified catalogue, and (4) the high degree of expertness required of personnel responsible for maintaining the subject catalogue.

I know of only one study which is concerned with determining how the classified catalog is used by readers. This was conducted as a master's study at the University of Chicago, by Emmett McGeever, then a member of the Crerar Library staff.⁵ He sought information on the ratio of books found through the classified catalogue to total book use, whether certain classes of readers used the classified catalogue more than others, recency of items, extent of foreign language titles, and extent of serials requested through use of the classified catalogue, and what kind of difficulties were experienced by readers. The general assumptions which he wished especially to test were:

. . . that the classified catalogue is used for subject access to scientific and technical literature by the less experienced searcher of the literature, who is not competent to take advantage of the precision of the classified catalogue; and further, that the use of the classified catalogue is a very low part of the total catalogue use.

In the overall number of requests for books, 77.1% resulted from use of the author-title catalogue, and 22.9% from the classified catalogue. This result appears to differ sharply from previous conclusions that use of subject and author-title catalogues is about the same. On the other hand, McGeever had anticipated an even lower percentage, and concluded that for even 22.9% of use of the collections to result from the classified catalogue was a very significant proportion of the total use.

On the other hand, the first assumption which he wished to test was strongly supported by the results, namely that the classified catalogue is used by less experienced searchers of the literature. It was shown that 14.1% of all books requested by subject resulted from use of the classified catalogue by high school students. In reality, this percentage is much more significant than McGeever realized. During a general study of reader use at Crerar late in 1958⁶ it was learned that only 3.8% of the total amount of reader use was by high school students. This means that only 3.8% of total use accounted for 14.1% of books requested through use of the classified catalogue. It is also significant to note that McGeever's study showed that 88.3% of the books requested by high school students were located by the students through use of the classified catalogue. In light of the further observation that all use of this catalogue was accomplished with very little

assistance by reference librarians, it seems justifiable to conclude that the classified catalogue can be effectively used by readers relatively unschooled in the technical aspects of catalogue construction.

We might glance briefly at some of the conclusions reached on some of the other questions asked by McGeever as part of his study. There was no significant difference in dates of publications of books selected by use of the author-title catalogue and the classified catalogue. Of foreign language requests, 13.5% of all use was in this category; but the comparable figures for the two catalogues was 16.1% from the author-title catalogue, only 4.9% from the classified catalogue. An even more striking variance was shown for serials. For requests originating from the author-title catalogue 86.9%; only 8.8% from the classified catalogue.

Our interest here, however, is in use of the classified catalogue as a research tool. For this reason, it may be of greater interest to look at classified catalogue use by other reader groups. To refer again to our 1958 survey of reader use,⁷ we know that use of the collections by the public is about equally divided between students, professional groups, and technical employees of companies. Of non-student users less than 3% are "general interest" readers. The major proportion of student use, 82%, is by college and university students, with the ratio between undergraduate and graduate students being approximately 3:4. Of non-student readers, the great majority are serious users of the collections, again about equally divided, in this case between employees of companies using the library in connection with company business and professional workers in engineering, chemistry, medicine and other areas pertinent to the scientific and technical fields covered by the Library's collections. From these figures it is seen that a very high percentage of book use by readers relates to serious pursuits.

We might look, then, at one further result of the McGeever study. While his analysis of use of the classified catalogue by groups other than students was not extensive, he did find that the amount of such use is very significant. For example, users of the catalogues engaged full-time in use of the library located 29.4% of the books requested through the classified catalogue. For those whose principal job is library research, the percentage is 24.1%; and for those a minor part of whose job is library research the percentage is 18.1%. And these percentages represent use of the classified catalogue in its present state of imperfection.

It is obvious from such evidence that we are justified in taking very seriously the responsibility for making the classified catalogue the most effective tool possible, but are faced by problems inherent in accomplishing this objective.

Because of the requirement of specificity for greatest effectiveness, it is necessary to have classification schedules which follow closely the new developments in the subject matter of our collections. The following information shows the universal character of this problem.

Problems of construction of the classified catalogue cut across all disciplines within the scope of the Library. For example, the 1958 reader use survey disclosed a distribution of book use by broad classes as follows: basic sciences 34%, technology 37%, medicine 26%, other subjects 3%. Furthermore, active use by every reader group cut across all three of the major sections of the collections. Only in analysis of subject use by particular professional groups do significant differences become evident. A few examples from a separate analysis of book use by professional groups are pertinent.

One might expect chemists to range widely among the subject classes, and this was shown to be the case. Of professional use accounted for by chemists, the percentages for the three major subject groups were basic sciences 26%, technology 17%, and medicine 6%. Engineers and physicians would be expected to exhibit more specialized interests. They do. Of professional use of medicine, 25% was by physicians, only 3% by engineers. Of professional use of technology, 36% was by engineers, less than one percent by physicians. On the other hand, use of the collections by lawyers, although relatively low, is significant, and is about equally distributed among basic sciences, engineering, and medicine.

The pertinence of this analysis is that in the continuing review of the classification and of the classified catalogue, no major discipline can be slighted. The review must take place along the broad front of all sciences and technologies.

Another problem derives from the need to have the classified catalogue serve well the value of presenting in perspective any given subject in relation to other sub-groups of any general class. One of the conditions which makes this difficult is the large volume of material which finds its way into the catalogue. It would be desirable, from the point of view of this requirement to have numerous subjects represented on display by guide cards in any given catalogue tray. This is often prevented by cards for one or two subjects so numerous that they fill one tray and sometimes extend into another.

One possibility which occurs to us in this situation is to reduce the number of cards. The feasibility of this is suggested by the natural obsolescence of scientific publications in earlier years. The survey of reader use, to which reference has been made, showed that cards for earlier publications might be removed from the classified catalogue without materially reducing the value of the catalogue with respect to coverage. For example, the statistics of use by date of publication showed that only about five per cent of total use of the collections was for titles published before 1900. And it is quite possible, that further analysis of books requested through use of the classified catalogue would show that imprints of much later dates for many subjects could be removed. As a matter of fact, there is already some evidence in the McGeever study to support this thesis.

For the purpose of presenting a perspective of any given subject in relation to other sub-groups of any general class, another alterna-

tive is to print class lists for use of readers in different subject fields. This has not been done at Crerar Library, but it is being given serious consideration.

Two related problems are of giving an overview of holdings relating to a given industry, and an overview of the scientific and technical literature relating to a given region. Neither of these is adequately provided in the typical alphabetical subject catalogue. The first is only inadequately provided in the classified catalogue. The major class for technology of an industry has the primary material organized in its various sub-classes, but related material in other fields can be traced only through use of the subject index. The second problem of display, however, is dealt with in the Crerar Catalog by use of appropriate place numbers in the 900's (not used at Crerar for general history), followed by subject numbers, within parentheses, for scientific and technical developments in the place or region.

Still another, and final, problem that has a high degree of relevance to constructing effective classified catalogues is the heavy requirement placed on classifiers for subject specialization. It may be that the solution to this problem is to draw into the classification activity the expertise of more, if not all, members of the library staff. We are exploring the possibility of this in our own organization. We have about a dozen professional staff members outside the Catalog Department who have sufficient knowledge of one of more areas in science and technology to make a major contribution to such a program. And we now have plans in the making to initiate a staff seminar on classification to explore the best procedures for utilizing this special knowledge to the benefit of the classified catalogue.

Notes

1. C.J. Frarey, "Studies of the Use of the Subject Catalog; Summary and Evaluation," *Subject Analysis of Library Materials*, ed. M.F. Tauber (New York: Columbia University School of Library Service, 1953), pp.147-156.

2. Harriet Penfield, "Fifty Years of the JCL Classified Catalog" (nine page manuscript in Crerar Library archives, 1952)

3. May I add a footnote here to the credit of Miss Penfield, whom I greatly admired. Still alert for the late seventies, when she retired, she was uneasy to see such a fundamental change in the character of the catalogue take place, but readily agreed that it must be.

4. Jesse H. Shera and Margaret Egan, *the Classified Catalog: Basic Principles and Practices* (Chicago: American Library Association, 1950)

5. Emmett B. McGeever, "A Study in the Use of a Classified Catalog" (Unpublished master's thesis, Graduate Library School, University of Chicago, June 1928)

6. "Survey of Reader Use of the John Crerar Library" (Chicago, September 1958, Mimeographed report in process of revision).

7. *Ibid.*