

## What Lies Ahead in Classification

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Of all the modes of human intellectual activity prognostication is probably the most treacherous. It may not influence people, but certainly it will alienate one's friends. No one paid much heed to the warnings of the unfortunate Cassandra, and there is no record that either the Oracle of Delphi or the Cumaean Sibyl had any bosom companions. But every well-ordered conference needs a sacrificial goat, and for that role I probably possess a natural affinity, even though my sex may differ from that of the Sibyls.

Because the crystal ball is always, at least potentially, cloudy the temptation is ever present to seek refuge in definition, ambiguity, or riddles. It was no accident that the Sibylline leaves were scattered. Thus one might be quite within his rights to ask rhetorically what is meant by librarianship? by classification? and by the future? Doubtless, I too will end by "hedging my bets" in this way, but for the moment, at least, I shall throw discretion, rather than prophetic words, to the winds and declare bluntly and without equivocation that I think library classification is here to stay.

Not long ago I remarked to a friend who has long been a leader among special librarians, that on recent visits to England and Brazil I had been repeatedly asked why librarians in the United States were so belligerently opposed to classification. My friend's reply was immediate, explosive, and, I am afraid, very typical of most of us—"That's easy, because it's no good!" The substance of this essay, then is as much a protest against such a misunderstanding of the role of classification in librarianship, as it is a forecast of the future. Like the Apostles' Creed, it may be regarded as, "The essence of things hoped for—the substance of things unseen."

### THE NATURE OF CLASSIFICATION

Niels Bohr has reminded us that knowledge is synthesized within the human mind as a conceptual framework, a framework that—ideally at least is an unambiguous logical representation of relations between and among experiences. This framework is not static but must be adapted to provide for new experience. The limits of expandability of any such frame, then, are always finite and eventually they prove too confining to comprehend new experience and abandonment becomes

unavoidable. Such revolutions in thinking may be born of the most intensive specialization, yet they dictate a reorientation of the unity of all knowledge.<sup>1</sup> Thus the physicists at the close of the nineteenth century assumed that their task was essentially finished and resigned themselves to refining measurement and to computing the constants in nature with greater accuracy. But the discoveries of recent decades shattered forever their comfortable little world - a world which will not be tolerated again.<sup>2</sup> Because the evolution of man's knowledge is not a predictable and finite process, because a field of endeavor may never properly be regarded as closed, and hence because classification can never be seriously advanced with a pretense of ultimacy, we have come at times to question whether anything useful can be gained by attempts at classification, especially since the Unified-Science movement tends to obliterate distinction among the disciplines. But the permanence of any one system of classification is not a valid measure of the utility of classification *per se*, and it has nothing whatever to do with classification as a mode of human thought.

Far more relevant to the present discussion is John Dewey's contention that knowledge *is* classification, for knowledge is not just an awareness of events but of events-with-meanings. The assertion that to know is to define implies the recognition that wherever there is knowledge there is explicitly present a universal. As Dewey says,

To hold that cognition is recognition is to concede that likeness, a relation, rather than existence, is central. And to be acquainted with anything is to be aware what it is *like*, in what *sort* of ways it is likely to behave. These features, character, kind, sort, universal, likeness, fall within the universe of meaning. Hence the theories which make them constitutive of knowledge acknowledge that *having* meanings is a prerequisite of knowing.<sup>3</sup>

So, also, Gordon Childe holds that knowledge is a pattern of communicable ideas symbolized in language, a structured pattern of categories which connotes classification. Such categories as *space, time, causality, substance*, etc. denote ways in which empirical data, since knowledge is assumed to derive from experience with the external world, are supposed to hang together to form a pattern, a pattern which represents for each individual some segment of the universe as he comprehends it.<sup>4</sup>

This insistence of both the philosopher and the anthropologist on the dependence of knowledge upon classification is not coincidental. As the present writer, following closely the work of Jerome Bruner and others, pointed out in a paper presented in 1957 at the Dorking conference on classification, the total process of cognition, of the utilization of information in thinking and problem solving, is one in which class identity is inferred from observed criterial properties or attributes exhibited by an object or event.<sup>5</sup> "Thinking," then, as it is

commonly understood, is a process of pattern creation or pattern recognition, i.e., classification, and conjunctive, relational, and disjunctive concepts are the warp and woof of the pattern, the lines of reference of the classification. These concepts may be either "certainties" or "probabilities" depending upon whether or not they coincide with past experience to the extent that they can be assigned to class membership. Cognition, then, results in pattern, and the brain is the loom by which it is woven.<sup>6</sup> One is reminded of Mephistopheles' explanation to the young student in Goethe's *Faust*:

In fact, when men are fabricating thought,  
It goes as when a weaver's masterpiece is wrought.  
One treadle sets a thousand threads a-going,  
And to and fro the shuttle flies;  
Quite unperceived the threads are flowing,  
One stroke effects a thousand ties.<sup>7</sup>

The categories which man formulates, the terms of which he sorts out in responding to the world about him, are strongly conditioned by the culture into which he is born. Each culture formulates its own master plan, its structure of values, its own classification of knowledge, in a manner that reflects the common language, the way of life, the religious beliefs, and the accumulated experiences of the group. Thus each man's personal history images the traditions and thought patterns of his culture. The events of which his life is composed and the relations those events, experiences, and perceptions bear to each other must be filtered through the categorical system he has learned, or he departs from it at his peril. All thinking, all knowledge, begins, as Susanne Langer has stated, in the basic formulation of sense perception, for all thinking is conceptual and conception begins in the recognition of pattern, relationship, the comprehension of *Gestalt*.<sup>8</sup> Thus man is literally ensnared in a web of classification. Within limits he can, to paraphrase Dr. Johnson, alter the reticulations and decussations and vary the interstices between the intersections, but he can no more escape from his network of concepts than could Lemuel Gulliver break the strands by which the Lilliputians held him captive. Only the innovators, the discoverers, have the ability and the courage to sever even a limited number of these bonds, and over them hangs the constant threat of ridicule, social ostracism, and even the hemlock itself. Yet it is such as they who reshape the pattern, relocate the ties of relationship, and thus contribute to a redefinition of the cultural pattern which future generations solidify into accepted stereotypes as their predecessors had formalized the patterns of an earlier day. In such manner does the social conscience make cowards of us all and sickly o'er our native hue of resolution. Thus, to quote Susanne Langer,

The modern mind is an incredible complex of impressions and transformations; and its product is a fabric of meanings that

would make the most elaborate dream of the most ambitious tapestry-weaver look like a mat. The warp of that fabric consists of what we call 'data,' the *signs* to which experience has conditioned us to attend, and upon which we act often without any conscious ideation. The woof is symbolism. Out of signs and symbols we weave our tissue of 'reality.'<sup>9</sup>

Hellenic thought was unified by the study of first principles, for which Plato's dialectic provided the method and which Aristotle formulated as a science of metaphysics. Medieval scholarship, which was theocentric in the extreme, was logically ordered by a theology in which were set forth, with due proportion and emphasis, the truths, relating to God and man, man and man, and man and nature. The Age of Enlightenment was dominated by a search for a rational explanation of the universe and human behavior was measured against the cold clear light of reason, and from its roots, thrust deep into the earlier insistence of Bacon on the importance of the human faculties, modern principles of classification emerged.

#### THE NATURE OF LIBRARY CLASSIFICATION

Library classification, even before that memorable Sunday morning when, in the Amherst chapel, the decimal system burst upon Melvil Dewey like the revelation of the Apocalypse, was a transfer from, or more precisely a reflection of, man's unceasing quest for an ordered universe of structured relationships. Callimachus organized the collections of the great Alexandria in accordance with the major categories, or disciplines, into which Greek thought was divided. The monastic libraries of the medieval world reflected, as one might assume, the theological doctrines of the Church, and relegated, according to Prideaux, the books of the heretics to "mourning and dirt."<sup>10</sup> Naude, in the mid-seventeenth century, was a true descendant of the Renaissance in his return to the classical example of the Alexandria. The great system of Brunet, which according to Gustav Mouravit is both synthetic and analytic, presents in its principal divisions "the great sphere into which the activities of human thought are deployed," while at the same time offering "in their minute details, the products of those activities" and following "all the ramifications on which those activities are exercised."<sup>11</sup> Brunet traces the course of human thought from God, through justice, law, and man's relation to man, through his knowledge of his environment, the external world, and the manifestations of the human imagination, to the eventual contemplation of the record of the human adventure. Thus it represents something of a compromise between the theologians and the precursors of modern science, and invites comparison with and, indeed, is reminiscent of Bacon's tripartite classification of the human faculties of memory, reason, and imagination.

Brunet died too early to be influenced by Darwin, but both Dewey

and Cutter, and especially the latter's principle of expansion, were deeply influenced by the doctrine of evolution. But it was the classification of James Duff Brown that most strongly reflected the evolutionary thesis. Brown postulated that every science or art springs from some definite source and that in its categorization some serial development may be assumed. Thus he predicated his scheme upon the assumption that in the order of things there first was *matter* and *force*, which gave rise to *life*, which, in time, produced *mind*, which eventuated in *record*. Martel and Hanson at the Library of Congress built their structure on the foundations Cutter had laid, and the same may be said with respect to Bruxelles' debt to Dewey. Though in the latter, the forefathers of the *Universal Decimal Classification* at least recognized that the content of books cannot be adequately described in terms of a single linguistic isolate. Hence they made an heroic effort to introduce into the U.D.C. an elaborate system of associative signs to represent some of the most important relationships by which human thought is patterned.

Henry E. Bliss who certainly had one of the finest minds yet to address itself to the problems of library classification, and who devised one of the two most modern schemes now available, attempted to reconcile in one hierarchical sequence a series of sub-orders, the developmental, the pedagogic, etc. The system that emerged he believed to be in harmony with "the order of nature" and the contemporary "scientific consensus," and hence, in his opinion, relatively permanent. In this Bliss was not unlike the nineteenth-century physicists who saw nothing in their futures but improvement in the refining of measurement and the computing of constants.

Ranganathan is probably the only man who can challenge Bliss on his own terms—and he has done so. Whatever one may think of the *Colon Classification* certainly its distinguished creator has surpassed all others in his grasp of the fundamental problems of organizing the intellectual content of graphic records. In his facet analysis and its American counterpart, semantic factoring, the role of classification in bibliographic organization achieves a new and greater significance than it ever had as applied to book arrangement or even as exemplified in the classified catalogue. But despite the work of Ranganathan and Bliss, and their intellectual kin, library classification as it is thought of today was born of the eighteenth-century enlightenment and matured in nineteenth-century Darwinism, with but superficial embellishments that, in the main, are but the tinsel of twentieth-century epistemology. To say of library classification that it is utilitarian is not, in itself, derogatory, it should be useful, but today library classification is utilitarian at the lowest level of its capabilities. It does not structure recorded knowledge in patterns harmonious with the patterns of thought of the library user, it serves mainly as a device by which one may find a particular book. The Dewey *Decimal Classification*, in whatever edition, and the shelf of drab paper bound volumes that are the classification of the Library of Congress, are not a gate through

which the mind is led into the recorded world of the human adventure, they are only an address-book for the library stacks.

## THE REJECTION OF BIBLIOGRAPHIC CLASSIFICATION

The librarian's traditional distrust of the importance of classification may be directly attributed to his indifference to the theory of librarianship. From the days of Dewey, the librarian has viewed classification as little more than an array of pigeon-holes into which books might be conveniently slipped, according to the subject of which they treat, and from which they may be retrieved when that subject is in demand. But as the world of knowledge expanded these compartmentalized arrays became increasingly complex and the problem of assignment of titles to them involved decisions that were correspondingly involved, until the whole idea was abandoned as excessively intricate for all purposes except the simple task of physical location. By contrast the alphabetical subject catalogue seemed a more practicable alternative. But librarians forgot that the alphabetical subject catalogue itself, as Phyllis Richmond has demonstrated,<sup>12</sup> must, if it is to achieve its fullest utility, be derived from a classified structuring of the fields it encompasses. To be sure the subject catalogue was often rationalized as a supplement to the classification, but in many areas of library material, particularly in those involving history and geography, its terms merely recapitulated the sequence of the classification scheme.

The assumption that a subject index can compensate for the inadequacies of a classification scheme Bliss has properly characterized as the subject index illusion which, one should add, arises from a serious over-simplification of the bibliographic problem. Books are not, as Dewey and his contemporaries apparently saw them, taxonomic specimens that can be arranged in a hierarchy of genus, species, and sub-species according to the presence or absence of a single characteristic or physical property or group of covariant characteristics or properties, that differentiate the members of one group from those in another. Library classification has been defined by many people, but the definition devised by William Randall, and modified slightly by the present writer, is typical and probably as satisfactory as any for present purposes. According to this definition a library classification is:

A list of terms which are specifically different from each other, used to describe the subject content of graphic records, inclusive of all knowledge defined by the limits of the scheme, infinitely hospitable with regard to significant differences among the concepts, with an arrangement that is linear, unique, and meaningful to the user, and which, when applied to graphic records, results in the arrangement of the records themselves.

This is pure bibliographic taxonomy, and its fallacy lies buried in the phrase "terms that describe the subject content of books," for terms do not define the subject content of books as they define a biological specimen by categorizing its physical properties. Any attempt to substitute for classification a system which mechanically coordinates or otherwise manipulates controlled or uncontrolled verbal isolates, such as uniterms, Zator descriptors, and the like, results, as Vickery has shown, in increased confusion.<sup>13</sup>

The librarian and the bibliographic instruments with which he works together constitute a bridge between the user of graphic records and the records themselves. Therefore, recourse to graphic records, or retrieval, must be the focal point of a library theory and the end toward which all our efforts are directed. But retrieval is *not* a simple process of choosing graphic materials from an array of pigeon-holes, whether those pigeon-holes be a sequence of books on a shelf, documents in a file, or the representation of bibliographic units in a catalogue or bibliography. A book, even a simple book, presents a highly complex pattern of intricately related concepts which are approached by a user in whose mind there is also a complex pattern of motive, accumulated experience, and predisposition. The book, or graphic record, does not present, as is commonly assumed, a fixed conceptual pattern, or perhaps more precisely, a finite number of interrelated conceptualizations. To be sure the text does not change, but the interpretation of that text is infinitely variable. A book is the physical embodiment of what the author thought he said, but only in a limited way can it speak for itself. What it actually says is what the mind of the user chooses to put there. It was Ludwig Lewisohn, I believe, who said that "the seat of beauty is, after all, in the beholding mind," and so is the content of a book. Any act of communication can reveal an inexhaustible source of truth or mere sophistry. The distinction between the two must, as Polanyi has shown, derive from, the *text* of the message itself, the *conception* suggested by it, and the experience on which it may bear.<sup>14</sup> Judgment operates by trying to adjust these three patterns to each other. The outcome cannot be predicted from previous acts of communication for there may be involved the decision to correct or otherwise modify previous behavior or reinterpret experience in terms of some novel conception suggested by the text, or the result may be a decision to accept previous usage or behavior, or the text may be completely dismissed as altogether meaningless. The relationship between book and reader, then, achieves fruition only to the degree that the pattern of the book's content approaches coincidence with the thought pattern of the reader. Even in simple situations this is a complex relationship and the librarian's eternal hope to attain such a relationship with simple measures can end only in dissatisfaction. At this moment of fusion between the pattern of the graphic record and the pattern of recourse to it lies the clue to all our problems and the end of all our strivings. Here is a problem as complex as the nature of matter itself—and as worthy of serious research.

The true role of the librarian, then, is to mediate between book and reader and the human factor that is the librarian can never be eliminated. A good classification system, however carefully designed, can never substitute for a librarian with brains. Properly employed, however, classification can extend the capabilities of the librarian but it can never solve all his problems for him, in the way that Dewey seems to have anticipated, in this psycho-bibliographic relationship that characterizes the act of reading.

The librarian's rejection of classification arose from the fact that he misapplied it because he misunderstood its nature and the nature of the bibliographic process. This misapplication crystalized at a very early stage of modern library development, and, until recent years, has remained essentially unchanged. Such misapprehensions of librarians about classification were intensified by the deceptive simplicity of the alphabetical subject catalog, a form of delusion that encouraged librarians to ignore the complaints of many scholars that the dictionary catalog was almost useless as a guide to the materials of research.

There were other factors that contributed to the librarian's attitude toward classification. The enormous costs of reclassification, costs which grew geometrically as collections increased, seemed to justify the assumption that such wholesale revision was not worth the expense, this in turn led to the conclusion that one classification system was little better than another, and that none was very good. Failure of attempts to devise a universal classification scheme that would be all things to all men in all situations seemed, in the minds of many, proof of the failure of classification itself. Finally, in a country so intensively mono-lingual as the United States the pressure for a system that would bridge the conventionalities of language and deal directly with a generalized symbolization of concepts was at a minimum. Had the French influence been stronger in New England, the Dutch in New York, the German in the Middle West, and the Spanish on the West Coast the classified catalog might today have been less of a curiosity than it now is, even in our large metropolitan public libraries. As it is, the standardized subject headings of the Library of Congress have dealt effectively with such minor linguistic variables as *bag*, *sack*, *poke*, or *skillet*, *frying-pan*, *spider*.

## THE RENAISSANCE OF CLASSIFICATION

Recently there have appeared manifestations of a renaissance of a interest in classification. The composite and multi-faceted character of recorded knowledge, its interdependence and relatedness, the magnitude of its proliferation, or especially during the past half-century, the variety of aspects from which it may be sought, and the gravity of the social, economic, and political problems for the solution of which it is essential, all have combined to create a situation with which traditional library procedures and processes are ill-fitted to deal effectively. Growing improvement in the understanding of



the operation of the human brain and the processes of thought have focussed attention on the role of classification in cognition. A rejection of the taxonomic basis of classification for what Alfred North Whitehead has called referential classification, and the development of a wide variety of special classifications have revived interest in the possibilities that classification can offer in improving the analysis and retrieval of information. Rapidly growing interest in the development of electronic computer-like devices for expediting bibliographic search has compelled a re-examination of classification as the basis for the construction of a machine language or languages, and this in turn has necessitated a serious study of the logical bases for systems for the organization of recorded knowledge.

Some indication of this revival may be shown by a tabulation of the entries under the heading "Classification" in *Library Literature* from 1946 to 1957.

#### Entries in *Library Literature* Under the Heading *Classification*

U. S. and Foreign, 1946 - 1957, and 1937

Year	United States	Foreign	Total
1957	26	45	71
1956	49	46	95
1955	35	45	80
1954	21	40	61
1953	36	42	78
1952	19	37	56
1951	20	48	68
1950	6	38	44
1949	11	24	35
1948	9	16	25
1947	9	38	47
1946	5	20	25
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1937	18	43	61

These crude statistics suggest that interest in classification in Europe has remained remarkably constant, that, with one exception, it has exceeded that in the United States for every year since 1946, and that, if the number of articles analyzed in *Library Literature* can be taken as an index, interest in classification on this side of the Atlantic has been definitely on the increase. For a number of technical reasons which cannot be dealt with here,<sup>15</sup> these statistics must be interpreted with the utmost caution, but, when considered in conjunction with other forms of evidence they may represent a trend toward an increasing concern with problems in classification.

This rebirth of interest in classification is receiving increased support from without the library profession. By this I do not mean the documentalists and information specialists, whom I regard as librarians. Mathematicians, logicians, engineers, physicists, anthropologists, psychologists, linguists, and brain specialists all are becoming aware of the organization of information as a field for research and many within these professions have begun exploratory work in it. Such activities will compel librarians to reappraise classification as well as the effectiveness of their other procedures, for if they do not they will lose control of the very profession they practice.

Across the Atlantic there are forces that strengthen interest in classification here. Western Europe has long been a focus of activity in advancing bibliographic classification, and to this end much of the effort of the Federation Internationale de Documentation has been directed. Admittedly it has suffered from illusions of universality and, at times, an over-zealous leadership, but these seem to be occupational hazards where problems of classification are concerned, and much important work has come from such centers at The Hague, Brussels, and Paris. In England the Classification Research Group, which can certainly trace its origins to the pioneering work of Ranganathan, has, in a surprisingly brief time, made rather remarkable progress in reviving research in classification.

Encouraged by the success of the British venture, Mrs. Phyllis A. Richmond, of the University of Rochester Library, began, not much more than a year ago, the promotion of a comparable group in the United States. At the present time this little band of kinspirits, which, as an affiliate of the American Documentation Institute, now numbers almost one hundred, has held three meetings in conjunction with the annual conventions of the American Library Association, the Special Libraries Association, and the American Documentation Institute. Though it is still engaged in the task of identifying targets for research, and despite the fact that it has not as yet developed a real program of activities, it is symptomatic of the growing revival of interest in classification. The promise of this activity is most gratifying to those few of us who, under the leadership of Norman T. Ball, were trying in 1947 and 1948 to direct the attention of the newly-formed A.D.I. toward a more intensive attack upon the problems of classification<sup>16</sup>

Perhaps the most satisfying development of all has been the growth in the use of the collection of special classifications maintained by the Special Libraries Association in cooperation with, and serviced by, the School of Library Science at Western Reserve University. This collection now numbers some 600 titles and inquiries to and loans from it are received and transmitted daily. The use that is made of this material and the continuing generosity of many people in presenting to the collection such schemes as they have developed, are convincing testimony that the librarian's concern with classification is very far from atrophying.

## THE FUTURE OF CLASSIFICATION

The initial question to which this essay was addressed can no longer be postponed. What is the future of library classification?

Certainly library classification, interpreted narrowly as a system for preserving order in library stacks is in no danger of extinction. Stack order there must always be, or the resulting chaos would force librarians into what Verner Clapp has graphically called "simian search." Moreover, there seems little possibility that either the Dewey decimal system or that of the Library of Congress will lose, in the foreseeable future, their positions of preeminence as systems for stack arrangement. The advantage of an early start, combined with the geometric increase in the costs of reclassification as the size of the book stock grows, diminishes significantly the relative value of reclassification. Few, if any, libraries have had the courage to follow the pattern of the John Crerar in reverting to fixed location, and even this step is impracticable except in closed stack situations. The D.C. may be "a 'ell of a 'ole," but we seem unable to discover any other that is sufficiently superior to justify the risks of migration.

So far as the public library is concerned one may properly assume, in view of the almost complete uselessness of both the D.C. and L.C. to the general public, that special arrangements, in broad reader-interest categories, for open shelf collections will be on the increase. Though the librarian may not yet reject the *Decimal Classification* for his own professional needs, the day of his missionary zeal for Saint Melvil and all his works is, happily, at an end.

The continuing growth of special libraries, especially for the administrative and research needs of business, industry, and government, will promote increasing attention to the development of special systems for the retrieval of precise information from a wide variety of graphic records. Furthermore, it may also encourage increased attention to the theory of classification itself.

But the area from which the most significant developments in classification may be anticipated is that in which attention is being given to the development of new systems for mechanizing many of the routines for the more effective utilization of recorded knowledge. New information needs have posed new problems in organizing graphic records, these problems have dictated new research into the nature of information itself and the character of its use. Such research has led to the development of new systems which have promoted the invention of new machines, the limitations of which have intensified the formulation of system theory. This analytical-synthetic cycle of theory and technology must be maintained in reasonable balance, or serious mal-adjustments will ensue. If the technology advances at too great a distance beyond theory, the machine becomes the end rather than the means and dictates in ways that it should not be permitted to do the perimeters of the problem. On the other hand, theory cannot

advance beyond the point at which the technology can support it, for eventually technology places a ceiling upon theory through which the latter cannot break because it lacks the equipment with which to work. The theory of organizing knowledge and the patterns of its use, in other words the theory of classification, lies at the very foundation of this balance, for classification as a discipline is itself a convergence of theory and technology. Its theory is rooted in logic, linguistics, and the philosophy of science, enriched and supported by psychology, mathematics, and neurology, especially the study of the human brain. Its technology finds expression in such new fields as cybernetics, the mechanization of information search, and machine translation. It is no longer the exclusive possession of the librarian, but it is his responsibility to forge a new theory of classification and a new technology for its manipulation from all the disciplines that can contribute to classification as the means by which the reader and the text he needs are brought into fruitful relationship.

One of the characters in a recent science-fiction novel by Robert Heinlein says, "Dad claims that library science is the foundation of all sciences—just as math is the key—and that we will survive or flounder depending on how well the librarians do their job." If it be true that librarianship is the foundation of all science, and I like to think that it is, then certainly classification, the science of order by which man structures the universe in which he finds himself and by which his own behavior is patterned, is the mortar with which the blocks of that foundation are held in unity.

#### Notes

1. Niels Bohr, *Atomic Physics and Human Knowledge* (New York: Wiley, 1958) pp. 67ff.

2. See Henry Margenau, *The Nature of Physical Reality* (New York: McGraw Hill, 1950) pp. 18-20.

3. John Dewey, *Experience and Nature* (Chicago: Open Court, 1925) p. 330.

4. V. Gordon Childe, *Society and Knowledge* (New York: Harpers, 1956) pp. 65-73.

5. Jesse H. Shera, "Pattern Structure, and Conceptualization in Classification," *Proceedings of the International Study Conference on Classification for Information Retrieval*, 13-17 May 1957 (New York: Pergamon Press, 1957) pp. 19-21.

Jerome S. Bruner, Jacquile J. Goodnow, and George A. Austin, *A Study of Thinking* (New York: Wiley, 1956) pp. 243-245.

6. W. Grey Walter, *The Living Brain* (New York: Norton, 1953) p. 72.

7. Mephistopheles to the Young Student. From George R. Priest's translation of Goethe's *Faust*.

8. Susanne K. Langer, *Philosophy in a New Key* (Cambridge: Harvard University Press, 1948) p. 218.

9. *Ibid.* p. 227.

10. See W.R.B. Prideaux, "Library Economy (Chiefly Continental) at the End of the Seventeenth Century," *Library Association Record*, VI (March 15, 1904), 133.

11. Gustave Mouravit, *Le Livre et la Petite Bibliothèque d'Amateur* . . . (Paris: Aubry, n.d.)

12. Phyllis A. Richmond, "Cats: An Example of Concealed Classification in Subject Headings," *Library Resources and Technical Services*, III (Spring, 1959), 102-112.

13. B.C. Vickery, "The Need for Classification," *Classification and Indexing in Science* (London: Butterworth, 1958).

14. Michael Polanyi, *Personal Knowledge* (Chicago: University of Chicago Press, 1959) p. 95.

15. The author has made every reasonable effort to eliminate duplicate entries though admittedly some may have escaped attention. The data are also doubtless distorted by changes over the years in the periodicals indexed by *Library Literature* especially in its coverage of foreign literature. Figures are also skewed by the publication of a new edition of *D.C.* or a revised section of *L.C.* Finally, frequency of publication is not necessarily synonymous with reader interest.

16. See Norman T. Ball, "Committee on Organization of Information" *American Documentation*, I (January, 1950), 24-34.