

MISSIONS — CHINA

**Hodgkin, Henry Theodore, 1877-**

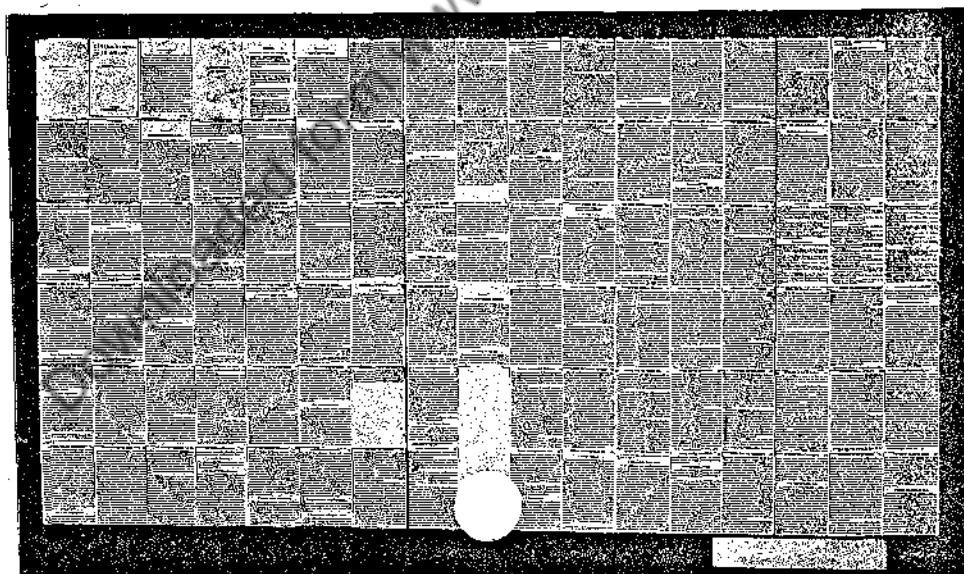
Living issues in China and the possible direction of their solution... New York, Friendship press [1932]

(viii, 215p. double map. 19cm. — "Reading list": p. [204]-210.)

Discusses China's government, educational system, social organization, economic conditions, health problems, international relations and religion, and how Christian missionaries can help in solving her problems. Author, a medical missionary in China, 1905-10, served ten years as secretary of the Friends' Foreign Mission Assoc. and seven as secretary of the National Christian Council of China traveling throughout China in its interests. He has written several other books on religion, especially on its missionary aspect.

[1st of 2]

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The Scholar  
and the Future  
of the Research Library

*A Problem and Its Solution*

By FREMONT RIDER

LIBRARIAN, THE WESLEYAN UNIVERSITY LIBRARY

NEW YORK CITY  
HADHAM PRESS

1944

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AND TO LAURA F. PHILBROOK,  
THEN LIBRARIAN OF THE RUSSELL LIBRARY (MIDDLETOWN)

BECAUSE THEY WERE PATIENT AND UNDERSTANDING  
WITH A SMALL BOY,  
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## PREFACE

*OF ALL the problems which have, of recent years, engaged the attention of educators and librarians none have been more puzzling than those posed by the astonishing growth of our great research libraries. My own interest in this subject has, over several years, resulted in a series of papers,\* some*

\* "We Pass a Milestone" (*About Books*, March, 1936, p. 3-11), and "The Growth of American College and University Libraries" (*About Books*, September, 1940, p. 1-11) were analytical studies only. The possibility of reducing library costs in general through a more exact knowledge of their incidence was discussed in "Library Cost Accounting" (*Library Quarterly*, October, 1936, p. 331-81). "The Possibility of Discarding the Card Catalog" (*Library Quarterly*, July, 1938, p. 329-45) made various suggestions for reducing cataloging cost. "A Regional Joint University Library—a Suggestion Advanced as a Partial Solution of the Problem of College Library Growth" (1937, 51 p.; Same, revised, 1938, 36 p.; Same, revised, 1938, 38 p.) discussed reducing the cost of acquisition and storage by means of inter-library cooperation; while "A Cooperative Cataloging Plan for the Libraries of the Hartford Area" (1943, 46 p.) discussed cataloging from the same standpoint. Possible reductions in cataloging costs through changes in cataloging methodology were suggested in "Alternatives for the Present Dictionary Card Catalog" (presented at the Library Institute at the University of Chicago, July 1940; reprinted in "The Acquisition and Cataloging of Books," edited by William M. Randall, University of Chicago Press, 1940, p. 133-62). The possibility of reaching the same goal through the introduction of certain union cataloging techniques was taken up in "Real Cooperative Cataloging—the Concrete Approach" (*Library Quarterly*, April, 1943, p. 99-112). Cutting cataloging costs through changes in catalog card format was the subject of "New Possibilities in Cooperative Cataloging" (a paper read at the College and Reference Library Section of the Special Library Association, New York City, July, 1943, 26 p.). An analysis of the library policy of one comparatively small institution, with suggestions for reducing costs, was made in "The Wesleyan University Library, an Analysis of its

of them mainly analyses, but others of them endeavoring to suggest answers to what has sometimes seemed to be an almost insoluble puzzle.

All of these papers were to a large degree a "thinking out loud," a pointing out of the direction along which eventual solutions might be arrived at rather than a presentation of assured conclusions. Some of them were, indeed, flatly contradictory, the papers beginning by making certain definite suggestions, and winding up by flatly disapproving them! But this was done deliberately. Indeed one of them remarked: "It may seem that all we are doing is raising straw men possibilities for the sake of knocking them down. . . . But may not this process give us a clearer understanding of our difficulties?" The main reason why, all through them, this quite open-minded attitude was taken was that all of the suggestions made were avowedly tentative. This was not because I felt that they had no value; but only that they seemed inadequate to meet what we were called upon to meet. In fact this was the one definite conclusion that these papers did reach: that no emendations in present library method alone were going to provide a sufficient solution of our growth problem. The petty savings so effected were quickly overwhelmed by its increasing magnitude. More and more over the years I became convinced that our only possible answer lay in inter-library cooperation, and cooperation

Past History, Present Position, and Possible Future Policy, Prepared by the Librarian, for the President, Faculty and Trustees. Not published, but printed as manuscript" (1943, 126 p.).



*much more sweeping than anything we had heretofore envisaged. That is why, when the committee headed by Mr. Keyes D. Metcalf of Harvard made its noteworthy "division-of-fields" report two years ago, it seemed to me a very important step in the right direction; because, to basic changes in some aspects of library methodology, it added inter-library cooperation on a scale which, although modest in its initial reach, was still unprecedented.*

*Four years ago, while I was milling around in all sorts of suggestions for reducing library costs—some of them, as usual, mutually contradictory, some of them vaguely inconclusive, and all of them falling disappointingly short of adequacy—the idea came to me which is the subject matter of this book. From the first it seemed "right"; in fact so obviously and completely right that I was afraid of it! It had that extreme simplicity that makes one distrust one's own judgment. And so for months I tried out innumerable samples of it—attacking it, testing it, criticizing it, from every angle I could think of. It had the somewhat disconcerting quality of being able to convert every new objection brought against it into a new argument in its favor.*

*Also, of course, I sought criticism. But every person to whom the idea was submitted—persons both inside and outside the library profession, and representing all sorts of viewpoints from catalogers to heads of libraries—was immediately so completely enthusiastic in approval that it was hard to keep one's own doubts from dissolving! They all agreed*

*that, tiny connecting methodological link though it was, it had the far-reaching possibilities that, from the first, it seemed to have.*

*This idea—the subject matter of this book—is really the marriage, as it were, of two familiar concepts. Most of the credit for it should go, therefore, to those who worked out these two concepts. On the catalog card side to Charles Folsom, the first American actively to propagandize for the card catalog, to Melvil Dewey, who standardized its technique, and to Charles Cutter, who formulated the first American cataloging code. On the micro-reduction side to the unknown man—whoever he was—who first took a miniature camera shot of a printed page, and to Messrs. Binkley, Draeger, Tate, Pratt, Raney, Metcalf, Fussler, and a long list of others, who have struggled, so unselfishly and so successfully, to make micro-photography the practicable library tool that it now is.*

*Something like an apology is, perhaps, due those librarians who have patiently listened through these years to my warnings of what was going to happen to their libraries unless—when all the time they were being offered no assured conclusion to that unfinished “unless.” To most librarians any change in method is disturbing, particularly when it affects long-cherished and deeply rooted fundamentals; and this is true even when the new methods proposed have been thoroughly tested and authoritatively approved. But change is very much more disturbing, as a librarian whose professional*

*judgment I highly respect pointed out to me a few weeks ago, when it breaks up one's established routines, brings into question one's professional standards, and impugns one's professional judgments, yet offers nothing definite to take their place. It is, therefore, with something like relief that, at last, I can present something I am willing unreservedly to endorse!*

*Some sentences in the pages that follow may sound, to librarians, a little like quotations from an elementary manual of library practice. But this seemed desirable. Although this book is intended primarily for librarians, it is also intended for educational administrators, teachers, and scholars; and to them some of our accepted library terminology might sound a bit blind if there were not interjected occasionally a brief phrase of elucidation.*

*Fremont Rider*

*Wesleyan University Library*

*Feb. 26, 1944.*

“WE MAY repeat that the library is ‘the heart of the college,’ but are we acutely anxious that our assent shall be more than lip service? Do we have a really compelling conviction that on the richness of the blood stream of books constantly flowing through its heart the vitality of every college depends? Are we, as educational pathologists, continually on the alert that our libraries shall not be attacked by that insidiously fatal disease, bibliographical pernicious anemia? Do we profoundly realize that our recitation systems, our examinations, our honors work are, when all is said and done, only devices by means of which we incite students to extract knowledge for themselves from books? Are we as teachers shadowed by a pressing apprehension lest our instructional ability wither and die for lack of that continual revivification that only books can give it? Are we, as trustees of the future, intently conscious that the whole curious plexus that we call ‘civilization’ is directly and absolutely dependent upon the existence and availability of books?”

## THE PROBLEM

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## CHAPTER I

### THE GROWTH OF AMERICAN RESEARCH LIBRARIES

**A**LTHOUGH it had been known for a long time that American research libraries were growing at a very rapid rate, it was not realized until a few years ago that they were, on the average, actually doubling in size every sixteen years. And more detailed analysis revealed an even more startling fact: this amazing rate of growth—a growth actually parabolic when put into graph form—was not in any sense a recent phenomenon: all our research libraries had grown at this rate, without substantial deviation either upward or downward, ever since they began in this country, over three centuries ago.

Now, when anything is growing parabolically, there obviously is going to come a time when some sort of an *impasse* begins to impend very rapidly indeed. And it is evident, when one considers the statistics, that American research libraries are fast approaching this particular point in the curve of their history. When a library has ten thousand volumes, it may double itself in sixteen years without creating for itself any special difficulties; but,

when it has four million volumes, and still goes right on doubling every sixteen years, a situation very quickly develops which cannot easily be brushed aside or ignored.

To talk of library growth in terms of parabolas may sound more than a little fantastic; but let us examine a few detailed figures.\* The most conservative rate of growth shown by any one class of research libraries has been that of the smaller men's colleges. Below are printed the figures for ten such representative colleges. It will be seen that they, on the average, have doubled, not every sixteen, but every twenty-two years.

*Table A.—Comparative Growth Figures of  
American Colleges Dating from 1831*

	1831	1849	1876	1900	1925	1938
Dartmouth	11,500	28,300	52,550	90,000	225,000	454,005
Wesleyan	1,500	11,123	26,000	58,000	151,000	240,022
Amherst	5,080	13,700	38,533	72,000	130,000	213,810
Hamilton	6,200	10,300	22,000	40,353	114,989	179,282
Bowdoin	12,300	24,750	35,860	67,164	125,000	178,000
Williams	4,019	15,125	27,500	47,463	110,000	166,991
Allegheny	8,000	8,000	10,500	16,000	47,000	122,195
Trinity	6,200	9,000	15,000	40,736	100,000	120,000
Middlebury	4,168	8,417	15,500	23,492	50,000	104,774
Union	13,350	14,526	25,800	35,314	75,500	102,461
Average	7,321	14,324	26,924	49,052	112,848	188,154

\* These tables are all quoted from the article "The Growth of American College and University Libraries—and of Wesleyan's," which appeared in *About Books* for September, 1940, (p. 1-11). The initial date in the tables quoted, 1831, was taken because it was the date of Wesleyan's founding. For the remaining figures an endeavor was made to get dates as near as possible to even quarter century intervals; but this could not be done exactly because statistics had to be taken where they could be found. For the 1831 figures the source was the *American Almanac* for that year; for the 1849 figures,

These figures for college library growth are corroborated by Miss Blanche McCrum, the librarian of Wellesley, in her carefully worked out "Standards for College Libraries." She analyzed (in 1933) seventy-two of the leading *college* libraries of the country. She found that thirty-one of the seventy-two had equalled, or had actually exceeded, the doubling-every-sixteen-years rate of growth shown by the great university libraries, that six colleges had tripled, two had quadrupled, and four had quintupled in each sixteen-year period.

The women's colleges, as a group, show a much more rapid growth than the men's colleges.

Table B.—Comparative Growth Figures of  
American Women's Colleges

	1876	1900	1925	1938
Smith	—	6,400	125,050	256,300
Vassar	18,632	35,000	141,325	209,785
Wellesley	10,000	51,159	113,673	182,000
Bryn Mawr	—	32,138	112,136	161,600
Mt. Holyoke	9,500	19,000	91,469	153,000
Average	7,626	28,747	116,731	192,537

It may be objected that the rate of growth of these women's colleges has been unduly high because they are all of recent foundation. This may be true: and this may also be the reason why the newer of the great universities show a rate of

Charles C. Jewett's, "Notices of Public Libraries in the United States," (1851); for the 1876 figures, U. S. Bureau of Education, "Public Libraries in the United States," (1876), issued for the Centennial Exposition; for the 1900 figures, the annual report of the U. S. Bureau of Education for that year; for the 1925 and 1938 figures, the *American Library Annual* for the two years in question.



## 6 THE SCHOLAR AND THE FUTURE

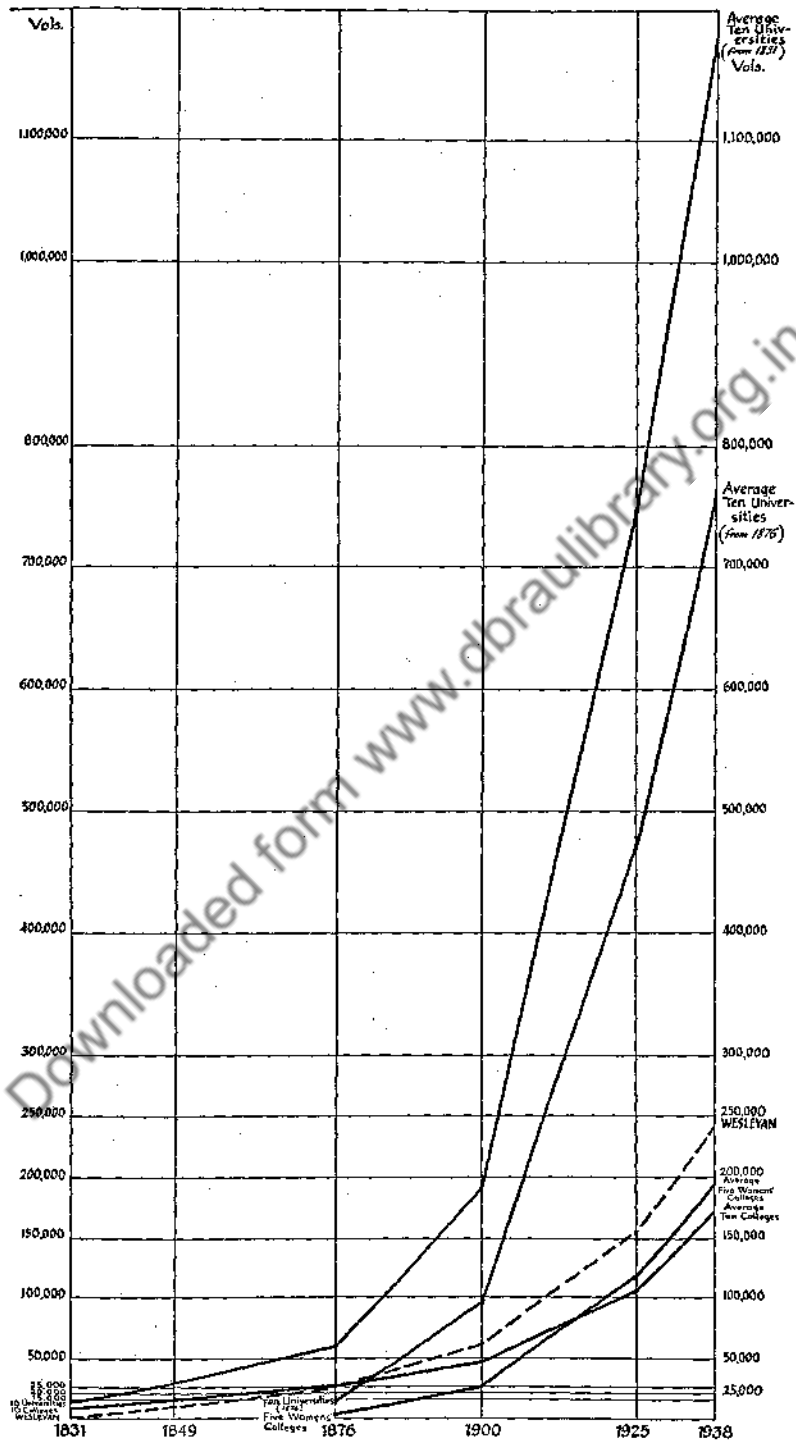
growth much higher than that of the older ones. Table C gives comparative figures for ten of our largest universities founded since 1849 (i.e., those whose first comparative figures were the ones available in the 1876 report). The universities of this age-group have doubled in size, not every sixteen years, but every nine and one-half years!

*Table C.—Comparative Growth Figures of American Universities Dating from 1876*

	1876	1900	1925	1938
University of Chicago	18,000	329,778	739,213	1,232,745
University of California	13,600	81,179	898,441	1,141,612
University of Illinois	11,000	42,314	687,315	1,130,000
Cornell University	39,000	225,022	742,723	1,035,170
University of Minnesota	10,000	65,000	472,000	1,017,690
Western Reserve University	10,000	53,709	290,000	508,000
Iowa State University	8,823	26,650	293,725	441,396
Oberlin College	14,000	51,000	274,241	386,664
University of Rochester	12,000	36,931	143,380	329,700
Syracuse University	10,000	52,290	157,376	313,454
Average	14,642	96,384	469,842	753,641

Finally, if we take our older university libraries, those that were established prior to 1831, we get something nearer to what we might term a statistical norm. Their figures are on p. 8: like those of *all* research libraries averaged together they show a doubling at almost exactly sixteen year intervals.

The graph on the facing page pictures all these respective rates of growth more strikingly than any amount of figures can, and shows very clearly their parabolic character. If it says anything it says that there is a problem here which has not yet received the educational attention it deserves. For it is ob-



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*Table D.—Comparative Growth Figures of American Universities Dating from 1831*

	1831	1849	1876	1900	1925	1938
Harvard	39,605	96,200	227,650	560,000	2,416,500	3,941,359
Yale	25,500	50,481	114,200	360,500	1,697,322	2,748,000
Columbia	4,580	12,740	34,790	295,000	1,055,198	1,615,051
Princeton	8,000	16,000	41,500	151,649	579,503	919,555
University of Penn.	2,000	9,250	25,573	182,525	615,099	881,781
Brown	11,662	38,800	45,000	110,000	350,000	530,200
University of N.C.	4,800	11,847	22,207	31,000	167,000	357,629
University of Va.	8,000	18,378	40,000	50,473	150,000	303,502
Rutgers	6,500	8,000	10,614	41,381	157,524	273,873
Georgetown	7,000	26,100	32,268	88,300	260,000?	258,700
Average	11,764	28,779	59,380	187,082	744,114	1,182,974

vious from it that the phenomenon which it visualizes is neither a local nor a temporary one. To be sure the tables cited carry the story back only to 1831; but every scrap of statistical evidence that we can gather shows that, as far back as we can reach, the story is exactly the same. It seems, as stated, to be a mathematical fact that, ever since college and university libraries started in this country, they have, on the average, doubled in size every sixteen years.

Of course, what makes this rate of library growth a very real problem from the educational standpoint is that it is not a laboratory experiment, not a growth in a vacuum. There has always existed a direct correlation between the educational effectiveness of a college and the growth of its library, a correlation so close and so consistent that it cannot have been fortuitous. The various sources from which these tables are quoted give us the statistical

history of a great many more libraries, and give it in much greater detail. And it is obvious, as one runs through them and traces the progress of any one library down through the years, that, whenever its growth slackened, its college was slipping with it. On the other hand, when any library spurred ahead of the sixteen-year average during any given quarter century, one always finds on investigation that, during that quarter century, that library's college was, for one reason or another, taking on a new lease of life.

In fact, this may be asserted as almost axiomatic: unless a college or university is willing to be stagnant, unless it is willing *not* to maintain its place in the steady flow of educational development, it *has* to double its library in size every sixteen years, or thereabouts. When its library ceases to grow an educational institution dies. One may argue that this ought not to be so. All that can be said is that the statistical record shows clearly that it *is* so. Nor is it material whether our reasoning be that a strong college insists upon having a strong library, or that a strong library develops a strong college: the one clear fact is that the two go together.

But, if this is true, and if this doubling every sixteen years is going to continue in the future, to what sort of a situation does it lead? To a situation that was presented, in somewhat dramatic concreteness, in a paper which the writer read at a meeting at the University of Chicago in the summer of 1940. In this paper the Yale University

Library was taken as a concrete example: and it was taken mainly because its rate of growth had, throughout its history, coincided very closely with our statistical norm.

It appears that, along in the early part of the eighteenth century, the Yale Library possessed somewhere around 1,000 volumes. If it had continued from this start to double in size every sixteen years it should, in 1938, have grown to 2,600,000 volumes. In 1938 it actually did have 2,748,000 volumes, i.e., an amazingly close correspondence with the "standard" rate of growth. And all the intervening statistics for Yale were also in close coincidence. In 1849, for example, it should, according to the doubling-every-sixteen-years formula, have had approximately 60,000 volumes. It actually did have 50,481.

It takes but a few moments' computation to work out that the Yale Library in 1849 occupied approximately  $1\frac{1}{4}$  miles of shelving, and that its card catalog—if it had then had a card catalog—would have occupied approximately 160 card drawers. In 1938 its 2,748,000 volumes occupied perhaps eighty miles of shelving, and its card catalogs, of all sorts in all locations, must have occupied a total of somewhere around ten thousand drawers. To service itself this library required in 1938 a staff of over two hundred persons, of whom probably half were catalogers (or others engaged in accessory acquisitional or preparational processes).

It is, however, when we project the rate-of-growth graph of the Yale Library a century ahead that its figures begin to become really alarming. Of course, it may be objected that any attempt to forecast library growth a century ahead is sheer absurdity. And, if that is one's opinion, one may, instead, figure it out for a half-century, or a quarter century, ahead. That makes the problem seem a little less pressing: but, obviously, does not change it fundamentally an iota. Doubling every sixteen years is still doubling every sixteen years quite regardless of how far ahead one's figures are projected.

But, on the other hand, why should we not project them for a century ahead? The Yale University Library is already considerably over two centuries old; Harvard's is three. And we must remember that, so far as we have figures available, neither library, in even a single generation in its long history, has deviated substantially from our established "doubling" rate of research library growth. It may be said that we have no right to assume that the Yale Library will even be in existence a century hence. Quite true. But, if we do make that assumption, then we have the further right to assume, in the absence of any clear evidence to the contrary,\* its rate of growth, during its next one hundred years, will continue to be what it has been during its last two hundred.

But, if the Yale Library does continue to grow,

\* Such evidence as there is, is discussed later in this chapter.

and to grow at a rate no whit greater than it has been steadily growing through its more than two centuries of past existence, if it continues to grow at a rate no greater than the most conservative rate at which all our other American colleges and universities have grown ever since they started, and are now growing, then, by a series of further successive doublings, the Yale Library will, in 2040, have approximately 200,000,000 volumes, which will occupy over 6,000 miles of shelves. Its card catalog file—if it then has a card catalog—will consist of nearly three-quarters of a million catalog drawers, which will of themselves occupy not less than eight acres of floor space. New material will be coming in to it at the rate of 12,000,000 volumes a year; and the cataloging of this new material will require a cataloging staff of over six thousand persons.

These figures sound astronomical. Perhaps they are. But are they any more astronomical than the Yale figures for 1938 would have sounded if they had been presented to the Yale librarian of 1738? Nor is there anything really new about any of them. All of them have been lying quietly in the record. But only a thoughtful few have fully realized what they portended.

But these statistics, and the graph on p. 7, make clear, perhaps, why this problem of research library growth is, whether they realize it or not, by all odds the most serious one that librarians and educators face. When a library is leaping upward

from two million volumes to four million volumes in sixteen years; and then from four million to eight million, and then from eight million to sixteen million, it is clear that all mere palliatives are going to be utterly ineffective, that we face a situation with which no minor economies in technique, no cautious emendations of policy, can possibly cope. We absolutely *must* analyze our whole problem from entirely fresh viewpoints, and must endeavor to find, in one direction or another, sweepingly new solutions for it.

Nor, as has been already suggested, can the library and educational worlds much longer delay this endeavor. Doubling every sixteen years has continued now for over three centuries; and so far we have been able to absorb it. But, obviously, we can't do so much longer. Sooner or later, as any mathematician will agree, repeated doubling becomes a most disconcerting business. To many librarians it is already disconcerting, for they are watching a veritable tidal wave of printed materials yearly, monthly, daily, *hourly*, mount higher and higher.

Nor must it ever be forgotten that this is far more than a library problem; far more than merely an educational problem; it is a problem—and a problem to the *n*th degree complex and baffling—of civilization itself. It was remarked in one of my earlier papers that “we seem to be fast coming to the day when, unless it is afforded the most expert sort of bibliographical service possible, civilization



may die of suffocation, choked in its own pléthora of print." This statement is in no sense an oratorical exaggeration.

Two questions regarding this doubling-every-sixteen-years growth-ratio are likely to arise at once in the minds of those who learn of it for the first time. The first one is: why, over these past decades and centuries, has library growth proceeded at such a rapid rate? And the second is: is this rate bound—unless, of course, we are able to make sweeping changes of some sort in either our library methods or our fundamental library policies—to continue in the future? The University of Chicago paper which has been quoted from purposely made no attempt to answer either of these two questions. But perhaps very brief answers to them should be attempted.

In reply to the first. Research libraries have grown in the past as the result of four main increment factors:

First, and most important, there has been a continually increasing realization of the importance of libraries in the educational process. This has resulted in libraries being supplied with *increasingly larger funds* with which to finance their growth.

Second, our universities have been continually adding new schools and colleges—some in old fields, some in entirely new ones. At the same time our universities, and also our colleges, have been adding new courses. Every one of these curricular

additions placed upon the libraries of the institutions concerned the necessity of accumulating books *in fields hitherto uncollected*, or hitherto inadequately collected.

Third, college and university libraries have had the increased desire, as well as the increased means, to acquire vast ranges of *previously published materials* in the fields in which they were already collecting. This has brought into them, over the last century—mainly from Europe—millions of volumes of the older material, the background literature of all the various disciplines.

Fourth, there has been going on all the while an enormous, and still continuing, increase in the *contemporary output* of new printed material, some of this last in the form of "books," but most of it in the form of periodicals and government documents. No library can afford to ignore this new material, however voluminous it may be, for it is the veritable life-blood of the whole educational process. If its inflow is cut off, or even substantially diminished, a sort of educational pernicious anemia immediately sets in.

So much by way of answer to the first question. But the second question is far more intriguing, far more important—and far more difficult to meet with a completely defensible reply.

Research library growth has continued, without any significant change of rate, either downward or upward, for over thirty decades, and at a rate so uniform over so many years, and so uniform in so

many different libraries, that it might almost seem as though some natural law were at work. And no statistics as yet published \* reveal the slightest indication of any slackening in the rate. Nevertheless, if research librarians were asked categorically whether they thought doubling every sixteen years was going to continue indefinitely, most of them, like the writer, would probably answer "No." † And there are a number of considerations which would support this negative answer.

First, growth due to the taking in of new collecting fields (i.e., not new subject fields, but old subject fields hitherto ignored by a given library) seems due ultimately to diminish, simply because new fields for collecting are some day bound to become exhausted.

Second, a similar sort of growth, a growth due to the extension of the collecting interest of a given library into new geographical areas, seems also due ultimately to diminish, because there is bound some time to be an end to such new geographical areas.

Third, such growth as is due to the increased publicational output that results from a general increase of population seems due ultimately to di-

\* The war will undoubtedly affect the growth-rate temporarily, but, almost surely, only temporarily.

† In a recent letter to the writer Mr. Keyes D. Metcalf, of the Harvard University Library, for example, says on this point: "It is perfectly true that for the past two or three generations we have been unwilling to face the growth of the future. . . . But I am convinced that a turn in the road has come. Curves of that kind have to change some time."

minish as first American, and later world, population approaches the stabilization point.

Fourth, such growth as is due to the increased publicational output that results from the continual raising of the cultural—and hence of the book-writing and book-reading—level seems due to slow down, in proportion as the optimum cultural level tends to become universal.

Now, obviously, these are all very long-range and exceedingly complex factors, factors that are here baldly summarized in absurdly over-simplified abbreviation. And, although it is altogether likely that they all may *ultimately* have their effect upon the rate of research library growth, it is also altogether likely that that effect may, for many years to come, be an almost imperceptible one. In other words, although slackening of the growth-rate is remotely probable, it offers no possibility of relief to our libraries so far as the foreseeable future is concerned.

Furthermore, in fairness, it must be admitted that argumentative formulae can be developed which exactly contradict every single one of the arguments summarized above; and—unfortunately for our libraries—they are formulae which sound almost equally plausible. Thus, for example, it can be argued that:

A. Entirely new subject fields may be developed, fields so important in the volume of their respective literatures as to wipe out completely any advantages gained by decreases in the output of other

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fields. (Take aviation as an example: forty years ago there was practically nothing; today there is a veritable deluge of book, pamphlet and periodical materials.)

B. Although it is true that we may, after a while, have no new geographical areas left to collect from, it is entirely possible that we may be offered new geographical sovereignties and such new sovereignties will be, from a publishing—and so from a library—standpoint, to all intents and purposes, new areas. Europe, for example, was actually no larger in area in 1920 than it was in 1910; but the number of its independent countries had been almost doubled by the first World War. And that doubling in the number of its countries meant, not only new languages and new literatures which sought, and received, publishing expression; but also whole new sets of government documents, of new society publications, of new periodicals, etc. The total publishing output of Europe nearly doubled between 1910 and 1920. Or, to take another example, New Guinea is now little more than a name on the map; but, not impossibly, thanks to air conditioning and to advances in tropical medicine, it may, a century hence, be another Japan or Australia in population, in culture, and in wealth, with all—book-wise, and so library-wise—that that development in population, culture, and wealth would mean.

C. It is true that the cultural level of the world may ultimately approach a theoretical optimum,

that optimum being reached, of course, when every world inhabitant has become an "intellectual," i.e., a regular book and periodical reader and user. But, obviously, that optimum lies still far off in the distant future; and, before it comes to pass, there are bound to be enormous further increases in the world's book and periodical outputs—increases which libraries must somehow find ways to absorb.

All of which resolves itself into this: as an intensely practical matter librarians and educators cannot look to the outside world for any solution of their problem of research library growth. If they do, they are surely going to be overwhelmed. They must find a solution themselves.

## CHAPTER 2

### WHAT DO WE MEAN BY "RESEARCH LIBRARY"?

THIS problem of library growth has been referred to as the problem of one particular kind, or type, of library, of what we called "research libraries." It is not a problem of "public libraries," for example (except a few great public libraries, like the Boston Public and the New York Public, which are also great research libraries). Nor is it a problem of most college libraries, although a few of them also are—in the curricular fields which they cover—research libraries. Most of our great research libraries are university libraries. Finally, we must always bear in mind that research libraries do not have to be large: there are many highly specialized research libraries; and highly specialized libraries are, naturally, small.

Nevertheless, when a librarian sees the phrase "research library," it brings to his mental vision a rather definite concept. What he sees is a vast aggregation of all sorts of book and periodical and manuscript materials, assembled together, not for sustained, or for pleasurable, reading—indeed, in a sense, not for reading at all—but for "research,"

that is, for the purposes of scholarly investigation. Research libraries are, primarily, the stored-up knowledge of the race, warehouses of fact and surmise, in all their forms and infinitely remote ramifications, the raw material from which our humanists and our scientists are going to develop later new facts and fresh surmises. Research materials are in a sense the building blocks of civilization; and the storage element in the function of the research library—just the sheer holding of book and periodical materials, not for any immediate use at all, but for some possible, and possibly very remote, future use—is an extremely important, but not always very well understood, part of that function.

But, in order clearly to understand the various sub-problems into which this problem of research library growth divides itself, it is desirable that we know a little more definitely what we are talking about. What do we mean when we say “research materials”? Into what main classes do they divide themselves? What are their outstanding characteristics, characteristics, that is, which they have in common?

One basic distinction very commonly made between research and non-research materials is the line drawn between primary and secondary, between books which are a first publication of observed or recorded or deduced fact, and books which are merely rewritings of such first-hand publications. All “popular” books, that is all books



written for that hypothetical person known as the "general reader," are secondary in their character.

In every library certain broad categories of material at once divide themselves—with many individual exceptions—into primary and secondary. Most *Government Documents*, for example, are primary material, the basic stuff of research for those disciplines having to do with history, economics and government, and also for certain of the sciences, notably geology and biology. Only a small proportion of documents (such popularizations as the "Farmers' Bulletin" series, for example) are secondary in character. *Periodicals* are either primary or secondary, depending on whether they are intended for the general reader or for the specialist in any given subject field. In our mind's eye the former may loom larger, because every day we see more of them; but, in number of titles, special-subject periodicals outnumber general ones a hundred to one. *Newspapers* perform a dual function. As current publications they are obviously for the general reader; but, when they are held, bound and indexed, they acquire research value in many directions. *Theses*, in any field, are—or, at least, are supposed to be!—primary material. They also represent starting points for the development of further primary material.

Most laymen, when they think of a "library," think of it as a collection of what might be termed "miscellaneous books" (as opposed to such specific

categories as those mentioned above—newspapers, theses, periodicals, documents, etc.). As a matter of fact, "books" are almost of minor importance as a part of the contents of a great research library. And the reason for this is that the vast majority of "books" are not of research calibre: they are secondary in character, rewritings of original source material. Literature is the most important single exception: in this field the most important primary material consists of "books," i.e., the texts of a literature, whether these texts happen to be new fiction published last month, or medieval poems reprinted by the Early English Text Society. Commentaries on these texts also have research value. In literature and in history periodicals play a far less important role than they do in the sciences; and, in literature, government documents seldom play any part at all.

Of course, to all of these broad allocations there are many exceptions. For example, although nearly all biography is secondary, autobiographies, personal memoirs, and collections of letters have primary value. Most historical texts are secondary; but the work of certain historians may be so searching and so perspicuous as to acquire research value even though secondary in form. (And this last statement is equally true of secondary writing in any subject field.) Furthermore, for some special types of research, even material that is normally hopelessly secondary may acquire research, or primary, value of the first importance, as, for example, old

school text-books in a critical study of teaching methods.

Persons not familiar with the needs of research have at times become good-naturedly critical of the insistence of the truly scholarly library that almost every sort of printed material may have, for some one, at some time, research value; and that, accordingly, libraries are under a profound duty to scholarship to preserve it, no matter how remote that value may seem. What these critics do not fully appreciate is that none of us is wise enough to know whether the value in question is a really remote one or not.

In a revealing paragraph Professor Pierce Butler, of the University of Chicago, points out \* how the humanist's methods of work require exactly these sorts of apparently almost useless materials. He advises American librarians to study these research methods, and he goes on: "In particular American librarians should study in detail why it is that American humanistic research workers must go abroad so frequently to pursue their studies. Case studies of this cultural phenomenon will reveal that, contrary to the ordinary opinion of librarians, it is not to get access to primary source material. A few go to study unpublished manuscripts, but a far greater number go to examine what American librarians regard as obscure and trivial material. The

\* Pierce Butler, "The Research Worker's Approach to Books—the Humanist," in "The Acquisition and Cataloging of Books," edited by William M. Randall, 1940, p. 280.

advanced student of Shelley, for example, does not go to the British Museum to study the texts of Shelley's own publications. We have an abundance of these—far more than we really need—including even the rarest items. But we do not have, and we are making little attempt to obtain, the great mass of third- and fourth-rate novels, poetry, plays, schoolbooks, sermons, and political pamphlets that were popular in Shelley's period. Yet the student of Shelley must expose himself to those books if he is to get the subjective feel of Shelley's background. Again we do not have the lesser periodicals, ephemera, obscure society publications, etc., which preserve all sorts of recollection and memoranda where Shelley is to be seen as a specific human individual and his personality is revealed by its reactions to the fads, enthusiasms, frivolities, attractions, and antipathies which make up the quintessence of life's subjectivities. It is use of books such as these—intimate, personal, and even trivial—that gives its distinctive character to humanistic investigations. And until American librarians learn to recognize their functional significance the American library system will be unprepared to minister competently to humanistic scholarship."

But—and this is a very large "but" indeed—unquestionably correct though Professor Butler is in his main thesis, the fact that, somewhere, even the most esoteric of trivia ought to be preserved for possible future scholarly use, does not by any means imply that every thing needs to be preserved

everywhere—and certainly not in its original form. It is exactly here that cooperation, restraint on collecting omnivorousness by means of a division of acquisitional fields, and reduction of bulk through economies in other directions, are so urgently called for.

So much then for the broad classes, or categories, into which research materials divide themselves. What characteristics do they have in common?

One of the most important of their common characteristics—and it is a characteristic which, as we shall see, is of great practical importance—is the one already alluded to, namely that they are, broadly speaking, and somewhat paradoxically speaking, *not read*. Indeed, very frequently the research worker wants merely to make a “reference” use of his materials; he wants to verify a date, to find a chemical formula, to check up on the terms of an equation, to note the exact phraseology used in a legal decision, to review a psychological reaction, to obtain a map, to find an anatomical drawing.

The second characteristic common to all research materials is that—again generally speaking—they are comparatively little used. The simple law of averages would of itself make this true. A given university may have nine thousand students of undergraduate grade, as against one thousand of graduate calibre. But, when it comes to the books in its libraries, 100,000 volumes of them may service, and service very well, its entire undergraduate requirements, while its remaining 900,000 volumes

are being held solely, or almost solely, for graduate and faculty use. This works out, at the start, to an almost hundred-to-one ratio; that is, in that university, on the average, undergraduate books get a hundred times as much use as research books.

When we examine sample bits of research material we see at once why its use is slight. Research workers are always working on intellectual frontiers. They are continually pushing keen observation, shrewd guess, and brilliant deduction out into the black Unknown Country of the Mind that surrounds on every side the little half-lighted spot that we call "civilization." We all know that frontier lines—*any* sort of frontier lines—are far flung and thin and remote. The frontier lines of the mind are no exception. Already they have become so remote, and so thin, that no one is able to be familiar with, or even to understand the terminology of, any more than one small segment of them.

The book and periodical materials in our research libraries are nothing more or less than the concrete embodiment of these frontiers of the mind: in fact, in a very real sense, they *are* the frontiers. And each year, as new research pushes the lines out farther and farther, and as they so get stretched thinner and thinner, the use of each segment of the line, that is, of each section of our library research materials, tends—and must tend—to get steadily less. Indeed, one can go so far as to say that, if something that we had previously thought was research material is being frequently

used, that very frequency of use proves that it has ceased to be research material!

The third characteristic common to all research materials is that they are used—and that they can be used—only by those who have gained a certain level of intellectual competency, that is, by those whom, for want of a better word, we call “scholars.” And this exclusiveness of appeal that surrounds all research material goes vastly further than merely a differentiation of scholars from the unschooled mass of the population. Each scholar, as was suggested a paragraph or two above, is, in turn, competent—that is thoroughly competent—only in the use of his own very special materials. Few scholars can even so much as understand the meaning of research materials in fields beyond their own narrow periphery. (Only of the librarian is there assumed a sort of intellectual omniscience—of course in vain!)

But what librarians have, perhaps, not always sufficiently realized is that, just because the users of research material are on a different intellectual level from all other library users, they require a quite different sort of library service, a service developed from a quite different library methodology. The cataloging that is best for callow undergraduates is not at all the best for full professors. The binding that is necessary for books used for reserve reading is not at all the best for rare, or for rarely used, research materials. The shelving techniques used in a browsing room are not, necessarily,

the most effective ones for a research library's stacks.

All three of these characteristics—relatively short use, relatively infrequent use, relatively high specialization in use—should be constantly kept in mind in the discussions that follow. To those familiar with research materials they are obvious. But, just because they are, they have tended to be overlooked; and the overlooking of them in the past has frequently complicated, quite unnecessarily, a good many library problems.



## CHAPTER 3

### THE FOUR MAIN FACTORS OF THE GROWTH PROBLEM

THE library growth problem is a problem, of course, primarily because it costs money, a great deal of money. Every volume added to a library involves it in so much additional expense. This added expense divides itself into four main parts: 1. *acquisitional cost* (i.e., the original *purchase cost* of the books and periodicals which the library acquires, together with the expense involved in acquiring them); 2. *physical preparation for use* (i.e., *binding* in those cases where binding is required, plus certain other minor accessory operations such as plating, back-strip marking, page cutting, etc.); 3. *bibliographical preparation* (i.e., what we call *cataloging*); and 4. *storage* (i.e., the shelving and maintenance of material after it has been prepared for use).

To gain a rough idea of the relative importance of these four main categories of cost, the figures of the Wesleyan University Library \* may be inform-

\* One of the few research libraries which has attempted exact cost accounting, and the only one which, in its cost figures, has included overhead as well as direct costs, and has kept its costs over a long extended period.

ative. They are (average per volume): 1. acquisitional cost \$.95; 2. binding (and all minor physical preparation) cost \$.40; 3. cataloging cost \$1.05; 4. storage cost (capitalized) \$.75; or a total, per volume, cost of \$3.15. As averages, these figures are reasonably trustworthy. Of course all of them will vary somewhat as between this particular library and any other; but it is probable that, if cost figures were available for our hundred largest research libraries, their averages would agree fairly closely with those just quoted. Each one of them requires, however, some further explanation.

Most laymen, if they had never seen any figures of library cost, would probably think that "purchase cost" was the main expense incurred in adding a book to a library. That it is not the above figures make clear. There are several reasons why; but by far the most important one is that a large proportion of the books which a research library receives it gets gratis. Over the last twelve years Wesleyan, for example, added, on the average, about sixteen thousand volumes a year. Of these it bought only about four thousand. And, of these four thousand, only a little over half were books which it bought in the ordinary sense of the word. The other half were books which it obtained by binding up periodicals which it had subscribed for. Besides the four thousand books which it bought, the Wesleyan library received, on the average, seven thousand volumes a year as gifts from its alumni, about a thousand volumes by exchange with other libraries.

and four thousand volumes as gifts from other sources, viz. the documents of all sorts of government bodies, the reports and bulletins of associations and institutions, the transactions of learned societies, the publications of colleges and universities, free material sent out by commercial firms, etc., etc. The 2,200 "books" which it bought cost it on the average slightly over \$2.90 each. The 1,800 volumes of periodicals which it "bought" cost it (that is their subscription cost only, not their binding) slightly over \$4.90 each. It is when these two purchase costs are averaged with the cost of the twelve thousand volumes that it received free that we arrive at its net *average* purchase-cost of ninety-five cents a volume.

Over the original cost of such of his materials as he has to buy the librarian has only a relatively slight measure of control. He may try to spend his book funds economically; and most librarians do. But he has to buy in an open market, in which prices have, for a variety of reasons and with only very minor and very transient declines, risen steadily for many years. Book and periodical prices depend mainly on manufacturing costs; and, in book manufacturing, by far the largest single factor is labor. Since printing wages in this country have advanced over 150% in the last thirty years, nothing that the librarian could do prevented a correlative rise in the cost of the books that he bought.

Binding costs fall into somewhat the same category as book purchase costs. Over them, as such,

the librarian has little control. A few libraries operate their own binderies; but this is almost always done for service reasons, rather than with any expectation that it will reduce binding cost. Both binding labor and binding materials have risen greatly during the last three decades; and binding costs have, of necessity, risen correspondingly. In Wesleyan's bindery—for Wesleyan happens to be one of the libraries which does operate its own bindery—the cost of binding, average per volume, was around \$1.50. This is a rather high per-volume figure—due to the fact that Wesleyan's binding consists very largely of the binding up of periodicals, a relatively expensive sort. (But this fact is equally true of other research libraries.) That Wesleyan's actual average binding cost is only twenty-five cents a volume is due to the fact that it is called upon to bind only one book out of every six that it acquires. The rest come in already bound. (Minor physical "processing" costs, which are here included in "binding"—work which has to be done on all books, whether they come in bound or not—add the other fifteen cents per volume.)

When we come to the third category of library cost, cataloging, we come to the one over which more ink has been spilt than over any other. To the layman cataloging is an esoteric, and indeed an almost inexplicable, process. He reads such figures as those cited above—\$.95 as the average purchase cost of a library book, and \$1.05 as the average cost of cataloging it—and is profoundly puzzled. Some-

how this relationship doesn't seem right. Some librarians have been known to advocate throwing out certain books, or certain whole classes of books, for no reason whatever except that "it would cost so much to catalog them." This does sound a little curious, doesn't it? What these librarians were really saying was this: "We advocate depriving the users of our library of *all* opportunity to use certain rarely used books; and we advocate this because the machinery which we have devised to make their use of books easier has become so complicated, and so expensive, that we cannot afford to apply it to the books in question."

Many thoughtful librarians are admitting that there is something wrong with our present cataloging picture. Yet they are not at all agreed as to what is wrong; and, even when they are, they are not at all sure what ought to be done to correct it. At one extreme are those who refuse to admit that present cataloging costs are—relatively speaking—excessive. At the other extreme are those who not only believe them excessive, but have reluctantly come to the conclusion that nothing less than a fundamental change in our cataloging approach will meet the growth situation we face.

One difficulty about library cataloging is that librarians have not yet been able to agree on what, fundamentally speaking, it is for. When one faces the bulky mass of minutely ramified cataloging "codes" that catalogers have been patiently building up over the last eighty years, and examines the

imposing body of scholarly precedent and dogma that guides them in their work, it may sound absurd to assert that they are not yet agreed as to what they are trying to do. But it is a fact none the less. As Arthur Berthold puts it: "We have a remarkably well developed professional technique, but hardly any professional philosophy. We are still in the dark as to the meaning of our work."

Just what is this basic disagreement among librarians as to what a library catalog is for? There are two schools. On the one side are those catalogers who look upon the catalog as an end in itself, who say that it is a reference tool in its own right, a tool which conceivably would be of great use to research workers even if no library existed behind it at all.\* On the other side are equally great cataloging authorities who say that this concept is all wrong; that a catalog has no excuse for existence except to provide a means to an end, that end being to put a library user in touch with the book that he seeks.

Dr. E. C. Richardson, then the librarian of the Princeton University Library, thus once defined the function of the library catalog: † It is, he says, "to connect a reader surely and promptly with the book that he wants to use." And he adds: "Everything in cataloging which is not necessary for that purpose is a luxury." Professor Harvie Branscomb, then librarian of Duke University, in a recent book

\* For this view see U. S. Library of Congress, "Report of the Librarian of Congress," 1935, p. 241.

† Ernest C. Richardson, "The Curse of Bibliographic Cataloging," in his "Some Aspects of Cooperative Cataloging," 1934, p. 1.

from which we shall have occasion to quote further a little later, puts this same idea in these words: \* "Catalogs were created to inform readers what books the library possesses and where they are. Their basic purpose, in other words, is to serve as finding lists." But the catalogers of the opposition school, the "bibliographic catalogers," immediately point out that Dr. Richardson has qualified his own definition when he admitted into it the two question-begging words "surely" and "promptly." For, they say, it is only by means of that exact and elaborate "bibliographic cataloging" which they insist is necessary, that a catalog can give the reader his information with "surety" and "promptitude."

Here, as in so many similar cases, what both sides forget is that all qualitative terms are relative, not absolute. What Dr. Richardson meant to say was, undoubtedly, "with as much surety and promptitude as it is possible to secure at reasonable cost"; and what the bibliographic catalogers really want is exactly the same thing! They both know perfectly well that no amount of cost will ever bring absolute accuracy in cataloging. Their real point of disagreement is this: *how much cost* for cataloging is, all things considered, a "reasonable" one? In other words, their whole controversy boils down to specific figures. The "bibliographic catalogers," in effect, assert that we can properly afford to spend as much to catalog a book as it costs to buy it in the first place. The "finding-list catalogers," critics of

\* Harvie Branscomb, "Teaching with Books," 1940, p. 224.

such ultra-expensive, "bibliographic" cataloging, say that to spend *that* much shows a warped sense of proportion.

As has already been suggested, there is one factor that librarians, in their discussions of cataloging cost and adequacy, have failed to take sufficiently into account, namely the kind of patronage for which the catalog which they are making is intended. In any very large research library it may be ventured that half, or nearly half, of all the use which the catalog gets is a use, of one sort or another, made of it by the library's own staff. The acquisition department uses it, in checking against duplication in ordering; the cataloging department, in doing further cataloging; the binding department, in collating holdings; the reference department, in compiling bibliographies (and in many other ways); the inter-library loan department, in searching wants; etc. And it may be further ventured that it is mainly *this* use—by the library's own staff—which is very much aided by a catalog which is a bibliographical tool. It is the outside user of the library who is more likely to find the "finding-list" type of catalog, in most cases, reasonably adequate.

But, even if the statement made in this last paragraph should be true, it should not be misconstrued. It is *not* intended to be an advocacy of "finding-list" cataloging. My own feeling is that this whole "theory of cataloging" controversy has been a *hunting for economy in the wrong direc-*



tion. Simplified cataloging (i.e., "finding-list" cataloging), even though it be carried just as far as it is possible to carry it, will save us relatively little. At the same time it will deprive us of information which, while it may not be essential, we can ill afford to lose, because its omission will be not unlikely to cost us, in other directions, as much as the savings which it succeeds in effecting.

It should also be emphasized, before we go further, that the fact that our present cataloging costs are over a dollar a volume is not the fault of our catalogers. They do the work they are called upon to do with far more than average efficiency. Laymen are very far afield indeed when they conceive of cataloging as being nothing but a copying off of title pages on cards. If that were all that it is, it wouldn't cost a dollar a volume to do it. Also there would be no cataloging profession. In practice the cataloging of many of the most innocuous looking of books bristle with very genuine bibliographical difficulties. Any one doubting this statement has only to glance over a few pages of the last edition of the official "Cataloging Code." The result would probably be the acquirement of a new respect for cataloging and catalogers. No, the *impasse* that cataloging is in does not lie at the door of those who are doing it: it lies higher up.

But this is not to say that savings—and very material savings—in cataloging cost are not possible. They are. But they lie, not in any revision of the details of our cataloging rules, but in the elimi-

ation of our present duplication of cataloging work. We must try to develop some way to stop our present recataloging of the same book a thousand times in a thousand libraries. If we could eliminate that, then we could retain on our catalog cards every scrap of the "bibliographic" information that we find useful there—and might even add more—and yet cut our present dollar-a-volume cataloging cost down to a very few cents a volume. This is the sort of cataloging saving that is worth going after.

We now come to the fourth factor in library growth cost, book storage. It doesn't bulk as large in dollars and cents as some of the others; but it is the most spectacular, for it is here that doubling every sixteen years becomes tangible and visible. Yet, of all the four factors of cost, storage has always appeared, to both librarians and administrators, as the most nearly irreducible one. To say that, in some way or another, cataloging cost can be reduced sounds plausible. It sounds at least theoretically possible in some way to cut binding cost. But book storage cost is something else again. A book is a very solid bit of substance. It takes up definite room on a shelf, and it isn't compressible. Nor can any particular economy be effected by providing storage on a mass production basis, for two books of the same size take just twice as much space as one. That is why possible savings in storage cost have not yet received the study they deserve.

## CHAPTER 4

### PAST ATTEMPTS AT SOLUTION— “WEEDING OUT”

WHEN a librarian comes to the administrative officers of his institution, or to his board of trustees, pointing out to them that his library is, or soon will be, in pressing need of more stack space, he is practically certain to get, from at least one of them, this suggestion: “Why don’t you weed out? You admit that a lot of the books in the library are very seldom used: if that is the case, why do you keep them?” Nor does this suggestion come only from laymen. Only a few months ago one of our leading educational journals reprinted an address on “The Future of the College Library” by the president of a well-known mid-western college. In it he said: “We can’t afford to build a new library building every twenty years . . . What can we do? We can cull, we can weed, we can keep . . . at some reasonable figure, say fifty thousand volumes.” In this chapter an endeavor will be made to show that “weeding out,” whatever else it may be, is not in any sense a “solution” for the problem of growth.

In practice most “weeding out” proposals confuse the problem of library growth with two closely

related questions: "Should college libraries for undergraduates contain research materials?" and "If they do, cannot they treat such materials as 'revolving collections'? Can't they discard old books as fast as new ones come in?" Let's try to clear the ground by answering these two questions first.

A few years ago Dr. Harvie Branscomb, then the librarian of Duke University, published his notable study of college libraries, "Teaching with Books," which has been already referred to. Because he wrote under the auspices of an association, not of librarians, but of college administrative officers, and, because he was himself not a librarian by profession but a previous teaching member of the Duke faculty, he brought to the library problems which he discussed a stimulatingly fresh viewpoint. He began, it would appear, pretty fully accepting the idea that a college library is under no obligation to acquire, or to hold, research materials, for most college libraries do not do this. But, after visiting some of our colleges along the northeastern seaboard, he was puzzled.

Specifically he says: "Research materials. To what extent should the college purchase these? Certainly the thesis that research is a function of a university, and not of a college, cannot be admitted, since investigation and inquiry are essential to any faculty if it is not to become stale. On the other hand, research collections are enormously expensive, both to secure, to catalog, and to house." What he finally concludes is that most colleges will have

to limit their desires for research materials, and will have to depend upon the generosity of other libraries for what they need. But he admits that "there is no easy solution" to this problem; and feels that cooperation among neighboring libraries is perhaps the most promising way out. He also considers it "practical and fair" to make a distinction "between research materials which will serve a number of readers and those which will be used almost entirely by one individual"; and concludes that every college library, even those giving no graduate work, ought to buy "basic research materials . . . as far as funds permit."

But does even this modified concept of "college library" go far enough to fit all cases? Dr. Branscomb admits that it is necessary to provide some research materials for faculty members: but he says nothing about providing them for graduate students, simply because he does not feel—perhaps quite properly—that graduate students have any place in a college. And yet some colleges do have graduate students; and others—a further complication—have "honors students"; that is, students who are not doing real research work, but who are, to some extent, using its techniques, and, in any event, are making constant use of its materials. At Wesleyan our (relatively few) graduate students use nearly two thousand volumes each year, our honors students about six thousand volumes a year. Because these volumes are used for research, or quasi-research, they are highly specialized—which

means that most of the eight thousand titles that are being used this year are not the eight thousand that were used last year, nor are they the eight thousand which will be used next year. Wesleyan has never felt that it wanted mainly to "depend upon the generosity of other libraries," either for these eight thousand volumes of student research material borrowings every year, or for the ten thousand volumes a year of research materials which its faculty charges out.\* It has therefore found it necessary to build up for itself a very considerable library of research materials. And it has done this despite the fact that it is, avowedly and frankly, only a "college." Nor is Wesleyan in any sense unique in this. Exactly the same situation exists at Amherst, Wellesley, Bowdoin, Swarthmore, Williams, Vassar, Mount Holyoke, Smith, and a score or more of other colleges of the same general size and type. So much for question one.

Now for question two, and for the fallacy behind it—for there is a fallacy behind it—the idea that college libraries, even if they do feel that it is necessary for them to acquire a certain minimum of research materials, can, nevertheless, by some sort of a continual "weeding out" process, keep themselves at a "reasonable" fixed point, keep themselves "revolving collections," never growing any

\* Since Wesleyan's is an "open access" library, these figures cover only books which were taken out of the library building, and so were "charged" to their borrowers. They take no account of those volumes—perhaps three or four times as many in number—which were used within the library, and of which no statistical record was kept.

larger. This idea surrounds itself with a certain aura of plausibility. Why then do *all* college libraries, large and small, keep right on growing, and growing fairly rapidly? In the last twenty years half a dozen brand-new colleges have started out sternly resolved to make the "revolving collection" theory their library policy. Not one has succeeded.

The rock on which the revolving-collection, fixed-number-of-volumes theory always founders is what the librarian calls "continuations," i.e., periodicals, government documents, society transactions, and the like. These continue to grow indefinitely; and, for any library having them, that growth is unescapable. To a large degree "miscellaneous books" can be eliminated; they can be thrown away, and replaced by newer ones (although, even in their case, elimination is hedged about with many practical difficulties; and, despite theory, there always results, in practice, a steady, if slower, net growth). But there is no practicable way by which a library can cut off the lengthening of its sets of scholarly "continuations." It is impossible to discard the earlier volumes of the *Early English Text Society* and *Hansard* and the *U. S. Geological Survey Bulletins* and *Chemical Abstracts* just because later volumes are coming out; for, if the library needs any volumes of these sets—and of a thousand other similar sets—it needs all of them.

The result is that no library, large or small, which takes material of this sort—and it can't do effective teaching at even the college level unless it

does take it—can help growing larger. No librarian with any practical knowledge of college library administration would undertake to keep any college library at a fixed size, and, at that size, to maintain its scholarly quality. (In fact, if he were really experienced, he would not even undertake to keep it at a fixed size!) He would know that he was being asked to do the impossible.

But there is an even broader reason why "revolving collections" are impossible: the basic reason that makes all research libraries grow is the fact that human knowledge is continually growing in volume, and there is no way for libraries to escape the result of that growth. For popular consumption knowledge can be, to some extent, omitted or digested or condensed. But, for scholarly use, we can omit and condense and digest only within very narrow limits indeed: every scholar wants to do his own omitting and digesting. Furthermore it will be noticed that over the decades our popular reference books—our dictionaries, cyclopedias, and the like—also get steadily larger.

But there is another question—and a very practical one—which colleges of the Wesleyan, Amherst, Vassar type would have to answer should they decide to cease holding research materials. Suppose that Wesleyan, for example, did decide to "weed out," decided to fall back, for such research materials as it might thereafter need, upon "the generosity of its neighbors." The question it would then face might prove an embarrassing one:



"Which one of my neighbor libraries shall I pick to be my 'generous benefactor'?" For would that neighbor be able, and willing, to oblige? And particularly would it be able and willing, if all of Wesleyan's sister colleges decided to follow its lead and also become "revolving collections"—and seekers after a generous benefactor?

Last of all, borrowing instead of owning is not always even an economical policy. A vast amount of research material—many government documents and society publications, for example—may be had free of charge. And, even though this free material involves cataloging and storage costs, it must be remembered that inter-library loans also cost money. Indeed, in some cases, the cost of borrowing a given volume is about as great as the cost of possessing it. At present the cost of making an inter-library loan runs from \$1.00 to \$1.50 per item. This is unnecessarily high. But, even if it should be cut in half, the borrowing of twenty thousand, or more, research volumes every year would involve, for any college library, a substantial expense. In the case of rare and expensive items borrowing offers a library real help; but it is no panacea; it has its limitations.

There is another fallacy—less wide spread, but almost as tenacious—the fallacy that a research library does not need to aim at completeness in the special subject fields that it covers, but may be *deliberately* "selective"—and still continue to be a true research library. Yet, when one thinks about

it, it is easy to see that the very phrase "selective research library" is a contradiction of terms. In practice, stern financial necessity forces every research library to be "selective." But this sort of selectivity is a quite different matter. Every faculty, provided with the most important periodicals in its fields, *wants* the next most important ones. To think that one can create an ideal research library out of a selection of the "best" books in the fields that it covers is to be completely unaware of the true character of research materials. The geologist developing an ecological thesis doesn't want a "selection" of "the best" state geological bulletins: he wants—and quite properly wants—all of them. The historian doing research in the American Civil War doesn't want a few of its better written regimental histories: he wants all of them, for, in even the poorest ones, there may be vital facts recorded nowhere else.

So far we have discussed the research material problems of small libraries, college libraries. But the problem we are now considering is not primarily their problem at all. What we want to know is whether our great research libraries can find in "weeding out" any solution for the problem of growth.

It has been perfectly evident that, lying behind every suggestion that college libraries might "weed out," there has been a tacit assumption that they could do this because they could find some larger library ready and willing to provide their faculties

storage where the material is still available for use. Nor does it mean the weeding out of inter-library duplicates under some cooperative arrangement by which adequate copies of items are retained for joint use. It means a complete discarding, a unilateral weeding out, done entirely to serve self-interest, a weeding out consisting of the elimination of material—*and nothing more.*

## CHAPTER 5

### PAST ATTEMPTS AT SOLUTION— ECONOMIES IN METHOD

ALL attempts which have been made to solve, rather than merely to evade, the problem of research library growth have taken one or the other of two directions: they have endeavored to effect economy in the individual library by a reduction in the cost of some part of its own practice; or they have endeavored to effect economies in all libraries, or in a group of libraries, through the introduction of some sort of cooperation among them.

We have already remarked that most of the attempts so far made to effect economies in method have been made in cataloging; and that, despite this concentration of effort, the net accomplishment to date has been almost nil. The reason for this small success is not far to seek. Despite the criticisms of present cataloging practice offered by the "finding-list" school of catalogers, most of the information now on our catalog cards has been put there because it has proved useful to have it there. Furthermore—unfortunately—the items that are less essential happen to be the least expensive ones. The most important part of the whole cataloging

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process is what catalogers call the "determination of main entry," that is the deciding upon, and the securing of full information regarding, the name of the author (or the quasi-author) under which a given book is to be given catalog entry. But this part of cataloging is also the most time-consuming and the most expensive. In such cataloging matters as the details of pagination collation a few economies might be possible; but the trouble is that the total saving so made would be, at best, insignificant.

And what is true of cataloging is to a large degree true of the other routines that make up accepted library practice. Many libraries have been able to cut their acquisition costs materially by the introduction of some form of "multiple-slip" order system. Other libraries have cut their bookkeeping costs by the introduction of columnar ledger bookkeeping; have cut circulation costs by installing charging machines; have used Hollerith cards in various of their routines; have simplified binding records, and developed cheaper binding methods. And all of these things help. A few cents gained here, and a few there, when they are multiplied by hundreds of thousands of items, do count appreciably in a library's annual budget; and some libraries have saved many thousands of dollars a year by just such so-called petty economies. It is only when economies of this sort are matched against the "doubling-every-sixteen-years" handicap, that they look so inadequate as to seem almost futile.

With the fourth cost category, storage, there is a different situation. Although, as was previously remarked, the cost of "doubling" becomes most quickly apparent here, attempts to reduce storage costs meet with difficulties. For one thing, unfortunately, book storage costs never appear in any library budget at anything like their true value. Book storage costs depend directly on building design and construction; and, if an accurate accounting of them were the rule, there would be brought to realization a large amount of past error in building, which, because it is now buried and unrecognized, is repeated over and over again, not only in one library building after another, but even in successive additions to the same library building.

A large number of existing research libraries have very high book storage costs. This is not due to any fault of their administrators, but to the fact that they are saddled with unnecessarily expensive stacks. They may be expensive because they are stacks which were excellent when they were built but are now antiquated; or stacks which are of recent construction but poorly designed; or stacks which were well designed but built of unnecessarily expensive materials. Over building factors of this sort, vitally important though they are in the picture of storage cost, most librarians have little, if any, control. Either they are faced with a *fait accompli* when they come to a given library; or, if new stacks are built during their own administrations, they are not unlikely to find themselves



asked to sacrifice library efficiency to architectural appearance, or to a desire to combine library functions with foreign and perhaps inimical functions, or to a desire to effect really short-sighted economies. Any one of these sacrifices may add greatly, and permanently, to a library's storage cost without those responsible for the decisions involved having the slightest idea of their real cost effect.

It may be objected that the statement made at the start, that comparatively little study has been made regarding the possibilities of meeting the growth problem through greater economies in book storage, ignores the so-called "storage warehouse" movement. It does not. In this respect the "storage warehouse" is deceptive. It is true that, for the particular library which resorts to it, a storage stack building may provide more economical storage than its own present library stack does; but, if this is the case, it is due to no magic in the phrase "storage warehouse," but simply to the fact that the warehouse stack has corrected mistakes, or waste, which existed in the design, or the location, or the materials, of the original library stack. Just as "weeding out" offers no real "solution" to the problem of library growth, so book storage in a warehouse stack does not. (That is, it does not if the warehouse is one built by an individual library for its individual use. If a *cooperative* element enters into the planning and administration of the warehouse the picture is entirely altered. For the warehouse then becomes a species of "regional li-

brary," that is, a form of inter-library cooperation, And if, as such, it is properly integrated into the economy of its respective parent institutions it may effect very genuine saving for them.)

The theory behind the storage warehouse *per se* (i.e., one for a single library) is that a given educational institution shall build, somewhere at a distance from its library building, in a location where there is adequate room for growth, and where functional efficiency rather than exterior architectural appearance may be made the controlling factor in its design, a book stack building, planned and built to be simply an efficient book stack building. The growth pressure upon the institution's library building is then to be relieved by culling out of it, and moving into the "warehouse" building, its "less-used" books. There is a certain plausibility about this suggestion; and, of late years, as growth pressure has begun to become really acute, it has received considerable attention from librarians and university administrators. The only large warehouse so far built,\* however, the interesting one for the Boston area, planned and organized under

\* Although none of them involve buildings which are actually "storage warehouses" in the true sense of the word, the removal of most of the books of the Columbia University Library from the Low Library to South Hall, of a large portion of the books of the Library of Congress from the Library Building to its Annex, of a part of the materials of the New York Public Library from the Library building to loft building storage, are all manifestations of what might be called the "storage warehouse" trend, i.e., the taking of some of their books out of monumental and ultra-expensive library buildings, and the putting of them into new library buildings designed and built to secure more nearly maximum working efficiency.

the persuasive guidance of Mr. Keyes Metcalf of the Harvard Library, does not fit into our present discussion because it is a cooperative one.

The reason that any *single library* "storage warehouse" is a tacit confession of past failure to correlate architectural design and location with function is that there is but one logical and truly efficient place to store a library's books; and that place is in the library building. From the standpoints of both administration and use that is where they belong. And there is no valid reason why it should cost any more to give them there the adequately lighted and heated, fireproof storage that they need, than to give them the same adequately lighted and heated fireproof storage in some other similar building located ten miles away. It should cost less; for storage in two locations, one of them remote, however well planned, is bound to mean *some* duplication of operating expense and *some* loss of service efficiency. It is always true that, if stack storage in the library building costs more than stack storage in the remote location, it is because the library has had saddled upon it costs which had nothing whatever to do with its own efficient functioning. All that any single-library storage warehouse does is to change the *situs* of its library's growth; and merely changing the *situs* of its growth does nothing, of itself, either to slow up that growth, to reduce its costs,\* or otherwise to soften

\* Except as land cost is involved. But, except in some great metropolitan center like New York, this factor usually plays a very small part indeed in total book storage costs.

the impact of any of the problems which it creates. Instead it, of itself, creates new expenses and fresh problems.

If, by moving books from a library building to its "annex" or "warehouse," we have at last found a way to keep the books *in the library building* "at a fixed point," we have done so simply by moving our doubling-every-sixteen-years growth-center to the warehouse. If this is true, then, ultimately and inevitably, the center of gravity of the library is going, some day, to pass to it. *It*, from now on, will grow; and to it, increasingly, the library's users will turn. This has already happened at Columbia University: it is in process of happening at the Library of Congress. Eventually, with all "storage warehouses," the original "library building" will remain only as an architectural monument, a show place for tourists, a vault for treasures (probably also, in the case of university libraries, a working library for undergraduates). The real "research library" of the institution, the scholar's working tools, will be housed in the "warehouse." Before long the greater part of the library's books will be there, and to it, as a result, he will want to go to do his work.

None of the statements made in the preceding paragraphs, however, should be misunderstood. To meet, now, some existing situation a single-library storage warehouse may be entirely defensible; it may, very possibly, be the best way out now of what would otherwise be a bad *impasse*. All that is

being pointed out here is that it is no "solution" of the growth problem. That problem goes right on just as it did before, only in a new location.

Some genuine economies in book storage are, however, possible. "Sizing" in storage, for example—i.e., arranging the books on the shelves by size—needs a great deal more study than it has received. A *complete* pre-sizing would probably save as much as 25% of all present book storage costs. On the other hand, if the library introducing it is now being operated on an "open stack" basis, such a complete sizing would be a source of annoyance to users; for, if the first classification of a library's books is one by size, it is obvious that its books on each subject will be scattered through the stacks in as many different places as there are sizes in its "size classification." Considerable economies in book storage are possible, however, without resorting to any such a drastic "sizing" as this.\* Some libraries do not at present "size" at all, although most of them do segregate their folios. Few, however, appear at present to segregate quartos—although this was the standard practice taught to the older generation of library school students. And

\* There are also other possibilities. We have been experimenting with one at Wesleyan which—if it is combined with complete "sizing"—will almost double the capacity of our present stacks. It will cost us something to install it: and we will not be able to provide quite as convenient service. But a saving of one half on our book storage cost seems to us a saving not lightly to be ignored. In our case it will increase our total storage capacity from approximately 480,000 volumes to 950,000 volumes—in the same stacks. This is the equivalent of a \$30,000 a year saving in storage cost. Such a possible saving seems to us worth some experimentation.

such quarto-segregation is well worth while; for it is the one or two quartos sticking up on each shelf of octavos and 12mos. that force libraries to have seven shelf stack sections where they might instead have eight shelf ones.

In exactly the same way that "weeding out" and "storage warehouses" are not "solutions" of the growth problem, but simply "confessions of avoidance," so any "savings" which any library effects by its failure, or its refusal, to do work which it ought to do are not genuine economies. Under this head come things like "savings" in binding cost which result from a deliberate refusal to bind material which really ought to be bound, and "savings" made in stack maintenance resulting from a failure to clean properly, or to provide adequate lighting, or to furnish sufficient supplies of book supports and shelf labels. None of these things are true economies: they are all nothing but transfers, or avoidances, or postponements, of cost. Some of them save in materials at the expense of higher labor cost; some of them transfer labor from the shoulders of the staff to the shoulders of the public; some of them are merely postponements of expenses, deferments which are going to come back later to plague a future library administration. They are mentioned here only to warn of their futility.

## CHAPTER 6

### PAST ATTEMPTS AT SOLUTION— INTER-LIBRARY COOPERATION

**I**NTER-LIBRARY cooperation has always offered more alluring vistas of economy than library methodology; and this despite the fact that some of the vistas quickly clouded over, some of them turned out to be mirages, and some of them, although they showed clear possibilities, showed, equally clearly, almost insurmountable difficulties.

Exactly what do we mean by this phrase, "inter-library cooperation"? There are some words that have gathered to themselves so many accretions of meaning, each accretion so rich in associations of its own, that the basic word has become almost meaningless. "Cooperation" is a word of this type. Until, therefore, in trying to apply it to library service, we narrow it, pin it down and make it concrete, it is, as mental currency, valueless.

Even as between libraries "cooperation" has taken on all sorts of forms. Of these, naturally, we are here interested only in cooperations between research libraries; and, out of all such possible cooperations, only in those which aim at solving their problem of growth. Or, turning our definition

around, and viewing it from another angle, we might say that we are interested only in those forms of cooperation between research libraries which endeavor to make the combined book resources of a group of such libraries available to all the members of the group. The ways by which this combining of resources are to be accomplished are more or less interrelated, sometimes actually overlapping. They group themselves, however, into three general categories, the first of which may, for convenience, be labeled "Union-Catalog Cooperation."

A "union catalog"—to define the term for the benefit of non-librarian readers—consists of copies of the catalogs of two or more libraries inter-alphabetized into one. Most existing union catalogs are "author catalogs" only. Practically all of them are on cards. With most of them there have been added to the cards "location indicia," that is abbreviated annotations which tell in which of the libraries represented in the union catalog a copy of the book cataloged may be found. In other words, union catalogs combine in one place exact knowledge of the books held by two or more libraries; and, by this centralizing of information, make it easier for library users to locate the material they are seeking.

The model and progenitor of all union catalogs is the one, national in its scope, located at the Library of Congress. This is endeavoring to make itself a complete author catalog, in one alphabet, of all the books in all the research libraries in the



United States. Financed originally by a gift of \$250,000 from Mr. John D. Rockefeller, Jr., it has been in process of accumulation and interfiling for about fifteen years. It has now some 12,000,000 cards; but it is still far from its goal.

The transient overabundance of W.P.A. funds a few years ago caused a rank and sudden blooming of what were called "regional" union catalogs, notably one at Philadelphia. These were intended to do for a given local area what the national union catalog was doing for the country as a whole. The Philadelphia catalog contains, in one author alphabet, copies of the catalog cards of nearly two hundred Philadelphia libraries. There are other union catalogs, smaller or larger in scope, at New York, Chicago, Denver, Seattle, and a number of other cities.

What are the advantages, and the disadvantages, of "union catalog cooperation"? Does it have an effect on the growth problem of its libraries? How, if at all, does it enable them to cut down on their growth? Union catalog cooperation has one advantage at the start: it infringes hardly at all upon local library autonomy and so is comparatively easy to introduce. Being a superimposed cooperation, it leaves each of its cooperating libraries unchanged, in both method and content. On the other hand, because it is superimposed, it is an added expense, and can, of itself, effect no economies.

What union catalogs really do is the thing already stated: by synthesizing access to their materi-

als they provide their users with a better library service. There are all degrees of synthesizing. It is possible to have a nebulous sort of "exchange of information" synthesizing without any union catalog at all. And union catalogs, in turn, may run all the way from one-copy ones (usually located at some one library of the group) up to their theoretical perfection point, viz. a book form union catalog, printed in a sufficient number of copies to give every cooperating library one or more. This last is "theoretical," however; for, although repeatedly advocated, no such union catalog as this, one in multiple copies in book form, has ever yet been made.\*

Because "union catalog cooperation" imposes no coercion; because no cooperating library needs to give up anything, or to add anything, unless it chooses to, it can effect no reduction in its own rate of growth except as, by a "self-denying ordinance" it chooses *not* to add to its own collection some book that it knows one of its sister libraries has a copy of that it can easily borrow. Union catalogs make that sort of self-denial very easy; but of themselves, standing alone and unimplemented in their conventional one-copy form, that is their sole effect on the growth problem.

And this is so slight an offset against their heavy cost that many librarians have questioned whether union catalogs—in their conventional form—are worth that cost. About the regional catalogs par-

\* Except small ones covering relatively narrow special fields.

ticularly \* have they felt that there was something premature, something not quite thought through. Many of these regional catalogs had implications of impermanence of which some at least of their promoters appeared quite unaware—and, whatever a finished union catalog may be, one not finished and not kept up to date is pretty nearly a complete waste of money.

Mr. R. B. Downs, then of the New York University Library, in his excellent recently published "Union Catalogs in the United States," † took pains to point out that "want of financial stability is . . . an unfortunate characteristic of virtually every catalog thus far established." Dr. William Warner Bishop, then librarian of the Library of the University of Michigan, had remarked a few years before: ‡ "It is questionable whether regional catalogs in America will prove to be worth the money and time invested in their manufacture and in their upkeep." And Mr. Downs' point is further emphasized by Arthur Berthold, in his "Manual of Union Catalog Administration." Speaking of union catalogs in general he says: "No matter how important or how necessary a union catalog is, it ought not to be started before its financial backing is assured. On this point practically

\* No librarian questions the value of the national union catalog at the Library of Congress.

† A comprehensive compilation which should be referred to by any one desiring further information on union catalog development.

‡ William W. Bishop, "Resources of American Libraries," *Library Quarterly*, October, 1938, p. 471.

all existing catalogs have gambled. The usual attitude appears to be that, since the cause is worthy, someone will step in and provide the means. To some extent such a view has been encouraged by the ease with which it has been possible to obtain federal assistance in the form of free labor. . . . There is, in fact, already a fairly strong feeling that regional union catalogs are wasteful and not justified."

But none of the above quotations criticizing the *raison d'être* of some union catalogs, or some of the methods used in compiling them, should be interpreted to mean that I am myself opposed to the union catalog idea. The exact contrary is the case. My main criticism of existing union catalogs has always been that they did not go far enough. (Indeed, from one point of view, this very book can be looked upon as a proposal to carry the union catalog idea much further than anyone ever before dreamed of carrying it.)

In one of my *Library Quarterly* papers \* there was set up, step by step, a series of premises regarding union catalogs. Set up thus, one at a time, general assent to each premise was fairly easily won; but the syllogistic result ultimately led to was an interesting one.

*Premise 1.* A time is coming—if it is not already here—when no library endeavoring to provide research facilities on even the most generous of scales can consider trying to live for itself alone. It will realize that, adequately

\* "Real Cooperative Cataloging—The Concrete Approach," *Library Quarterly*, April, 1943, p. 99-112.

to serve its own clientele, it must cooperate with its sister research libraries in the securing, the storing, the cataloging, the borrowing, and the lending of research materials. And this is true whether the "area" be the entire country, or only a part of it.

*Premise 2.* To render possible this maximum use, each library must know what is being held in each of the other libraries of the area—and must know this, not in such general terms as "is strong in," or "puts emphasis upon," or even "has a special collection in," but in terms of the exact books held, on a given subject, or by a given author, in each cooperating library. In other words the area must possess some sort of a union catalog, showing the holdings of all of the cooperating libraries in the area, and one with its entries provided with "location indicia" showing where the holdings are.

*Premise 3.* But a single union catalog of any sort, located in some one of the libraries of the area, is not sufficient to give maximum service. If all are to have knowledge of their respective holdings every library in the area must have a copy of the union catalog.

*Premise 4.* The form that such a multiple-copy union catalog should take depends upon the number of libraries cooperating. Any *first* copy of a union catalog *has* to be one on cards. But copies made from that first copy may be either on cards or in book form. If the additional copies are on cards, then there is involved, for all the libraries having one of the copies, a perpetual card-filing and card equipment expense. If the additional copies are in printed book form, then the catalog will be one far cheaper and easier for each library to use; but it will force serious compromises in other directions, simply because all book catalogs which have to do with a continually increasing volume of items have to run between the Scylla of Multiplied-Alphabets-to-Search and the Charybdis of Multiplied-Reprintings-to-Pay-for.

*Premise 5.* The total cost of providing all the members of a group of research libraries with copies of a printed book union catalog of their joint holdings would, of

course, be a large one; but, when this total cost is divided among them, it may be easily bearable and, if there are a large number of libraries to divide it, it may be almost negligible.

*Premise 6.* The larger the area covered by a union catalog, the greater the number of items included, the greater the number of copies required, and so the greater the gross expense. But, *because of the increased duplication of individual items in the larger catalog*, and because additional copies of a book, after the first, can always be printed at relatively slight additional expense, the larger the area of the union catalog, the less the per-library expense. Or, to put this statement in another way: a multiplicity of regional union catalogs involves the same sort of duplicative waste as a multiplicity of individual library catalogs.

*Premise 7.* It has always been assumed that by "union catalog" we mean a union *author* catalog, simply because practically all union catalogs have been author catalogs. But, obviously, there is nothing whatever (except expense) to prevent our making a union subject catalog, or even, if we wish, a union *dictionary* catalog.

*Premise 8.* In dismissing this last possibility so casually in the past, haven't we overlooked one extremely important consideration? Haven't we assumed that a union catalog—any sort of union catalog—has always, of necessity, to be an *extra* expense? And haven't we continued to make this assumption in the face of the fact that a union *dictionary* catalog (or its equivalent), of all the research libraries in a given area, would automatically be a complete catalog of each individual library?

*Conclusion.* But, if this last statement is true—as, of course, it is—then it ceases to be true that a union catalog—so long as it is a dictionary catalog—*has* to be an added expense to the libraries included in it. Rather, the reverse has become true: the moment that we have a multiple-copy dictionary union catalog for any group of libraries *it is their independent making of separate individual catalogs that has become the duplicative* (and so unneces-

sary) *process*. But this has brought us, step by step, to a reorientation of viewpoint that opens up hitherto entirely unconsidered vistas of both service and economy. For it would appear that research libraries *might* discontinue their separate making of individual card catalogs, and *might* replace them with centrally-made copies of some sort of union dictionary catalog which included all their own holdings, thus giving them, for research purposes, far more useful catalogs than they have now, and yet saving them a very large proportion of their present cataloging expense.

The above series of premises (here somewhat condensed) and their "Conclusion" was the way that union catalog possibilities presented themselves to me four years ago, before micro-cards came into the picture.

The second category into which inter-library cooperations group themselves might be called "Division-of-Fields Cooperation." The elimination of unnecessary duplicative growth between the research libraries of any given area, by means of an agreed-to division, among themselves, of specific subject fields of acquisition, is an idea that librarians have discussed for many years.\* But, within the last two years, interest in this form of cooperation has been greatly stimulated by the appointment of a special committee of librarians to ap-

\* LeRoy C. Merritt did an excellent and long-needed job (in Robert B. Downs, "Union Catalogs in the United States," 1942, p. 58-96) when he analyzed the probable book production of the world to date (in number of titles) and assessed the proportion of it held in this country. We now have a fairly solid basis, if not of fact, at least of well-balanced estimate, from which to work toward a solution of any cooperative problem.

praise its possibilities anew, and by the report which this committee submitted two years ago (a report to which attention has already been drawn).

Headed by Keyes D. Metcalf, the Director of the Harvard University Library, but representing all the large research libraries of the country, this committee was asked to develop a concrete plan for a national division of collecting "fields." Its report invites such of the libraries as desire to do so to select for themselves one or more subject fields in which they are prepared to specialize. The report is persuasively phrased, and carefully avoids any hint of dictation, or even of pressure. It emphasizes that its proposals are tentative. It leaves every library free to specialize, or not, as it chooses, and in whatever fields it chooses. It leaves each library free to continue its acquisitions in all other fields so far as it chooses. But, in those subject fields which it selects as its own, it asks that it agree to try to acquire *everything* currently published.

Few research librarians will deny that this report is a step—and, if anything, a step already too long delayed—in the right direction. Indeed, if there should be criticism, it would be rather of some of the details of the specific procedure which the committee sets out. Yet, admirable as this report is in its tone, and sound as it is in its ultimate aim, there are some librarians who feel that any division of acquisitional fields, unless it implements itself, unless it correlates itself functionally with



other elements of library practice, holds educational implications which are at best puzzling, and at their worst perhaps undesirable.

To explain exactly what this last statement means let us take a simple case of division-of-subject-fields on a very small scale. Two small colleges, "A" and "B," are located a few miles from each other. College "A" teaches no botany, but does offer astronomy. College "B" does teach botany, and doesn't offer astronomy. It is clear that the libraries of College "A" and College "B" might easily divide these two subject "fields" between themselves to their mutual advantage. They might "cooperate": they might stop their duplicative buying of research material in *both* fields. Each library could agree to buy little, if anything, of a research character in the field which its own college did not teach, and rely on its neighbor library for books in that field when it needed them. On the other hand, each would agree to buy everything (that *both* colleges needed) in the subject "field" which it agreed to take as its own.

So far so good. But now, let us take a more complicated example. Could they similarly divide the "field" of biology, if they both taught it? And, if so, how would they go about it? Granted that both libraries would want to continue to buy the more elementary, that is the "undergraduate," type of books in biology, could biological *research* materials be, in any way, divided between them? The library of College "A" may already have certain

research "leanings" in its holdings of biological material, leanings that are, of course, natural reflections of the special interests of the members of its biological faculty. The library of College "B" may have similar leanings, but in quite different biological fields. It sounds plausible, therefore, to say that, working along the lines of their respective "leanings," these two libraries might divide the biological field between themselves (that is, so far, be it always remembered, as research materials are concerned).

No librarian would want to say that such a division of fields was impossible, even though he knows that, in its actual working out, all sorts of practical problems would arise. The Metcalf committee is undoubtedly well aware that, when it starts the allocating of collecting subject "fields," it is bound to strike snags. If departmental disciplines are becoming increasingly harder to define, blending into each other under such hybrid designations as "bio-chemistry" and "astro-physics" and "physical chemistry," how much more blurred are intra-departmental delimitations becoming? It may be hard enough to decide whether constitutional history "belongs" to History or Government. It may be hard to decide, if one library offers to specialize on the history of Germany, and another on the history of France, which one shall be assigned the history of the first World War. But how much harder is it going to be to split such a subject as "chemistry" or "electrical engineering" among three or four

research libraries, and to split it without any overlappings on the one hand or hiatuses on the other?

Nor, unfortunately,—to take another very real difficulty—does library material come conveniently wrapped up in neat little subject packages. There are scores of periodicals, for example, which cover very broad “fields.” Other periodicals will be devoted to one field, but have occasional articles in fields quite remote. No matter how libraries may divide *subjects*, there will come in to each one of them a constant succession of items that cut across two or more subject fields—only one their own; and there will be other items—whole groups of them, periodicals, documentary series, reference sets—so broad that every library will see some of its own special material in each of them.

The Metcalf committee is an extremely able one. And we are all to be congratulated that it is, for it is difficult to overemphasize the complexity of this “dividing” problem that it faces. We must remember that it must do more than see that every library selects *some* field. It must do more than see that the fields selected do not overlap. It must try to see to it that, collectively, the selections made cover the entire range of knowledge. Allocation would be relatively easy if libraries would be willing to accept collecting responsibility for broad and fairly well-defined fields; but they won’t. For one thing they will, naturally enough, want to take subject fields in which they will be able to start off strong,

that is, fields in which they already have "special collections." And, since most of these special collections came to them originally as gifts—that is, were acquired fortuitously—there is, literally, neither rime nor reason to their incidence, nor to the way in which they at present delimit themselves. That is why, at the start, the committee is bound to face almost insoluble conflicts of interest—and also to have on its hands a lot of sad little "orphan" fields of knowledge, which it can find no library desirous of taking under its wing!

But these very real difficulties of division and allocation, inherent in the working out of any subject division-of-fields plan, puzzling as they are, and complex as they are, are still not the major difficulties which a "division-of-fields" policy involves. They are, after all, rather in the nature of problems of administration. The really serious difficulties that "division of fields" presents lie deeper; and are not at first so obvious. They all derive from this basic query: when we start dividing acquisitional subject "fields" among libraries are we not committing the educational institutions behind those libraries to research concentration in the same "fields"? In other words, is "division of fields" just a library matter? Is it not, instead, a matter which is bound, ultimately, to involve the whole educational policy of each cooperating institution?

When any library undertakes responsibility for "complete coverage" in any subject field, even a relatively small field, it is taking on a substantial

commitment. Few even of our university libraries are in such an enviable financial position that they can attempt the sponsorship of more than one entire departmental field. And the average college, if it should feel able to assume any "division-of-fields" sponsorship at all, would probably feel it could afford to take on only some one small segment of one departmental field.

In due course, however, having assumed such a national sponsorship, that college or university library is going to be nationally "first" in its research holdings in the specialized field that it selected, whether that field happened to be "colloid chemistry," or "Italian literature," or "physics," or "the Risorgimento," or "piezo-electricity," or "the history of Virginia," or any one of a thousand other subjects, large and small.

But, because that library's sponsorship of its specialized field costs it money, perhaps a good deal of money, it is going to find that whatever it spends on its sponsorship field it will probably have to subtract from what it has available to spend on all its other regular curricular fields. (As a matter of fact, as we shall see later, this last is an extreme understatement.) If, however, an educational institution's library becomes pre-eminently good in a highly specialized research field, and more or less lacking in all other research fields, it would seem to be inevitable that the faculty and the students of that institution would at least tend to restrict their research to their library's special field.

These are the implications that were referred to above as "far-reaching." For what they really say is this: that, if we "divide fields"—*and do nothing more*—we are likely to have, eventually, not college and university libraries based on local curricular requirements, but college curricula based on local library holdings. And not merely curricula, but faculty. And—let's follow the idea through to its logical end—not merely faculty, but student bodies. These are the ultimate results that would seem to be "puzzling," and even "undesirable"—in an "unimplemented" division-of-fields plan.

We shall discuss this particular problem of division-of-fields cooperation further a little later. Before we do, however, we might dispose briefly of the third category of inter-library cooperations, "briefly" because they are of little immediate practical importance, either for the purposes of this volume or in actual fact. They may be grouped under the heading "Regional Library Cooperations."

Regional library cooperations go further—very much further—than any of the others; for what they propose is the actual physical amalgamation, into one single centralized library, of part, or of all, of what had previously been two, or more, independent libraries. Obviously "regional library cooperation" is practicable only for institutions that are, geographically, reasonably near to each other.

This amalgamation may be complete, as it was, for instance, in the case of the Joint University

Library which was set up a few years ago at Nashville, Tenn., where three independent educational institutions pooled all their library resources into one consolidated, jointly supported, library which they jointly use. Or it may be only partial, as would be the case, for example, if the research materials only of a group of college libraries were to be consolidated into a central research library for the group, each college of the group retaining its own independent "college," or undergraduate, library. (This was the original so-called "Connecticut Valley Plan.") Still another example of a *partial* regional library, would be the one previously referred to, viz. a "storage warehouse" of less-used research materials, set up by a group of cooperating libraries, into which warehouse each member of the group placed as much as it pleased of its less-used research materials, with the understanding that, in the warehouse library, *they would be given cooperative treatment for joint use*, that is that the materials would be checked and all duplicates would be eliminated, that the remaining items would be union-cataloged, etc.\*

Because "regional library" cooperation destroys local autonomy it is likely to meet with local opposition. On the other hand, it has the great advantage of assuring, if carried through, very much greater economy than any other possible form of

\* As previously stated, such a *regional* (cooperative) storage warehouse should be carefully distinguished from the storage warehouse which has been set up to take care of the overflow from a single library.

purely local cooperation. For the libraries cooperating it postpones materially the impact of cumulative growth, for it eliminates all duplicative waste among themselves. Whether it provides their patrons with a better, or with a poorer, library service depends almost entirely on the specific local situation. It is an obvious advantage to their users to have all of the materials of all the libraries of the group brought together in one place, and findable in one catalog. Furthermore, with inter-library duplication eliminated, funds are released to make the joint library a better library than the independent ones were. On the other hand, if the centralized library happens to be located at a point remote from a user's own institution, cooperation is from his standpoint not so attractive.

It may be asked, what, in general, has been the attitude of research libraries toward greater inter-library cooperation? The answer has to be that there has been a great variety of attitudes. Running them over, in a sort of ascending order, one might summarize them as: entire lack of interest in the whole subject; denial that unrestrained research library growth will ever cause any real crisis in library development, i.e., the attitude: "We have always managed to get along somehow, I guess we always will"; admission that a real crisis is impending, but the attitude: "It won't come in my professional lifetime: why should *I* worry?"; admission that research library growth is becoming a



serious problem, but sincere inability to see in *any* sort of inter-library cooperation any solution for it; admission that some sort of inter-library cooperation may be desirable, but inability to agree on any plan for accomplishing it when attempt is made to come down to specific details; and, finally, enthusiasm for cooperation in general, and even enthusiasm for some specific cooperative plan when the plan is first presented, but this first enthusiasm followed by a gradually waning interest, as the realization grows that the benefits of cooperation cannot be secured without the sacrifice of a certain amount of local autonomy, and that it is likely to involve considerable change in existing procedures.

The last reaction has been the one most commonly met with. Librarians instinctively tend to shy away from *change*, for reasons that are entirely understandable. They have had ground into them by years of experience the hard fact that change of any sort in library method is not something lightly to be entered into. They know that, since they are dealing with books, any change made is bound to be multiplied a hundred thousand—or a million—times; which means that the most insignificant of changes will run into real work and real money. It is just because librarians, as a group, are naturally—and properly—conservative, that it is so hard for them to realize that, in research library growth, they face a situation where sweeping change is inevitable, a situation in which many of their

hitherto accepted routines have already ceased to be effective.

We discussed at some length, a while back, the puzzling educational "implications" that were presented by any division-of-fields plan which was to be a *cooperation in acquisition*, and nothing more. And we said that it seemed to be necessary to add to cooperation in acquisition some sort of a *cooperation in dissemination*, some plan by which all the special-field holdings of the cooperating libraries might be integrated, brought into some sort of single national corpus, and in such a way as would make them automatically available to all research workers everywhere. For a long while it was my own hope, as the series of premises above quoted made clear, that in some kind of a multiple-copy national union catalog this "integration" requirement would be met. Yet I wasn't convinced that it would. For one thing, the "puzzling educational implications" already referred to stood in the way.

But there was another difficulty raised by cooperation in acquisition only, a very serious difficulty indeed, which, like Banquo's ghost, kept raising its head just when everything seemed—on paper!—to be working itself out. Let us look at it.

If one analyzes them, it is clear that the various proposals that we have been summarizing, all these attempts to meet the problem of library growth by inter-library cooperation, have one common denominator: *they propose to solve it, in one way or*

*another, by taking the scholar's books away from him. In "weeding out" this taking-away is blatant and permanent. In "storage-warehousing" it is taking them only a short distance away, and to a place whence they are easily returnable. In "dividing-up-fields" the materials are being taken a long way away, and being taken "for keeps."*

The truth of this last statement may not be immediately obvious; let us therefore amplify it. Division of fields means—and, if it doesn't mean this, it is meaningless—that at some time, either immediately or in the future, even the greatest of our research libraries will have to give up their present over-all, all-inclusive acquisitional reach, and will have to restrict themselves, more or less narrowly, as their resources may allow, to their special sponsorship fields. (We are now, of course, referring only to their acquisition of research materials.) They may, as stated, decide to come down to this limitation of their collecting reach immediately and abruptly; or they may come down to it gradually, staving off the inevitable just as long as is possible; but, sooner or later, come to it they must. Why? Because, as "doubling" continues, there will come a time, perhaps fifty years hence, perhaps a century hence, *when every research library will be spending just as much for the material it is acquiring in its own special sponsorship fields as it is now spending on its entire library.* That means that the latter cannot, and will not, have been kept up: either directly (by deliberate

discard and exchange) or indirectly (as the result of steadily increasing neglect) *all broad-coverage research libraries will have ceased to exist.*

Now you may rationalize this inevitable result of the bald unimplemented division-of-fields plan all you please; you may support the necessity for it with all the completely irrefutable arguments you are able to dig up; you may paint in the most glowing colors all the new things that your library will try to offer to take the place of what division of fields will take away, but it still remains, a stark and devastatingly clear fact, that, if division of fields is to have any really effective result it must—if it be that and nothing more—deprive all our research scholars of the one thing that they rate at present above everything else in importance in the daily doing of their work—*their libraries!*

Nor will it do any good to explain to them that—once division of fields is in full flower—although there may be in their own library only a smattering of research materials on—shall we say metabolism? there is a collection of books on metabolism in New York that is the ultimate word in comprehensiveness, bibliographical perfection of cataloging, and expertly classified accessibility. It will do no good to explain to them that, poor as their own library may be in materials on Chinese history, there is out at Berkeley a collection that is likewise the scholar's dream of research perfection in that particular field. It will not even do much good to explain to them, finally, that, through

a wonderfully complete, printed, national union catalog, of which you have a copy, they can find out *exactly* what books are in these two almost perfect collections, and that, if they want any of these books, you can get them for them.

It is all very well for us, as librarians, to think that such a theoretical heaven of bibliographic perfection as this ought to satisfy our scholars. Perhaps it should; but I very much fear that it won't. On one point they all seem to be amazingly unanimous: they all seem to have a desire—to the layman a sometimes quite incomprehensible desire—to have their research materials available, not in New York or California, but under their own finger tips wherever they may happen to be working. If you will only give them their materials, they are willing to take them in almost any form—untypographed, un-bound, un-cataloged, un-*everything*—but they do want *them*.

This attitude is almost disheartening! Here you are sincerely doing your best to solve an almost unsolvable problem; and your scholars, the very people you are trying so hard to serve, remain—most of them—unconvinced of the desirability of your solution, maybe impatiently unconvinced, maybe apologetically unconvinced, maybe resignedly unconvinced, but still, alas, unconvinced. They are willing to give up everything else you offer them in the way of library service rather than give up their books.

In a few cases, of course, librarians meet with

quite unreasonable demands from the people they are trying to serve; but the very fact that this demand for "book immediateness" is so nearly unanimous should make us realize that there must be some real reason for it. And there is, a reason that stems from the fact—going back now to our original analysis of the characteristics of all research materials—that research use tends to be a casual use, a short use, and so, often, an *unanticipated* use. A chemist, desiring in the middle of a laboratory experiment to check up on some previous report of the reaction which he expected to get but is not getting, isn't going to be helped at all by your offer to borrow from the University of Chicago the book that contains that report. An astronomer, seeing an unexpected patch of light on one of last night's plates, and wanting to make another plate *tonight*, can't wait long for the article that he wants to examine in the meantime. A professor, hurrying to get a batch of proofs back to his publisher, and endeavoring to verify a footnote, isn't going to think your proposal to get his data on inter-library loan from Duke a completely satisfactory library service. It does no good to say to these men that the item that each wants now so urgently, and so unexpectedly, will probably not be asked for again for ten years. That, to them, is no answer at all. They need it *now*—and you haven't it.

It is when one sits down and considers quietly this almost universal attitude of research workers toward the immediate accessibility of their ma-

materials that one is almost forced to the conclusion that no division-of-fields proposal that offers only cooperation in acquisition is going to be a satisfying solution to the problem of research library growth. To satisfy the research worker we must go further, must try to find some way by which he can still keep his books at his elbow.

Obviously, however, if we are going to do this, it must be in some quite unprecedentedly inexpensive fashion. For, remember, it is not a question of cutting book purchase cost alone. Our books must be made amazingly cheap, to be sure. But also our cataloging must be made amazingly cheap, our binding amazingly cheap, our book storage amazingly cheap. We must never forget that we have a four-part problem: and that, *unless we accomplish a reduction in all four parts we do not solve our problem.*

Is some entirely new synthesis, some entirely new integration of library materials conceivable? *Is it possible, whether we realize it or not, that we are approaching the end of an era in our library methodology?* It is now sixty or seventy years since, under the compelling assurance of Dewey and Cutter and Poole and their fellow pioneers, the library world crystallized a definite pattern of library technique, which, although it has been greatly amplified and refined, has never been basically changed. There has even been a tendency in some library circles to take it for granted that it was a final technique. But no technology is ever final or finished.

Entirely new conditions arise. In the library world they have already arisen: they are pressing upon us for solution. Are we standing on the threshold of changes in our libraries that are going to be far more sweeping than those which the library pioneers made six and seven decades ago?

It is perfectly evident that, if they are going to accomplish anything worthwhile, they *must* be far more sweeping.



## THE SOLUTION

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## CHAPTER 1

### MICRO-CARDS

**L**IBRARIES are great complexes of tiny items, items which it is almost impossible to handle in any way *en bloc* because each one, tiny though it is, is highly individualized and demands equally individualistic treatment. It is this combination of enormous mass and extreme individualization of detail that has gone far to make the problem of research library growth so difficult to solve. But it has not been the main difficulty. Even more puzzling has been the fact already emphasized, that this growth problem is—or seemed to be—not one problem, but a long line of problems, interconnected at various points to be sure, but not in any way that helped us to a solution when, one by one, we took them up.

The basic trouble here has been with our viewpoint, the way in which we posed our case. We have taken our problems of growth one by one. We tried to solve our problem of swollen cataloging cost as though it were a separate and independent problem, and our book storage problem as though it also were quite separate and independent. We have tried to economize on binding costs, as such,

on circulation costs, as such, on ordering costs, as such, trying to treat each as though it were a problem in a vacuum, not something tied up in a veritable mesh of inter-relationships. We failed to see that this segregation was an artificial and misleading one.

And the reason for our failure to integrate what were really varying facets of one single problem was that we were blinded by the *status quo*. We insisted on continuing to accept as library axioms, unalterable and unquestionable, certain assumptions which no longer had validity, such dicta, for instance, as: libraries are collections of books: books are stored on shelves: library materials have to be cataloged: catalogs have to be made on cards: books must be arranged by their call numbers, etc., etc., etc. It is not until we have looked behind, and beyond, every one of these—and many other—supposedly basic axioms of library method, and have seriously questioned their validity as axioms, that we begin to make any real progress. For, when we do this, we are suddenly amazed to find all the mismatched bits of our research library growth puzzle falling, almost of themselves, into a quite astonishingly new synthesis.

Let us see if we can make concrete the phrase used above: "failure to integrate." Some months ago the Wesleyan library bought, from the Readex Microprint Corporation, their reproduction of the two literature volumes of the "Church Catalog."

Their micro-print copy of these two volumes came to us on six leaves of paper, each leaf six by nine inches in size, and each printed on both sides. The six leaves were delivered to us enclosed in a substantially made, linen-bound, slip-cover box, six and one-half by ten inches, and two inches thick, duly labeled on its back-strip edge so that it could be stored, upright on the shelf, like a book.

The point I am getting at here is this: the "Church Catalog" had, by micro-reduction, been greatly reduced in purchase cost, had been reduced, in fact, to about one-twenty-fifth of its established auction price in book form. Obviously, that is a very substantial accomplishment. But book purchase cost, we must always remember, is only the first of four categories of book cost. What had the Readex people done about the other three? Clearly, they might, in *some* way, have done something about storage cost at least; because they had, through the magic of micro-reduction, shrunk twelve hundred large pages down to twelve small ones, i.e., they had effected a more than 99% decrease in storage bulk.

But, in this particular case, as in all the attacks which librarians themselves have made upon the library growth problem, there had occurred at this point a *failure to integrate* all four of the factors of cost. What was the result? Our six leaves of micro-printed "Church Catalog" were delivered to us, as a completed unit, in a storage form that negatived almost completely all of the saving in storage

cost that micro-reduction had effected. So far as bulk was concerned, we were, to all intents and purposes, put right back where we started: we were asked to handle and store a "book" again, and a fairly bulky book at that.

What about the last cost factor, cataloging? About it also the Readex people did nothing. It never even occurred to them that it was any business of theirs to do anything. (And, very possibly, at this stage, it wasn't!) In any event their failure to integrate Cost Four into their over-all production picture meant that, when we received our six leaf "book" from them, we had to catalog it ourselves; and, in doing our cataloging of it, we had to follow exactly the same procedure, and had to incur exactly the same expense, that we would have had if we had been cataloging the "Church Catalog" in its original two-volume form.

This particular illustrative example has been picked out, not because the Readex people did anything unusually short-sighted, or at all out of the ordinary. Quite the contrary. They did exactly what all the rest of us have been doing. But what they did shows, in essence, why the micro-reduction of books for libraries has been, to date, so relatively disappointing a development. For—all propaganda to the contrary notwithstanding—it *has* been disappointing. We have had coming into our research libraries a mere trickle of micro-materials, where our micro-enthusiasts had hoped for, and had expected to have, a flood. And the reason why the

flood has never come is the one just stated, that micro-reduction has never yet really integrated itself into library practice. *Micro materials have always been treated* by their makers, by their users—and by librarians—as *though they were books*. A different sort of books, to be sure, an annoyingly different sort; and so problem-making, instead of problem-solving.

No one seems to have realized that, abruptly, for the first time in over two thousand years, libraries *were being offered a chance to begin all over again*. In this first half of the 20th century A. D., the recorded words of men were coming in to us librarians, not in the form of the "books" in which they have been coming in to us for two millenniums, but in a brand-new form, an utterly and completely and basically different form, a form that demanded and that, if we could only see it, would requite, an utterly and completely and basically different library treatment. Basically micro-materials are far more different from books than flat books were different from the papyrus and vellum rolls that preceded them. But we didn't see this: we tried our hardest to treat them in the way we treated books. And we became annoyed when this didn't seem to work out very well.

*Did it work well?* Consider what we have all been doing when we took in a twenty page pamphlet which had been reduced for us to a ten inch strip of micro-film. A ten inch strip of film doesn't seem to fit into conventional library practice *anywhere*.

How have we tried to store it? Some of us put it in a box on the shelves. But, if we did that, we cancelled—exactly as the Readex people did with that “Church Catalog”—all of the economy in storage space that micro-reduction had salvaged for us. Some of us put such a snippet in an envelope, and then filed the envelope in some sort of vertical file. This worked fairly well—provided we had enough similar snippets to make a real file out of them—which most of us have not had. Some of us tried splicing a lot of such snippets together until we had created a composite reel of odds and ends. But this result was, of course, always a hodge-podge, awkward to use—and a sad mess to catalog.

“To catalog!” Here we are, back again to the fourth great factor of our growth problem, to that cost which, as we have already seen, bulks larger than any one of the others. Who has made any attempt whatever really to integrate micro-reduction into cataloging? Remember that now we don’t mean drawing up any set of supplementary cataloging “rules,” to be duly inserted in our cataloging “codes,” to cover such questions as: “What additional data, if any, should be given when we are cataloging materials in micro form?”—“Should width of film be put on the cataloging card?”—“What form of ‘collation’ is required when cataloging films?”—“Who, in the case of films, shall be deemed the ‘publisher’?”—and such similar cataloging minutiae.

It can be granted that there is in the record any

amount of this sort of cataloging discussion. What we mean here is something far deeper, far more fundamental. We mean: what thought has been given to the idea that micro-reduction might make possible some entirely new conception of cataloging, might make practicable some entirely new approach to the whole cataloging process? For this sort of discussion one searches the literature of micro-film almost in vain.

Almost. In his comprehensive compendium, "Photographic Reproduction for Libraries," published only a few months ago, Mr. Herman H. Fussler, of the University of Chicago, does give a hint—not much, but still a hint—of the thing that we are talking about. He says (here italicizing some significant phrases): "The use of microfilm by libraries . . . has not resulted in *basic changes* of methods or organization. . . . Perhaps the nature of microfilm . . . is such as to slip smoothly into established methods. . . . Certainly that is true of the principal uses *made thus far by libraries*. However, until it is quite certain that this is true, the question must be raised as to whether . . . we have gone far enough. Is it possible . . . to utilize *reproductive techniques in new and radical ways* which would result in either greater efficiency, or greater service to library patrons . . . in ways . . . *entirely divergent* from our present conception of library organization and methods?"

And a little further along he answers this question of his in these words: "There is a body of evi-



dence in the experience of nonlibrary and non-research organizations and in the inherent nature of the techniques themselves to point toward an affirmative . . . answer. . . . *The library profession cannot afford to be too complacent or too conservative . . . if the library is to keep its rightful place in these swiftly changing times.*"

For many years, if any of us had made any attempt to effect the sort of integration we are now talking about, he would have been handicapped by the form in which our micro-materials were being given to us. Two thousand years ago books in roll form gave place to books in folded flat sheet form. But, although some of us felt strongly that, sooner or later, micro-materials in roll form would effect the same transition, there had been discovered then no practicable way to accomplish it. And, although we further suspected—some of us—that the material that was going ultimately to be used for these flat micro-materials would be paper, or its equivalent, primarily because paper is cheaper than film, but also because it is more resistant to handling abuse, we hadn't found any way to make this change either.

But, because we had these two ideas, some of us felt that Dr. Bendikson, of the Huntington Library, had been on the right track in his work, a decade or more before, with paper photo-micro prints, and thought that these pioneer studies of his had hardly received the attention they deserved. He had been "stymied" by the difficulty of reading small-scale

micro-reduction in paper print form; but there was no doubt in his mind that, some day, the optical difficulties that stood in the way of this sort of micro-reading, as well as the technical difficulties that prevented the printing of micro-materials on paper, would both ultimately be solved. And his faith was justified. When word came to me one day, three or four years ago, that the Readex people had found the answer to both of these problems I was so excited that I took the next train to New York to see exactly what they had accomplished. They had indeed made a vast stride forward: we are not yet fully aware how great a stride. Before our eyes entirely new possibilities in the use of micro-reduced materials were opening up: new micro concepts were at last taking practicable shape.

The micro pioneers are not responsible for *our* failure to integrate their work into our own. That was our job, not theirs. They were interested primarily in the technical problems which the new medium presented. They almost had to be. And, as a result of their ingenuity and vision and financial sacrifice—and many of them contributed all three things—we have now attained a perfection of technical result which places us very much, and forever, in their debt. It was not their fault that the meshing of micro techniques into library techniques has been an ignored study.

The idea that is the subject matter of the second half of this book came into being, as many such things do, from a quite unexpected direction. In

attacking the library growth problem from various angles, I had, for one thing, become acutely dissatisfied with some of the aspects of our conventional catalog card. And one thing about it that kept bothering me was the way it wasted perfectly good—and expensive—card space.

In the first place, the face of the card was wasteful. Measurement of the superficial area of a great many catalog entries showed that, in the great majority of cases, a half-size card ( $6\frac{1}{4} \times 7\frac{1}{2}$  cm.) would provide all the space needed. And such a small card could be read and handled almost as easily as our so-called "standard" catalog card.

But, although I went so far as to suggest in one of my early papers \* the possibility of giving such half-size catalog cards serious consideration, and, although, here at Wesleyan, we have for several years been successfully using such cards—several millions of them—for another purpose,† I was not at all convinced that they ought to be adopted for cataloging. For half-size cards would not, of themselves, do anything about the wasted backs of our present cards. And, because this waste was twice as great as the waste on the fronts of the cards, it intrigued me that much more.

The waste of space on a catalog card—even though it was a waste of three-quarters of every card, and even though it was being repeated on billions of catalog cards all over the world—might not

\* "The Possibility of Discarding the Card Catalog," *Library Quarterly*, July, 1938, p. 333-4.

† In the files of the American Genealogical Index.

seem, to most people, important enough to spend very much time over. But, as I was thinking about it one day, this idea came to me: *why might we not combine the micro-texts of our books, and the catalog cards for these same books, in one single entity?* in other words, *why could we not put our micro-books on the (at present entirely unused) backs of their own catalog cards?* And why wasn't this that new "integration" of our basic materials that I had for years been looking for? I called this new concept, this new correlation, a "micro-card": \* and that is what it will be called hereafter in this volume.

The more I considered this "micro-card" idea, the more it grew on me. For, with almost miraculous simplicity, it seemed, automatically, *to solve, not one, but all four of the factors of our growth problem.* Let us run over them, briefly at first, very much as I did when the micro-card idea first came to me, leaving the more detailed discussion of each point involved to one of our later chapters.

The cut in the first of our library costs, the original purchase cost of our text, is obvious. In

\* In a letter received after this book was in type Mr. Keyes Metcalf calls my attention to the interesting fact that Dr. Bendikson, in a short article in the *Library Journal* in November 1933 used the phrase "When filing cards take the place of books" in referring to his binocular-read prints. In this article he also suggests the possibility of using  $8\frac{1}{2}'' \times 11''$  prints as an alternative for the  $5'' \times 8''$  prints which were his primary recommendation. What he did not catch was the idea of going downward, not upward, in the ratio of his reduction, and, by so doing, to reach a second idea, the idea which is the essentiality of "micro-cards," that is the combining of micro-reduced prints and their respective catalog cards into one single entity.

the case of the Church catalog the saving here made was about 96%. It will seldom be very much less: it will sometimes be more.

Second, storage cost. Any one familiar with micro-film knows that a fair amount of micro-text can be put on the back of a standard-size catalog card: but even some micro-film enthusiasts will be surprised to learn *how* much can be put there. We are assuredly today only in the first stages of micro-reduction technique, yet even today it is possible—*by using some very simple new methods in our photographing*—to get as many as 250 pages of an ordinary 12mo book on the back of a single catalog card. And there can be no doubt at all that, given just a slight further smoothness in film graining, just a little more technical skill in micro-photo-graphing, just a little more improvement in lenses and in camera efficiency, we shall be able, and in a very few years at that, to put, if we wish, as many as five hundred ordinary size book pages—in other words a regular full size book—*on the back of one single catalog card*.

Of course, as has just been suggested, we can't do this if we insist on following the conventional methods that we have always followed in the photographing of our texts. But there isn't the slightest reason why we should follow them.

Furthermore, very often—in fact, in most cases—we shall *not* want to put 250 pages, or anything like that number of pages, on the back of a single catalog card, even if we are technically able to do

so. Other, and very important factors indeed—as we shall see later—are going to enter into this particular question; and it is these factors, rather than ultimate compactness in storage, that are going to determine the number of pages we put on each card. But, *certainly*, and *now*, we can reduce the storage cost element in our problem of research library growth, not 10%, nor 50%, not even 99%. We can reduce it, by means of micro-cards, a full 100%.

Now this last statement will probably be thought to go a little *too far*! Ninety-nine percent, perhaps, yes. But 100%? After all, one ought not to claim the impossible! I admit that a saving of 100% on the storage of anything does sound a little fantastic. But let's look at the facts. A single twenty-three inch long catalog drawer would, if it were full of micro-cards, hold twenty-three hundred author-entry catalog cards for twenty-three hundred books. It would also hold, on their backs—if we assume for the purpose of this example that none of this particular lot of books happened to be over 250 pages long—*the complete unabridged texts of all these same books in micro-reduced form*. And just to get in one single catalog drawer twenty-three hundred "books," twenty-three hundred books which would require, for their storage in their normal bound book form, a row of eight bookcases, each bookcase seven shelves high and three feet wide, would seem to be, in itself, quite enough of a miracle in the way of saving book storage space.

But, the percentage of saving in storage that we claimed wasn't 95%, or 99%; it was 100%. And 100% saving is the simple literal fact; for our twenty-three hundred bound volumes, when they have been reduced to micro-card form, *actually occupy no space whatever*, because what they occupy is the otherwise unused white space on the backs of twenty-three hundred catalog cards; *the white space that would have been in that catalog drawer anyway, whether there was anything printed on it or not!*

Take next, the third category of research library growth costs—binding. Once we have micro-cards, binding costs have also evaporated. They too have been cut a full 100%.

Yet still we have not reached—in fact we have not begun to reach—the end of the economies which micro-cards offer us. There still remains the fourth and last factor of our growth cost problem—cataloging.

For decades librarians have been talking about “cooperative cataloging”—and through all these same decades they have kept right on doing a large part of their cataloging over and over again, in each of their libraries, independently. Now micro-cards come, to invite those libraries for which they are intended—research libraries—to save somewhere between 95% and 99% of their present cataloging cost. As a matter of fact “invite” isn't a good word: “force” would be a better one. For, with micro-cards, it is hardly possible to avoid, even if one

wanted to do so, the enormous economies of cooperative cataloging. Why? Because *whoever prints one side of our micro-card will in practice print the other side also*: indeed, under a proper set-up for micro-card publishing, a set-up which will be outlined in a later chapter, any alternative would not only be impractical; it would be almost impossible.

Just what economy in cataloging cost is effected when we do at one point the complete cataloging of every item, as well as the printing of it? The cost of printing the micro-card text, small though it is in total anyway, will be divided between a hundred, or two hundred, subscribing libraries. And, in the same way, the cost of the cataloging of that text will also be divided between the same one hundred, or two hundred, libraries. Our present costs for independently done cataloging will, for micro-cards, shrink almost to the vanishing point. Where they now average at least a dollar per cataloged item, they will become a matter of a cent per item, or less.



## CHAPTER 2

### MICRO-CARDS—THEIR MICRO-TEXT

**B**EFORE we go further one incidental question perhaps deserves an answer. There may be some who are reading this, familiar with micro-*film*, but not with the Readex micro-*print* process, who are querying: How is it possible to put micro-text—i.e., a strip of *film*—"on the back" of a catalog card? Five years ago we would have said that it wasn't possible.

When Dr. Bendikson put his ten to twenty miniature book pages on a sheet of photographic paper five by eight inches in size, he had to read them afterward either with extremely good eyesight or with a low-power binocular microscope. Dr. M. Llewellyn Raney, the director of the Library of the University of Chicago, another vigorous micro-photographic pioneer, although he was pointing in the right direction when he remarked, in one of the first treatises on micro-photography,\* "There seems a possibility of paper prints for short runs in low reduction, and film for longer footage in high reduction," could only point, because, when he

\* "Microphotography for Libraries," edited by M. Llewellyn Raney, 1937, p. 107.

wrote, there was still no practicable method to read high reduction micro-text printed on paper.

When mankind—most of it—discarded manuscripts in roll form for flat books, it was because it had learned by experience that “books” in this form are easier to handle, more compact to store, and less subject to disintegration in use. We, in turn, sought to get away from “reels,” or rolls, of film for exactly the same reason. Reels, when we want to read them, have to be “threaded” in and out of a reading machine—which takes time and invites damage. To “find a place” in them is difficult, despite some clever accessory devices that have been developed (and the stroboscopic device of the Film-Book Co. was, in theory, extremely clever). At the same time we wanted to get away from *film*, because, as already remarked, it is more expensive than paper, more easily damaged by careless use, and more liable to deterioration in storage. For, although it is true that we have got away from the idea that it is necessary to store films in air-conditioned vaults, and accept ordinary stacks as affording a reasonable moisture-content storage, lack of proper humidity is still a real foe to film.

It did not prove easy, however, to solve either of the two problems which micro-print on *paper* involved. It was necessary, first, to find some cheap way to put the print on the paper; and, second, having gotten it there, to find some way to read it. Both presented serious technical difficulties. There had to be discovered some chemical, or mechani-

cal, process by which a metal printing plate could be made which would carry a photographic image having a fineness of detail much greater than that used in the finest of half-tone screens. And then there had to be invented a reading machine which would magnify this micro-printed image by reflected, instead of by transmitted, light.

There is no need to review here all the steps that led up to eventual success. It is sufficient here to say that there was success. Within the last few years both of these problems have been solved by Mr. Albert Boni of the Readex Corporation, if not yet perfectly, at least in a way that affords us a thoroughly practicable start, a start in the direction which, it seems fairly certain, most of the micro-reduction of printed materials for library use is destined to take.

It should be made clear, however, that we are not, for our micro-cards, limited to mechanically printed micro-print. Nor do we, necessarily, have to use a reflected-light reading machine (on which the Readex Corporation has, at present, a patent monopoly). It is true that their micro-print process is, at present, for any except a very small edition of copies, far cheaper than any alternative process. And it is true that their reading machine is far more satisfactory, at present, than any alternative reading device. In other words, there is every practical reason why their process, and their reading machine, should be used, at present, for micro-cards.

But we do not *have* to use them. It is quite possible to make micro-cards entirely by photography, photographing the original text matter on a regular negative film, and from it making positive photo-print copies on ordinary sensitized paper by the usual photographic methods.\* And it is also entirely possible for us to read these photographic micro-prints by Dr. Bendikson's simple original methods. Any good binocular microscope gives remarkably clear reading images of even greatly reduced micro-card text.

Furthermore, our micro-card text can be photo-printed directly on our catalog cards. All of the regular photographic supply manufacturers manufacture a sensitized card stock, which is already close to library catalog card requirements in handling crispness, thickness, and rag content; and there is nothing to prevent a photographic card stock being manufactured that would meet exactly standard library card specifications.

A suggestion might be interjected at this point for the benefit of scholars—and librarians—who find themselves with short bits of micro-film which they want in some way to store and index. Directly contradicting what was said a page or two back, it is entirely practicable to put film—actual film—right *on the backs* of our catalog cards. And, by “putting it on,” I do not mean what Mr. Fussler suggests in his discussion of this particular little problem (i.e., merely *clipping* it to them). I mean actually ce-

\* The card making the frontispiece of this book was so made.

menting it down flat on the back of the cards. Few users of micro-film, even among those who use it regularly, seem to be aware that, although the Readex machine was never intended to be used to read *film*, it nevertheless does read it. In fact it can read it just about as well as it does micro-*print*. All that is required is that the film be a clear *positive* film, and that it be placed flat and close against a white paper background. It is this film-reading capability of the Readex machine that enables us to cement short strips of regular micro-film flat to the back of a catalog card, using any chemically suitable, transparent adhesive; for, when it is so cemented down, it can be read with perfect ease by means of the Readex machine. If the film strip is covered with a strip of cellophane similarly cemented down, it will be, in this quasi-micro-card form, far more securely protected than by any other method that I know of. In experimenting with samples of film strips "micro-card pocketed" in this way, I have deliberately given them the roughest sort of handling imaginable; dropping them, walking on them, rubbing them across table tops, etc.; they have come through as fresh as ever.

This method of storing and cataloging short snippets of film appears to solve almost perfectly the problem of handling them. No longer need they be one of the library's outstanding nuisances. All that one has to do is to type on the front of an ordinary catalog card a proper catalog entry for each snippet, cement the snippet down flat on the back

of the same card, and drop the completed quasi-micro-card into one's catalog file.\*

Mechanical micro-print—the Readex process—does not become economical until the “edition” to be printed has passed the fifty-copy mark. In large editions (editions of one thousand copies or more) Readex micro-print costs almost as little, per copy, as ordinary letter-press printing. In such editions the micro-text on one micro-card, which might be the entire contents of a 250-page book, would probably cost less than a cent! Photographically reproduced micro-text is, *per copy*, much more expensive, simply because sensitized paper is much more expensive than plain white paper. But photographic reproduction is “indicated,” as the doctors

\* It is even possible—if one's library does not yet happen to own a Readex reading machine—to make a “film-strip micro-card” which can be read by means of the Recordak, or any other regular *film* reading machine. To make micro-cards which will store film strips for *transparent* reading, cut a “window” 35mm. wide—very much like the window on a “window envelope”—out of the center of a regular catalog card. Cement two strips of cellophane over the back of this window, one slightly larger than the window, one a centimeter larger all around than the first one. Before cementing down the final end of the second strip push your strip of film into the “pocket” which you have thus made. Up to four frames of 35mm. film can be placed in this fashion, not *on*, but literally *inside of*, a regular catalog card. The center of the card being transparent, the film strip can be read by means of any conventional *film* reading machine. On the front of the card, above the window cut-out, there is enough room to type a normal catalog entry, thus making the whole unit a micro-card, inter-filable with one's other micro-cards. The window can be cut out of the card by hand: but, if there is need for a lot of them, they can be cheaply die-cut in quantities. “Window micro-cards” will take only a single strip of 35mm. film, instead of the two strips that can be cemented flat, side by side, on the back of a card.

These cards are also very cheap lantern slides!

would say, for all micro-card editions running to less than fifty copies. Depending on the number of copies printed from the original negative, and the cost of making the original negative, a 250-page book, *photographically* micro-reproduced, might cost between five and ten cents per micro-card copy.

It is time now that we said something more about how it becomes possible for us to get 250 pages of micro-text on the back of a single  $7\frac{1}{2} \times 12\frac{1}{2}$  cm. catalog card; for it is probable that, since this particular assertion was made, those readers who have had experience in micro-filming have been doing some mental arithmetic. In their mental arithmetic they are saying that our first mathematical premise has to be that one can get only one book "opening" (i.e., two book pages) in each "frame." And they are saying that our second premise has to be that ten "frames" are the greatest possible number of frames that can be placed on the back of one card. And ten frames times two pages equals twenty pages (which isn't anywhere near 250). Q.E.D.

This little bit of mental arithmetic illustrates excellently what was said, a while back, about the necessity we are at present under of trying to view all our library problems entirely afresh, of reviewing all our practices unfettered by any sort of precedent, background, use, or tradition. Let's try to do this with micro-photography. And, to do so, let's go back for a moment and see how it all started. Some unknown pioneer, in some European

library, with a Leica (or a similar) camera in his pocket, wanted a copy of something in a book he had been reading. He had an idea. To save his time in copying he propped up the book; spread it open at the page he wanted; and snapped a miniature picture of it. When he did this he started a tradition. And that tradition, or practice, or method, has stayed with us ever since.

The Leica camera, like most cameras of its type, used regular 35mm. motion picture film. So the greater part of all micro-film cameras ever since, and the greater part of all micro-film reading machines ever since, have been equipped to use 35mm. motion picture film. Nobody seems to have given any particular thought as to whether this was either the size or the sort of film best adapted to library micro-text use; it was simply what micro-filming happened to start with. (It is true that there has been also a considerable library micro-text use of 16mm. motion-picture film; but the 35mm. width has been deemed "standard" for library micro-photography, and the use of other widths has been actually discouraged.)

All moving-picture cameras are set to take their pictures in "frames" of a certain size. And the Leica, and similar cameras, were set to take their pictures in frames of the standard cinematographic size. Why not? It was a good size—for pictures. And so—in turn—the library world began to use, and continued to use, this motion picture frame size, again without attempting any particular analysis



as to whether it was really the best size for library micro-text use, or not. There was nothing obviously wrong with it; all sorts of photographic equipment was geared to take it; why shouldn't the library world accept it too?

And finally, when we, in our libraries, photograph the materials we are micro-reducing, how do we do it? We do it in essentially the same way in which that unknown micro-pioneer did it. We prop up a book, and photograph it "as is," either one or two pages of it at a time; and it has never occurred to us, apparently, that it might be useful for us to question the economic validity of the procedure that we were using. One finds in micro-photographic literature any amount of discussion about such things as "cradles" of various sorts—that is devices to hold books open, and to hold their pages flat, so as to make their photographing easier—but nowhere a word about a much more basic question, whether we ought to do our micro-photographing from opened books at all or not.

If we now look at our whole problem again, entirely afresh, from a micro-card standpoint, it is obvious that our proper photographic frame for library micro-work, should be, not a moving picture industry frame, but a frame *exactly the size of the back of a catalog card*. And here we happen to be very fortunate; for there is a standard width of film, 70mm., that is exactly right to go on our 75mm. high card, and still leave the 2½mm. of what printers would call "gripper margin" at its

top and bottom—just enough margin and no more.

But what are we going to put into this new standard-size library micro frame, 70 by 120mm.? Surely not one page, or two pages, of text. On the contrary, we are going to put there just as many pages as we want to put there, from one up to 250. How are we going to do this? By “imposing” our photographic “copy” to suit our requirements. We are not going to work, as all our micro-filmers have hitherto been content to work, and as that Leica pioneer worked, *from unmanipulated originals*.<sup>\*</sup> For one copy—or several copies—we may have to do this; but, just as soon as we get into “edition reproduction” of our texts our hands are no longer tied. In every case where we want to make more than fifty copies of our micro-text—and that will always be true where we are dealing with micro-cards—we can use much more efficient methods. We are no longer under compulsion to *minimize fixed cost at the expense of reproduction cost*.

Just what does all this lead to? Look for a moment at one of the Readex Corporation's six-by-nine inch micro-printed pages (and one of their pages is taken as an example only because it is the only sort of micro-printed text on paper at present available). If you analyze it from the standpoint of text *compactness*, you discover that the one hun-

<sup>\*</sup> Of course we are here assuming that we are *not* photographing unique manuscript, or rare book, materials. If we are dealing with material *too valuable to destroy* we shall have to continue to copy it by single “openings” just as we do now. We are here talking about the micro-reproduction of the ordinary library run of book, pamphlet, and periodical material.

dred pages of micro-print which they put, systematically, on each of their pages usually occupy less than half of the superficial area of the page. The rest of the page space is white space, taken up by page margins and by page "gutters" (the space between the pages). But, in failing to use so large a proportion of the space they have available, these Readex pages are no whit different from the micro-filmed pages which the rest of us are making all the time. Any strip of our micro-film will show a considerable amount of entirely waste film, some of it between frames, but more of it along film edges, particularly along film edges if we happen to be using perforated film.

But the really important waste which we have been permitting ourselves all the while in the past by our conventional method of micro-filming has been not a waste of blank space, but a quite inadequate use of the space that we did use. For, because we were always photographing from opened books, *it was never possible for us to get more than two pages—that is one book "opening"—on a single frame.* No one gave any thought as to whether this was a wasteful practice or not, any more than one gave much thought to the waste involved in the use of perforated film. The saving gained by micro-reduction itself was so enormous that it seemed a little silly, perhaps, to endeavor to squeeze the last possible drop of use out of a strip of film. It seemed silly, however, only because we were not viewing micro-reduction as but one element in an inter-

related whole of processing. We were not—to go back to our already worn-out word—trying to integrate it into our library economy. But, now that we are, now that we have set ourselves a definite problem, now that we want to get just as many pages of micro-text as we can on the back of one catalog card, we are able, quite abruptly, to see that every square millimeter of wasted film space counts.

Well, what are we going to do about it? We have already said. We are going to “manipulate” our copy in such a way as will enable us to photograph at one time, not two, but just as many pages as we can get in our frame. And this is really a simple enough matter. All that we have to do is to take *two* copies of the book that we are proposing to micro-copy, return these two copies to their original unbound form, and then *spread them out*. How do we do this? We take the two copies; trim off all the waste paper margins on all the four sides of their pages; and then “reimpose” the resulting pages *in an order and layout especially adapted for the easy reading of them on the back of a catalog card*. Then we photograph, at one shot, in one frame, the complete book as it is thus laid out for us in one single huge sheet. This procedure sounds simple enough. It is simple enough. But, when we follow it, we find that the impossible has become possible; and that we can, very easily, get on our catalog card not twenty, but up to 200 or 250 perfectly readable book pages; and that we can do this *without using*

*a reduction ratio any greater than the one that we commonly use now when we are microfilming newspapers.*

Nor is the above "imposing" job either a difficult or lengthy one. For one hundred to two hundred pages it may take half an hour; for twenty to thirty pages, it takes ten minutes. The preliminary book trimming should, of course, be done on a regular guillotine cutter. And, in practice, we have found it helpful to paste the pages down with rubber cement on a large piece of binder's board, or press board, simply to keep them in their places for photographing. To give a neat looking result they should be "lined up" evenly across the board, very much as a printing plant stone-hand lines up a "form" of type for printing. The binder's board should be five feet by three feet, or in some other size exactly proportionate to the size of a catalog card. (One piece of board can be used over and over.) The two copies of the book being photographed are, of course, destroyed by this method of photographing; but what of it? Their cost is negligible when it is distributed over even five hundred micro-cards—and micro-cards will probably never be printed in editions of less than five hundred copies.

So far we have spoken only casually about what micro-cards are going to cost. Before going further it might be worth while to insert a few comparative figures. For convenience, we are going, in this com-

parison, to assume that our library "processing" costs (cataloging, etc.) are those quoted in Chapter 3. We are going arbitrarily to assume that our cataloging of each item requires three cards (an "author-entry" card, a "title" card, and a "subject" card). We are going to assume, even more arbitrarily, that we shall buy our micro-cards for five cents each (more will be said on this particular point later). Finally, for the sake of comparison, we are going to estimate comparative costs for two entirely different sorts of original items, one an unbound 80-page pamphlet which can be acquired by the library free, and one a bound five-hundred-page book which can be bought by it at a purchase cost of \$5.00.

*Total Cost to the Library*

	80 page pamphlet in printed book form	80 page pamphlet in micro-card form
1. Original purchase cost	\$—	\$ .15
2. Binding (assuming the cheapest possible)	.20	—
3. Minor physical "proc- essing"	.15	—
4. Cataloging (in the case of the micro-cards the cataloging is included in their purchase cost. Card filing, es- timated at 1 cent a card, is here itemized separately)	1.02	—
5. Card filing	.03	.03
6. Storage	.10	—
Total cost	\$1.50	\$ .18

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	500-page book, in printed, bound form	500-page book, in micro-card form (assuming that 2 cards are required)
1. Original purchase cost	\$5.00	\$ .30
2. Binding	—	—
3. Minor physical "proc- essing"	.15	—
4. Cataloging	1.02	—
5. Card filing	.03	.06
6. Storage	.44	—
Total cost	<u>\$6.64</u>	<u>\$ .36</u>

Downloaded from www.dbraulibrary.org.in

## CHAPTER 3

### MICRO-CARDS—THEIR CATALOG CARD FORMAT

IN several revolutionary respects the catalog-card side, or front side, of a micro-card will be different from the one that librarians are at present used to. The Library of Congress prints cards for all the books that it catalogs, and most libraries buy and use copies of these cards to do their own cataloging of the same books. By catalogers Library of Congress catalog cards are considered model cards. They look like this:

**Maurois, André, 1885—**

Tragedy in France, by André Maurois; translated from the French by Denver Lindley. New York and London, Harper & brothers, [1940]

viii, 255 p. 21 $\frac{1}{2}$  cm.

"First edition."

1. France—Pol. & govt.—1914— 2. European war, 1939—  
France. I. Lindley, Denver, tr. II. Title.

*Name originally: Emile Salomon Wilhelm Herzog,*

40-27735

Library of Congress

D761.M32

Copy 2.

Copyright

1501

940.5344



The Library of Congress type of catalog card has these major characteristics:

1. It is what catalogers term a "unit" card. Catalogers make their "main entry" for a book under the name of its author. But they also make "added entries" for it: "*title*" entries (i.e., entry under the title of the book being cataloged); "*subject*" entries (i.e., entry under the subjects which the cataloger decides that the book is about); and (sometimes) "translator" entries, "editor" entries, "joint author" entries, "series" entries, etc., etc. A "unit card" is a card which has the author's name printed at its head; that is, it is itself the "main entry" card. But, above the author's name, has been left a blank space. A library buys as many unit cards for a given book as it decides to make entries for it (usually either three or four). The "author entry" card is complete as it comes. On each one of the other copies of the unit card the local library types in one of its proposed "added entries," in the blank space which has been left on them for that purpose.

The catalog cards printed for general library use by the Library of Congress suggest, in fine print at the bottom of each card, what "added entries" it thinks desirable for the book being cataloged. (Thus, on the sample card reproduced above, it suggests making a *title* entry, two *subject* entries—"France-Pol. & govt.-1914—" and "European war, 1939— —France," and also a *translator* entry, "Lindley, Denver.") The individual library buying these Library of Congress cards may, however,

entirely ignore its suggestions; and, in practice, it often does. It may make more entries; it may make fewer; and when it makes the same number, it may use different wordings. It is because some libraries are not willing to accept, unchanged, the standard "added entry" headings suggested by the Library of Congress that all of them are obliged to type in the headings on their own cards by hand.

2. On every Library of Congress or other "unit card" about one sixth of the card, on the left hand side, is left blank. In this space each individual library is supposed to insert, by hand, its "call number" for the book that the card catalogs. Call numbers are short-hand "classification symbols" by which a library indicates where, on its shelves, the book cataloged is stored.

Just as it did in the matter of entry headings, the Library of Congress suggests on its cards (in fine print at the bottom) a form of call number for the book which the card catalogs. (That is what the "D761.M32" on the above sample card is.) But, for the same reason that forced them to write in their own individual subject headings (*viz.* that they cannot all agree to use the call numbers suggested by the Library of Congress) libraries have to fill in their call numbers on their own cards by hand—hence the blank space.

Why can't they agree? Various reasons. For one thing a large library, like the Library of Congress, with many books on a given subject, is theoretically obliged to use longer call numbers to differentiate

its individual titles than a small library, with only a few books under each subject, would have to use. Since, however, as few as five symbols—in any system of call-numbering using a combination of letters and numerals (as all do)—will, mathematically speaking, be enough to differentiate no less than sixty million different books, it is evident that call numbers ten or fifteen symbols long are the result of a poorly planned call-numbering nomenclature. Furthermore, although the small library does not like to use call numbers longer than it really needs, it might far better use such a long number occasionally, than do what it does now (viz. make up, and write in, call numbers of its own for every book, to make them fit what it thinks are its own very special needs). This doing over of all call numbers to suit each individual library has, however, always been accepted library practice; and this despite the fact that the great majority of libraries nominally use the same system of classification.

3. Every "unit card" has, under the author heading, and taking up the main body of the card, an exact transcript of the title page of the book which it catalogs. (With minor exceptions, the title page is always copied in full, regardless of its length, or its informational pertinence.) Most book titles are only a line or two long, in which case most of the card is left blank. On the other hand, once in a while a title comes along that runs over onto two or three cards.

4. Below this transcript of the title page, in somewhat smaller type, the Library of Congress gives the book's "collation" (i.e., an exact description of its pagination, its illustration material, etc.). By accepted library practice this collation is done with the most meticulous sort of hair-splitting accuracy, all separately paged and all unpagged leaves being carefully so recorded, and all the various kinds of illustration that the book may contain being minutely differentiated.

5. With rare exceptions, the conventional "unit" type of catalog card, such as those issued by the Library of Congress, gives no evaluative, or descriptive, information regarding the contents of the book which it catalogs.

In every one of these present generally accepted catalog card characteristics micro-card cataloging will make radical changes.

"First: It will take full cognizance of the already noted fact that catalog card space is expensive. It will therefore try to see that every square inch of it is put to efficient work. Even the fact that we are going to *compress entire libraries into our card catalog drawers* ought not to permit us to waste space on our cards which might be put to some good use.

What "good use"? The (directly readable) front side of a micro-card is the key to, the introduction to, and the explanation of, the (indirectly readable) complete text on its back.

The ideal catalog card will give a reader such

information about the book it catalogs as will enable him to tell, without examining it, whether it will be of use to him or not. We cannot always realize that ideal; but the less often a reader has to waste his time hunting up a book which proves, from his point of view, to be useless, the better. This is just as true of a micro-card, where to examine a book a reader has only to turn the card over, as it is of our conventional catalog card, where a reader has to hunt up his book in the stacks. Therefore:

*Second:* The catalog card entry on the front of every micro-card will be made in sufficient fullness, and will be devised in such a way, as to tell the would-be user *everything* that it is thought will be helpful to him, regarding the micro-text which is on the back of the card. This means that it will, as now, give him the author's full name (and his dates of birth and death). It means that it will give him *so much* of a transcript of the title-page as provides genuine information as to the scope, the authoritativeness, and the subject matter of the text—but will not waste valuable card space in giving more. It means that it will save card space (and cataloging cost) by omitting all, or nearly all, of the present "collation"—because by the merest glance at the back of the card, without even the necessity of putting it in a reading machine, the user is given a much better "collation" than by any amount of detailed description.

*Third:* On the other hand, micro-cards will, in

their cataloging procedure, add something to the cards that our present cataloging usually does not provide at all, viz., a brief but carefully worded descriptive—and possibly to some extent an evaluative—annotation (an “abstract,” if you please) of the text on the back of the card. This abstract will, whenever possible, try to provide the would-be user with some clue as to the author’s scholarly competence, viewpoint, and background. But its main purpose will be to indicate the scope, and to summarize the subject matter, of the text. As with the cataloging entry proper, the abstract will try to answer the prospective user’s invariable question: “Is this book likely to be useful to me in the piece of work I am doing?” In the case of books (or pamphlets, or periodical articles) in foreign languages, and particularly in the case of items whose text is in Russian, Dutch, Portuguese, or some other of the less well-known foreign languages, this micro-card “abstract” is likely to be extremely useful to the research user.

*Fourth:* The catalog-card front of all micro-cards will be sent out *complete*. Nothing will be left for the receiving library to add, or fill in, by hand.

How is this “completeness” to be accomplished?

Take, first of all, the question of the “call number.” This particular problem settles itself, for, *mirabile dictu*, a micro-card is, for the first time, a catalog card which needs *no call number*. “Call numbers,” it will be remembered, are a device by

means of which books can be put on shelves in some definite order, and found there again afterward when they are wanted. With micro-cards, our "book" has been already "found": it is not away somewhere on a shelf, but here, at the reader's finger tips, in our catalog drawer. The necessity for having call numbers—*so far as finding books by them is concerned*—has automatically vanished; and the time taken to make them up and write them in, and the space saved by omitting them, can both be used for something more useful.

Why we no longer need call numbers for finding our books is clear. But it may not be so immediately obvious that, if we are able to eliminate the necessity for having call numbers, we may also be able to eliminate the necessity for having all classificational nomenclature for call numbers. This elimination is extremely important. Let us see why.

All of the so-called "systems" of library classification, the Dewey Decimal Classification, the Cutter Expansive Classification, the Library of Congress Classification, etc.—the classifications that librarians, for generations, have had to become familiar with, and have come to consider a permanent and absolutely essential part of library practice—are essentially *systems of call-number symbols*. It is these that make them classifications *for books*, rather than merely theoretical, or philosophical, classifications of human knowledge. What has always most obviously differentiated them has

been the various ways in which they chose and combined either letters or numerals, or both, to denote the various subdivisions of their classificational schemes. Their nomenclatures were the tools which we used.

It is true that "Dewey" and "Cutter" and "L.C." do differ greatly in their actual classifications, that is, in the way in which they divide up and subordinate the various subject fields of knowledge. But, rather curiously, we as librarians think of them, I am sure, primarily in terms of their nomenclatures. The Dewey classification has won the commanding lead it has over all others, not primarily because of the wisdom shown in its subordinations, but rather because of the simplicity, the adroitness, and the compelling practicality of its nomenclature. Indeed, to most librarians nomenclature seems the all-important thing. It will be difficult for them to conceive of a classification for books which has no symbols, no nomenclature, of any sort.\* Yet if we are able to cease to need call numbers, we shall be able to cease to need classification symbols for call numbers. If we escape requiring them for call numbers, we may escape requiring them for any purpose; and, if we can do that, then—*so far as micro-cards are concerned*—they, and all the decades of argument and controversy they have aroused, may be completely discarded.

If any librarian doubts this last statement, let

\* The Harvard University Library is almost the only one which hitherto has stood out a bit in this particularly individualistic direction!



him examine some good system of subject classification which has no system of symbolic nomenclature to accompany it. "Corpus Juris," or any similar cyclopedia in any one of the professions, provides excellent examples. Look up the classification of "Toxicology" which precedes the cyclopedic treatment of this subject in the "British Encyclopedia of Medical Practice" and compare it with the Dewey, or the Library of Congress, treatment of the same topic. The differences are at once obvious. What are they? First, that as soon as any subject classification is freed from all nomenclatural bondage, it is able to become extremely flexible, because it ceases to be under any obligation to fit into any prescribed numerical or alphabetical pattern.\* The subordination of its elements is dictated solely by logic and convenience. It can relate itself more closely to practical use.

Furthermore—and this, from the standpoint of the lay user, is extremely important—it is *self-interpretative*. It no longer has to say that "842.08" means "French drama, Collections of," or that "YYP" means "English poetry." Instead, it says right out, in plain straight English, "French drama, Collections of," and "English poetry." And book classification thus expressed in plain English words meets the needs, and satisfies the desires, of most library users far better than any symbols like

\* Unless a relative index is required. This point is further discussed later.

"842.08" and "YYP" ever can, no matter how cleverly the latter were devised.

But escaping from the symbolism, the conventional nomenclature, of library classification does not mean that with micro-cards we are going to escape from classification and classifications. In fact we may decide—in the next chapter—that it is wise for micro-cards to embrace classification more closely than books ever did.

## CHAPTER 4

### MICRO-CARDS—THEIR ENTRY HEADINGS

THE form of the entry headings to be put on our micro-cards deserves special consideration; for on their practicability—that is, their practicability *for research use*—hangs a great deal of the practicability of the cards themselves. Micro-cards are so new, so different, that it is not easy at first to see all their implications. Suppose, forgetting all that we now know, we were asked to try to formulate a science of librarianship from a brand-new start. If we did, we would find ourselves developing, so far as entry headings for micro-cards are concerned, a number of rather astonishing new library axioms.

We have just seen that micro-cards intend to eliminate all writing in of material by hand by the receiving library: that the cards will be sent out completely printed. The elimination of the necessity of "writing in" call numbers proved to be a simple matter: we eliminated the call numbers themselves. But entry headings can't just be eliminated. To file cards we must have headings on them to file them by. And how can we print all the headings we desire to have at once, at the top of the same card, at the point of origin? Yet, in some way,

we *must*. To leave the local library under the necessity of writing in, or typing in, *anything* by hand, places upon it an absolutely impossible burden of expense. To show that the expense would be absolutely "impossible" we have only to say that it would far exceed the total cost of the micro-cards themselves. But, to provide such a complete printing, we may have to make some changes, some compromises, some sacrifices.

First, an example of the changes that will eventuate. Micro-cards will give due place to the "author entry," and will recognize the desirability of "title entry," but they will emphasize, even more than our catalog cards do now, the predominant importance of the *subject* approach to research materials. So long as librarians fail to realize that it is the subject approach which scholars most often use, they are going to fail to do as effective cataloging of research materials as they might. To librarians it is the author entry that is supremely important. They have found, by experience, how necessary it is that they set up for themselves, somewhere in their cataloging procedure, what might be termed a primary triangulation point; and, after long study and experience, they are unanimously agreed that the "author entry" is the best single such point. And the reason that they are so agreed is because, despite all the difficulties it develops in actual practice, it still is the only form of catalog entry which can be established with reasonable definiteness and exclusiveness.

But, for all that, if we examine, quite dispassionately, how much the author-entry is used, and by whom, we will see that its value, though great, is to a very large degree one *existing for the library itself*. As a class it is the catalogers themselves who make the largest single use of author entries: they have to: for them it is the absolutely essential entry. Library order departments find it equally essential. So do other departments.

On the other hand, when it comes to outside use of the catalog, this is no longer true. Only in the field of literature does the author entry have *primary* research importance. Very seldom indeed will a scholar in any field desire to look for a book, or a pamphlet, or an article, by its title. Occasionally he may want a book, or a pamphlet, or an article, by a certain author. Most frequently, however, what he will be looking for will be *material on a certain subject*: the battle of Solferino, tensor decomposition, the action of diazomethane on cyclohexandione, the parasites of *Ostrea Virginica*, the influence of the discount rate in England on agricultural prices, the spectrophotometry of the temperature of the cepheid variables. In most cases he won't know in advance who wrote the articles he is after; and generally he won't even care.

My own feeling is that, even in our regular cataloging, we have not, for the really scholarly use of our materials, given as much emphasis to the subject approach as we should have done. But we are now particularly considering micro-cards. And

here we face some very interesting changes of use-value. The library staff will, so far as its micro-card library is concerned, entirely cease to do cataloging; that means, obviously, that cataloging staff use of the author entry will, for micro-cards, be correspondingly diminished. But the library staff will also, so far as its micro-card library is concerned, cease to do any ordering: that means that order-department use of the author entry will correspondingly cease. In other words, so far as micro-cards are concerned, the author entry is going greatly to decline in relative importance, even for the library staff. All the more reason, therefore, why the subject entry should be made the first one to find on a card, the easiest one to use, the one contrived with the utmost of scholarly competency, the one most carefully kept up to date.\*

Much of the material that will make up our micro-card library will be of less than full book length—pamphlets, theses, reports, bulletins, and the like, and even separate periodical articles. (On this last point more in the next chapter.) This means that the separate units of material which micro-cards will be called upon to catalog will, in general, be shorter, *and more highly specialized*, than the ones we catalog now. And this in turn means that, in general, we shall require subject headings more finely worked out than those to which we are accustomed. Otherwise we shall find

\* Please do not mis-read this sentence: *bibliographically speaking, the author entry will still remain the main entry.*

ourselves turning over to our users huge inchoate masses of undigested materials lumped in the catalog drawer under a few inadequately subdivided subject headings.

But properly to work out, and properly to apply, highly specialized, finely subdivided, subject headings will require staff members who are not only experts thoroughly trained in cataloging, but also experts—that is, thoroughly trained research scholars—in the respective fields they are given to catalog. It is absurd to think that, in the days that are ahead of us, we can continue to ask our catalogers to be omniscient. To expect a cataloger to develop one day a correct and exact catalog entry, subject heading and abstract for a doctoral thesis, written in Russian, concerning some obscure reach of mathematical theory, and the next day to do the same thing for a book in German on some esoteric chemical reaction, is simply asking too much of one human mind. For all our micro-card cataloging, subject heading and abstracting we shall have to resort to a very high degree of scholarly subject specialization.

Now for another angle of this matter of micro-card entry headings. Twenty years ago practically all research library catalogs were, like all public library catalogs, what the librarian calls "dictionary catalogs," that is, they were catalogs in which author, title, subject, and all other sorts of entry headings were intermingled in one straight alphabetical order. The dictionary catalog was an Ameri-

can invention. It was originally developed because it was thought simpler and easier for ordinary mortals to use. But, of recent years, as our catalogs have grown ever huger in size, and as their various headings have become more and more complex, this original simplicity has been gradually lost. Particularly under such headings as "UNITED STATES," where even a small library may have thousands of cards, the mixing of author, subject, and title entries into one alphabet has resulted in a filing labyrinth in which the ordinary library user now very easily gets lost.

Because of this, a few college and university libraries, a half dozen years ago, began to experiment with "split" catalogs, that is, with card catalogs in which authors, titles, and subjects (this was the usual split-up) were filed in three separate alphabets. These split catalogs proved so much simpler for the average library patron to find his way about in that the libraries that tried the new plan were soon enthusiastic about it; and, among research libraries, this movement away from the "dictionary catalog" has gradually spread.

Our new micro-card catalogs will be "split" catalogs. But they will be split catalogs for several reasons in addition to the one—greater simplicity in use—which has so far been the only argument in favor of them. Take, for example, the difficulty already referred to, that faces us in the case of micro-cards: the necessity of printing in all our entry headings at once, all together, at the top of



the cards. Our users don't want all of them at once: at any one time they want only one. How then can we print them all together, and yet print them in such a way that a user of the catalog can easily "unscramble" them, can pick out the one that he wants to use, and temporarily ignore the rest?

At first blush this seemed an almost impossible order: but, at a meeting in New York last summer of the College and University section of the Special Libraries Association, there were shown \* some sample catalog cards that seemed to offer a way of accomplishing this result. Here are a couple of these sample cards:

CHEMISTRY—INORGANIC—POTASSIUM—FERRICYANIDE

Locke, James, 18—, *et al.*

POTASSIUM ferricyanide, On  
an isomer of. Amer. Chem. Jour: 1899: 21: 193-206.

LITERATURE—ENGLISH—POETRY—VICTORIAN PERIOD—BROWNING,

Brockington, Alfred Allen, 1872—

BROWNING [Robert, 1812—]

and the twentieth century, a study of his influence and reputation  
... [Doctoral thesis, Univ. of London] London, Oxford Univ.  
pr., 1932.

It will be seen at once that each of these two cards is uniformly supplied with three separate printed

\* To accompany a paper by the present writer, "New Possibilities in Cooperative Cataloging."

headings—the first a *subject* heading, the second an *author* heading, and the third a *title* heading. These three different headings are all printed on the card at once; but each is printed on a separate line; each is differentiated from the others typographically; and each is also differentiated by a standardized scheme of *widely* different indentions. So long as they are thus—triple—differentiated on each card, and so long as the headings are *kept alphabetized in three separate alphabets* (i.e., in a “split” catalog) the three different headings are likely to be kept *mentally separated* by the great majority of users.

It will be noticed that, on these sample cards, the subject heading is given the first, or dominant, position. But the author heading (which is still, bibliographically, the “main entry”), although it is given second line place, is given almost equal prominence by setting it in a bold-face type. The (relatively) much less important title-heading—less important *in a research library*—is given inferior position, both in typography and in indention.

But the necessity we are under of issuing our micro-cards completely printed is not the only reason for giving them this “three-way” form of entry heading. This form of heading permits great flexibility in the purchase and use of the cards. Not all micro-card subscribers are going to be able to afford, and some of them will not even desire, three sets of micro-cards. Many a small college library, determined, at some strain on its resources, to subscribe for all micro-card books in its curricular

fields, will decide that two sets of them will have to do it. It will decide, for example, to have a micro-card author catalog and subject catalog; but to save one-third by getting along without a title catalog. And some micro-card subscribers, particularly individual subscribers in limited subject fields, will decide that one set of cards only, to be filed by them as either an author catalog or a subject catalog, will do them. The "three-way," or "automatically alternative," form of printed-in entry headings, offering, as it does, the opportunity to file identical cards in three different ways, gives a flexibility in purchase and use that their buyers are going to find extremely desirable.

"But," catalogers are going at once to reply, "you are providing only three headings: one author, one title, one subject. Suppose we want more: suppose we want other added entries?" The answer is: here is one place we have to compromise. If this form of printed-in headings should be adopted there would be supplied, uniformly on every micro-card, the three alternative forms of filing entry stated (author—title—subject), and only these three. If any library decided that it wanted to enter a given book under some fourth heading, there would be one thing it could always do: exactly what it would have had to do if no one had ever supplied it with printed cards: it could put a blank card in its typewriter, type at its head whatever additional entry heading it wanted, and copy, under that heading, as much as it chose of the catalog entry of

the micro-card. (And, if any library should happen to want some unusual sort of added entry—a “translator” entry, or an “editor” entry, for example—this is the procedure that it would have to follow.)

Much more often, a library would be likely to think that it wanted a second subject entry. And, in this direction, even though micro-cards are going to provide only one subject heading for each micro-card, they are going to extend all the help they can, because they deem subject headings important. How can this further “help” be extended? Well, for one thing, the title entry can be made to work overtime, as it were, by giving it, wherever possible, the additional value of a subject entry. By inverting it, or by otherwise “manipulating” it, every endeavor will be made to make it just as practically helpful as possible, instead of the almost meaningless entry that it now often is.

It is especially likely to have the added value of a subject entry in cases where the second subject heading desired is a geographical one. A book bearing the title “Chinese Missions,” for example, would get its actual subject entry from the religious angle; but its title, besides being a title entry, would “bring it out” in the catalog from the geographical side. Similarly a title entry for “Australian Geology” would “bring out” this book from the geographical angle; while the subject-entry, under “Geology—Australia,” would direct a would-be user to it from the geological side.

A good many librarians think that subject headings tend at present to be overdone, that we need fewer rather than more of them. And this is probably true. On the other hand, a great many books very definitely have a subject interest from two entirely different directions. How can we give this double subject approach to books of this type? Fortunately our micro-card publishing plan itself automatically takes care of this; for, under it, all books in borderline, or criss-crossing, subject fields will presumably be "micro-published" twice, in each of their two respective subject fields. As a result, all libraries subscribing to material in *both* the subject fields will receive two sets of cards for the same book, each set with a different subject heading. Thus, to cite easy examples, material on forensic medicine would receive both law and medical micro-card publication; books on biochemistry would receive both chemistry and biology publication. A library which subscribed for the cards for only one of a book's two fields would get its cards only once, and then subject-headed for the one field in which *it* was interested. This would, obviously, be both proper and adequate; for a law library would be interested in forensic medicine *only* from the legal side, and a medical library in it *only* from the medical side.

Let us now turn to another heading question, raised not for dogmatic, or immediate, decision, but rather as a moot point to be further discussed. It probably was noticed that the subject headings

on the sample cards shown a few pages back were quite different in their form from our present conventional subject headings: in fact that they were *classificational subject headings* rather than *alphabetical subject headings*.

Not all librarians may realize that what they term "subject headings" are really a special sort of "classification"; and that subject heading "codes" are really a special sort of schemes of classification. The difference is simply that, in schemes of subject headings, the classificational units, after they have been selected and correlated with each other, are given names, instead of symbols; and that they are then placed in relationship to each other by means of an alphabetical \* arrangement (and by means of "See" and "See also" reference cards) instead of by a logical, or analytical, arrangement.

In considering this whole subject of headings for our micro-cards we must get used to the idea—a little hard for us to get used to at first—that a micro-card catalog is very much more than a catalog; in fact that it is no longer primarily a catalog. *Primarily* it is a collection of micro-reduced books: it is a "library" in and of itself: only secondarily is it also—simultaneously—a card catalog of these same books.

This matter of the necessity of viewing a collection of micro-cards as primarily a library rather than a catalog is brought up here because it takes

\* Not always alphabetical, however. In many places, particularly in history, our present schemes of subject-headings have adopted a classified sub-arrangement, exactly like any analytical classification.

on very great practical importance when we come to the arrangement of the cards in their drawers. Not the arrangement of them by author or by title; with these two sections of the catalog no question arises; the arrangement has to be an alphabetical one by their respective headings. But, when we come to the arrangement of the subject-headed micro-cards, a question does arise. No scholarly library in existence arranges its books on its shelves in the way it arranges its subject cards in its dictionary catalog, i.e., alphabetically by the names of their subjects. Such an arrangement is entirely possible; but no librarian has ever dreamed of following it. We do—almost always—arrange the books on our shelves by subjects; but the subject arrangement which we follow there is not an alphabetical one, but a classified one. We say that we “classify” the books on the shelves. Why do we do this? Because long experience has proved that this classified arrangement is the one found most useful by the vast majority of library users.

The question that immediately faces us with micro-cards is, can we, as librarians, argue with any consistency for a change in this hitherto fundamental rule of book arrangement, just because our books have ceased to be books arranged on shelves, but have become books on cards arranged in drawers? On what grounds can such a change be argued for? and are the grounds tenable?

“Oh, but,” it will be replied at this point, “what you are really proposing is that we adopt a classified

subject catalog for micro-cards instead of an alphabetical subject catalog." That is, indeed, what the suggestion amounts to. Only I would phrase it the other way around; I would say that we ought not to *change* our established—and always previously found good—method of book arrangement merely because in the case of micro-cards it, incidentally, results in our having, for them, a classified subject catalog.

Why do most library users—and scholars invariably—prefer to have their books arranged on the shelves in a classified order instead of in a hit-or-miss alphabetical, or alphabetically-arranged-subject, order? Because, to any informed user of research materials, more or less familiar, as he is, with the systematic taxonomy of his special field, there is a considerable advantage in being able to find these materials, the directly pertinent and the cognate, in close physical and bibliographical juxtaposition. Even to the uninformed, but intelligent, worker in any field a classified arrangement of its data synthesizes it, clarifies it, shows its mutual relationships, in a way that no straight alphabetical arrangement, with its higgledy-piggledy mixing and scattering of subjects all over the alphabet, possibly can. Furthermore—and this is of very great practical convenience,—any classified arrangement keeps materials of a sort together in one place.

When it comes to micro-card books two objections to a classified arrangement for them can be raised.



First, that it will be obviously necessary to provide a "relative index," or "alphabetical key" to the classified arrangement, whatever it may be, that we use, a "key" to give the uninformed, or puzzled, library user an alphabetically arranged list of subject words to which he can turn, to learn where, in the classified arrangement, the material he is seeking is. (In the case of micro-cards this alphabetical "key" could be printed on cards—in which case its continual revision, correction, and publication would be made easier—or it might be printed in book form, in the same way that the "Relative Index" to the Decimal Classification is printed now.)

It may be argued that such a classified catalog as this, with its "key," forces library users in many cases to make a two-step approach to their materials. What these particular critics fail to see is that in this respect the procedure, with micro-cards, would be no whit different from the one we follow at present with books. Our books are at present arranged on our shelves in some sort of classified order. The scholarly expert almost always prefers to go directly to them, to browse over them, and to pick out for himself on the spot the books that he wants. But, if he is not expert in the classificational arrangement, or if, however expert, he can't find what he is looking for by this direct approach, what does he do? He *uses a two-step approach*: that is, he uses an alphabetical "relative index," or "key" to the classified book order; a

"key" which we know better as our present dictionary catalog subject headings.

The second objection to any classified system of subject headings for micro-cards is that, if we are to have a "key" to them, it would be impossible to arrange them in a *completely* "logical" order. This last statement may need a word of explanation. Why would it be impossible? Because, *unless we accompany our name headings with some sort of classificational symbolization*, we must arrange them in an alphabetical order. Otherwise there is no way by which a "key," or "relative index" could direct a user to a given name heading, and no way by which he could find it.

There are two possible ways by which this difficulty might be overcome. By one plan, under each "step-down" in the classified subject-headings, the headings *under that step* might be arranged alphabetically. Here the main clarificatory and grouping-together advantages of every classified form of subject heading would be preserved; because only the *order* of the headings in each class and subclass would be put into alphabetical order. Although this would frequently offend one's logical sense, it would not actually make any very great practical difficulty.

As a matter of fact the Library of Congress Classification, our great present exemplar of scholarly classification, in thousands of its subheads and sub-subheads, deliberately departs from a classified (or philosophically correct) order for its headings, and

adopts, for sheer practical convenience, an alphabetical order. Thus, to take a single example, in the Library of Congress Classification the various chemical elements are arranged alphabetically by name under their subject class number "QD181," whereas the Decimal Classification groups them in "546" according to a classified scheme. Theoretically the classified order for them is better: practically, so long as we have all Bromine material together under "QD181B7" and all the elements together under "QD181," it is not really very important whether "Bromine" comes before "Bismuth" in our shelving arrangement under a grouping arrangement, or after it under an alphabetical arrangement. It would be entirely possible to work out such an alphabetical-classified subject arrangement that would follow very closely either the Decimal Classification or the Library of Congress Classification, but, unfortunately, it would have to be worked out, and, when it was worked out, it would *not* be either one of these two present classifications.

The alternative possibility would be to go back to the classificational symbolization that in the last chapter we thought we were going to be able entirely to discard. This would mean that microcards would have definitely to adopt a specific classification scheme for themselves, presumably one or the other of the two present standard classifications, Decimal or Library of Congress. The idea would be to adjoin to the *word* headings (by means

either of superior letters or some similar typographical device) their proper classification *symbols*. A micro-card subject heading might, for example, look something like this:

RK            551

Dentistry—Operative—Filling—Porcelain

This form would give us a classified arrangement of our micro-cards; enable us to use either one of our standard classifications "as is," unchanged; and enable us to link it up directly, by means of the symbols, to a "key" or "relative index" in the usual form.

It should also be noted, before we close this phase of the discussion, that a classified arrangement of our micro-card subject headings would have another practical advantage. We shall learn, a little later, that economy in distribution is going to dictate that all sales of micro-cards shall be by subject fields. This being the case, there are obvious "handling" advantages in having the words of our subject headings, whether they be classificational main heads, or subheads, closely correlated with our various "fields" of micro-card sale.

Discussion of micro-card subject-heading forms should not be permitted to receive undue emphasis. The way in which our micro-cards are subject-arranged is obviously an important detail—a very important detail—but it is still only a detail. A

decision on it, either one way or the other, does not affect the fundamental micro-card idea an iota. It would always be entirely possible to follow present subject-heading practice, and even to use—at least as a starting point—the present official subject-heading code. All that has been pointed out is that this would mean a break—an entirely unnecessary break—with all previous library shelving practice; and that, before we made this break, the whole question ought carefully to be considered.\*

\* For a further amplification of the writer's own attitude toward this question see his "Alternatives for the Present Dictionary Card Catalog," in "The Acquisition and Cataloging of Books," edited by William M. Randall, 1940, p. 148-9.

## CHAPTER 5

### MICRO-CARDS AND CATALOGING ANALYSIS

THE library cataloging of periodicals, as it is now customarily done, tends to leave behind it a sense of futility. Essentially what it does is to provide library patrons with a checklist of the library's "holdings" of a given periodical, in terms of volumes and numbers. It does not, ordinarily, give them any information as to the material that is in them. It is as though we carefully listed a series of caskets containing great treasure, but gave to those most interested no clue as to their contents. We leave them either to open the caskets and paw over what is inside; or, by means of some information gained outside, to look for a jewel said to be in one of them.

This was not always the case. Back in the pioneer days of librarianship librarians did attempt to direct library users to periodical materials. In those days "analytics," as catalogers call them (i.e., individual catalog entries made for the separate parts of periodicals and other "composite works"), were an accepted part of cataloging procedure. Soon, however, periodicals grew so rapidly in size and in

number that such "analyzing" threatened to swamp cataloging departments. A few libraries—the New York Public for one—carried it on manfully long after most libraries had given it up. Eventually most of it was taken over by a new species of bibliographical tool which had been developed for this specific purpose, a long, and still growing, line of "indexes," "digests," and "abstracts" in periodical form, of which the H. W. Wilson Company's numerous excellent publications, and the *Index Medicus*, were perhaps the first examples.

If research materials can be said to have any common denominator, it is the fact that, on the whole, *they come in small packages*—in periodical articles, pamphlets, government documents, committee reports, society proceedings, and the like. As has been already pointed out, it is the secondary material, the re-serving up of primary fact for the general reader, that usually blossoms out into full-length book form.

It is largely because research material comes in small packages, and is, as a result, minutely specialized, that it tends to be hard to get at. But the very reasons that have tended to bury it, bibliographically speaking, are exactly the reasons that make it fit so admirably into the micro-card set-up. The area of a single catalog card is, after all, a limited one. Although, under compression, it will take longer items, it is best suited to items not over, perhaps, a hundred pages long. But for research material this length is almost ideal. Probably 95%

of all its separable "units"—all of its many millions of books, proceedings, periodical articles, reports, theses and pamphlets—run to less than one hundred pages. Probably the average size of a unit of research material would not be over sixty or seventy pages. In other words, micro-cards on the one hand, and research materials on the other, seem naturally to "match up." And, when we do come to the occasional research item that runs to over two hundred pages, we can either arbitrarily split it up for separate micro-card "analysis," if it appears to split along well definable subject lines, or we can, as has already been suggested, take recourse to a continuing series of two or more micro-cards.

One would hardly want to suggest, at this stage, that micro-cards are going to reverse the library world's seventy-year trend away from catalog "analyzing," or that they may ultimately eliminate—*so far as research materials are concerned*—any significant proportion of our periodical indexing and abstracting journals. Yet, for all that, this may prove to be one of their effects. It is clear that they make a direct access to scholarly materials, that all research workers would be delighted to be able to secure, both bibliographically and financially practicable. And in the older literature, not covered by any existing periodical indexes, there is likely to be a great deal of micro-card analyzing.

To see just how micro-card analysis works let us consider a typical scholarly periodical, the biological journal *Ecology*. It comes out in four quarterly



issues. Bound, these make a reasonably weighty annual volume. Each issue contains three or four separate articles, each from ten to forty pages long. An out-and-out ecologist will wish to browse over the entire contents of each number as it comes out; but, for research use afterward, nobody is going to want *Ecology* as a whole: what will be wanted then will be some specific article in it. The would-be user may want a certain article by John Q. Robinson (author approach), or he may want all the material he can find on the effect of saline saturation on marine life (subject approach), or he may want an article entitled "The Forest Cover of the Adirondack Region" (title approach). But, no matter what the angle is from which he approaches the catalog, what he wants is always something in the periodical, not the periodical as a whole. In the past we have cataloged *Ecology* as a whole; we have bound it as a whole, and stored it as a whole; and even though a research worker wanted to use only one ten-page article he had to carry home three or four pounds of *Ecology*.

Now, obviously, if we wanted to, we could still handle *Ecology* on micro-cards as a periodical whole. We could continue to treat an annual volume of it as our storable and catalogable unit: that is, we could put an entire year of it on the backs of a series of two or three micro-cards (or perhaps better, on four cards—one quarterly issue to each card). And it may very well be that that is what we shall finally decide that we do want to do with it.

But there is something else that, for the first time, we can do with it, something that no previous cataloging or storage medium has permitted our doing, and something that the users of our research materials are very likely indeed to want us to do: we can "analyze" *Ecology*.

And, if we analyze, we shall have, instead of *Ecology*, stored and cataloged as a whole, *Ecology*, split up into its research unit parts. On the front of each *Ecology* micro-card the user of the catalog would find a careful cataloging, indexing and abstracting of some one particular important article in a given volume of *Ecology*. And, on the back of each card he would find, not *Ecology* as a whole periodical, but the text of the one article, from ten to forty pages long perhaps, which was cataloged on the front. No longer would the ecologist have to search for material through a long series of indexing and abstracting volumes—and then hunt through the stacks to assemble the actual periodical volumes called for in his indexes. Instead, all of his index references—and all of the material itself—would be assembled for him at one place in one file.

It may be replied that this does, indeed, sound ideal; but that the library world gave up periodical analyzing sixty years ago, not because it wasn't ideal, but because it had grown prohibitively expensive. But this reason has, with micro-cards, lost most, if not all, of its force. The following two tables of comparative cost will make this fact more clear. The first table shows the time cost to the

*scholar* of the two alternative procedures (for the scholar's time, too, is something that costs money); the second shows *the financial cost to the library*.

## TIME COST TO THE LIBRARY USER

*To Find All the Available Periodical Material on a Given Subject if it is in Bound Periodical Book Form, the User Must:*

1. Search in anywhere from one to perhaps fifty separate alphabets, in anywhere from one to perhaps five different "indexing" or "abstracting" periodicals (and even then he will be without assurance that he has been directed to *all* that the library possesses on the subject in question).  
(Time from ten to thirty minutes?)

2. Look in the library's card catalog (in an indefinite number of places) to see if *it* possesses the various periodical volumes which the indexing and abstracting journals consulted say have material that may be what he is looking for.  
(Time ten to thirty minutes?)

3. Hunt in the stacks for (or have hunted up for him) the volumes desired and found to be owned by the library.  
(Time five to ten minutes?)

Total time: From 25 minutes to 1 hr. and 10 minutes.

*To Find the Same Periodical Material, if it is Available in Separately Analyzed Micro-card Form, the User Must:*

1. Look in one *single* place, in one *single* card catalog. He will there find *everything* that the library has on his subject, and will know that, whatever the library's resources may be, he has everything.  
(Time from one to five minutes?)

2. No time at all. (If their micro-cards are *there* he automatically *has* the material.)

3. Turn over the catalog cards that look interesting and insert them in the reading machine at his elbow.  
(Time one minute)

Total time: From two minutes to six minutes.

## FINANCIAL COST TO THE LIBRARY

*To Provide  
One Year of a Typical Periodical  
in Bound Periodical Form*

*To Provide  
One Year of the same Periodical  
in Micro-card Analyzed Form*

1. Subscription Cost of Periodical	\$5.00	\$5.00
2. Cost of Binding	1.80	Nil
3. Cost of "Processing" and "Cataloging" the bound volume. (The "cataloging" cost is small in the case of such a "continuation" as this.)	.35	Nil
4. Cost of Micro-cards. Assuming that in the case of periodical articles the library buys two sets of cards only (author and subject cards); that they cost five cents each; and that for the particular periodical we are taking as a sample there are "analyzed" twenty separate articles each year.	Nil	2.00
5. Cost of Storage (capitalized). (This estimate is for a book occupying 2" of shelf space, and for cards occupying 1½" of file space. In this case we do charge for the storage of the "analytical" micro-cards because, if we had used ordinary library cataloging methods we would not have had any.	.40	.10
6. Cost of Filing Cards (@ 1¢ each)	Nil	.40
7. Proportionate Cost of the Periodical Indexing or Abstracting Services which cover this periodical (estimating it here, quite arbitrarily, at 1/200th of an annual subscription cost of \$50.)	.25	Nil
Total	\$7.80	\$7.50

If we are to believe the last of the above tables the financial cost of the two methods is almost a toss-up. But this table gives micro-cards no "breaks": it gives them the bad end of every assumption. It assumes, for example, that we are subscribing for the current periodical only to throw it away.

Suppose, to be a little fairer to micro-cards, we take an example of periodical analysis for which they are more logically fitted, viz. a volume out of a set of an old, out of copyright, expensive foreign research journal. Suppose this journal is now indexed nowhere. Suppose also that it is printed in Russian or Finnish or some other language so foreign that the micro-card abstracts of it would be of great practical value for this reason alone. Our cost table might now look something like this:

<i>To Provide One Year of Periodical in Conventional Bound Form</i>		<i>To Provide Same Periodical in Analyzed Micro-card Form</i>
1. Cost of one year of the Periodical, unbound	} \$10.00	Nil
2. Cost of Binding		
3. Cost of Cataloging	.35	Nil
4. Cost of Micro-cards	Nil	\$2.00
5. Cost of Storage	.40	.10
6. Cost of Filing	Nil	.40
7. Cost of Present Abstract- ing Services	Nil	Nil
Totals	\$10.75	\$2.50

But there is still another cost consideration. Both of these cost comparisons assume that the library subscribes for *two* sets of micro-cards. This also is a

little unfair to the micro-card side of comparison; for even one set would often give its users far *better research service than they get now*. And a subscription to one set, instead of two, would cut all the micro-card cost figures given exactly in half.

We now come to another question: if, on our micro-cards we "analyze" individually all the long and really important articles, just what are we going to do with that portion of every periodical which isn't worth any such separate analysis? It is true that a great many periodicals, and those the most scholarly ones, are little more than bound collections of monographs; and that these periodicals lend themselves easily to micro-card analysis. But there are other periodicals, particularly those more popular in character, trade journals and the like, which contain a great deal of more or less ephemeral matter, short notes, current news, personal items, association notices, and the like. These short scraps of material are clearly not worth separate analyzing. Most of them have extremely little research interest. Some of them are hardly worth keeping at all—except in *one* place (which would mean, in this case, in the "sponsorship library" covering the subject field which the periodical is in: *that* library will, by the way, always hold a complete copy of the periodical in bound volume form).

One answer would be to make the sponsorship library the only place where these ephemeral, short items would need to be preserved. In those com-

paratively few cases when one of them might be wanted, it could be requisitioned there. But there is another answer, a logical answer, and perhaps a better one. It is: that we might first "analyze" (i.e., catalog and micro-card separately), out of a given issue of a periodical, all such articles in it as are deemed long enough, and important enough, to deserve separate analysis. (This, of course, would require the exercise of expert scholarly and editorial judgment; but the present editors of abstracting publications have to exercise exactly this same sort of scholarly and editorial judgment now: we are making no new demand of them.) We might then take all the remaining scraps of the issue, and catalog and micro-card them (plus a table-of-contents list of the separately analyzed articles) under the title of the journal itself. If we should follow this procedure, we would have duly preserved, in one form or the other, the entire contents of the periodical, making it available, and in a not illogical form, to anyone who wants it.

When we consider analyzing, many other types of library "continuations" fall into the same category as do periodicals. Take law reports, as one example. We now preserve them as bulky, buckram-bound volumes; and we catalog them in exactly the same checklist fashion that we do periodicals—as volume so-and-so of such-and-such a series of legal "Reports." Users of them are forced to get at their contents, as best they can, indirectly, through various law "indexes" and law "digests,"

whose growth has paralleled that of the indexes and digests in other scholarly fields.

But, just as we have found that micro-card "analysis" might be enormously helpful to users of research periodicals, so might it also be for courts and lawyers, and for other users of legal materials. If we were to "analyze" these law reports we would digest, index, catalog, and print *the complete text of each court decision on a separate micro-card*. If we did this, every lawyer who subscribed for law micro-cards would find all his cases automatically marshalled for him, *in one place, in one card file*. He would instantly have available there the complete text of every pertinent decision on the exact legal point he has at issue, all of them duly indexed and abstracted. His digests would always be up-to-date; would never become obsolete; would never require "supplements" and "annual volumes" and "cumulations." The result: a great saving of his time, and, in most cases, a great financial saving over his present "library" costs.

For, once micro-card "decisions" were available for purchase, most lawyers would cease to buy the complete bound-volume "Reports" of any jurisdiction (except, perhaps, their own). Only law libraries would buy such "Reports"—and perhaps even they would not! For micro-cards could, and would, divide the law, and all the judicial interpretations of it, into small, interlocking, flexible, infinitely interchangeable bits. Each lawyer would buy only those subscription fields in which his prac-



tice lay. If he were a patent lawyer he would not buy micro-cards for all of the decisions of all the federal courts, but only the patent decisions. It would take only a relatively small card file to provide him with, what would be, literally, a complete library of patent law, and a completely pre-organized, and always up-to-date one at that.

And what would be true of the patent lawyer would be equally true of the negligence practitioner, the corporation lawyer, the specialist in real estate litigation, or in copyright law, or in admiralty law, or in domestic relations, or in any other legal special field. No longer would any one of them need to overload either his office space or his purse. No longer—except on rare occasions—would he need to go out of his own office to his bar association or law school library. Right by his own desk, in one small filing case, topped by a small reading machine, he would possess a "law library" far cheaper, far easier to use, and incredibly more adequate in meeting his own special needs, than ever he had dreamed of possessing.

Furthermore, if our lawyer wished, he could interfile in this same file not only the micro-card printed decisions of the higher courts in a given case, but micro-card copies of the unprinted preliminary decisions of the lower courts in the same case, micro-cards of the briefs of opposing counsel, micro-cards of the exhibits and auxiliary materials—in short, complete case histories—all condensed into incredibly small space, and all filed under a

master filing system, familiarly "legal" in the flavor and form of its subject headings, and so affording him instant accessibility to all its contents.

Who would "publish" the lawyer's micro-cards? Perhaps law libraries; but, very likely, commercial law publishers, exactly the same law publishers who are now publishing the same court reports in book form. They would find it easy, for they would simply have to combine with the editing, abstracting, and printing of books, the editing, abstracting, and printing of micro-cards. And, by so doing, to find almost surely a vastly wider, and more profitable, market for their product!

What is true of the law is likely to be hardly less true of medicine, of engineering, and indeed of every other profession. Micro-cards, with all of them, make analytical cataloging easy. All of these other professional fields can also be divided into subject sub-fields. For few men will want to subscribe for the micro-card output of a whole profession. The dentist, the gynecologist, the radio engineer, the oculist, the highway engineer, the social case worker, the psychiatrist—each will be able to choose, and to subscribe for, the micro-cards of *his* particular branch.

## CHAPTER 6

### WHEN THE MAIN RESEARCH LIBRARY CONSISTS OF MICRO-CARDS

WE have so long thought of the catalog cards of a library as being merely the key to its books that it is going to take a little time to adjust ourselves to this idea that the catalog itself is going to be the main library. Not that micro-cards are going entirely to supplant books. Don't for a moment get that idea! Of course they won't. Every research library will continue to have real books, hundreds of thousands of them, millions of them. Only one part of the entire library—but that a very important part indeed—will be affected. Perhaps, before going further, we ought to try to visualize what—if micro-cards develop as it seems likely that they will develop—the university “library” of the future is going to be like. It seems likely to be a four-part affair, consisting of:

I. Various relatively small libraries *in book form*, intended for “general” everyday use. These will include a “Reference Room” collection, which, depending on the size of the institution, might run in size all the way from 5,000 volumes to 100,000. They will include the “reserved book” collection

so-called (if this anachronistic pedagogical device is still being perpetuated!). They will include the "browsing room" collection, or some sort of an equivalent ("dormitory libraries," "house libraries," and the like). They will include laboratory collections, class-room collections, seminar room collections, and various other small special-subject libraries spotted here and there around the university for direct, "easy access" use. Finally, they will probably include what can, for want of a better term, be called the "college library," a selected, "revolving" collection of the latest and best books in all the institution's curricular fields, almost entirely non-research in character, and intended mainly for undergraduate collateral reading. This "college library" (it could actually be "divisional" in form) might run all the way from 20,000 to 200,000 volumes. These various libraries in this first category will, collectively, serve such of the university's library needs as lie below the research level.

II. The university's "sponsorship library," again a library entirely *in book form*, very highly specialized, very definitely consisting of research materials, and covering, as completely as its means and abilities will permit, its segment or segments of the divided-by-subject fields, nationally organized, research library corpus. Depending on the size and the financial resources of the university, this special-subject library might contain only ten thousand volumes, or it might contain several million. For

the materials already in, and continually coming into, this "sponsorship library" the library would be continually making and sending out micro-cards, distributing them to other research libraries all over the country.

III. What we might call the university's "hold-over" general research library, i.e., its present library, as it has been gradually modified by the new conditions which will surround it and will affect its content and use.

It might possibly be thought that, once division-of-fields has become a settled national library policy, there would result an immediate disintegration and scattering of our present great research libraries. Such a development seems to me extremely unlikely. It would seem much more likely that, instead, without any deliberate intent so to do, our present research libraries in book form would at last become "revolving collections." Nearly all new "trade" books (i.e., books published on a commercial basis), research as well as non-research, will come into the library not in micro-card, but in book form. There are also many categories of research material which every library will want permanently to retain *in book form*. It will want, for instance, to retain a good deal of what might be called "prestige material," incunabula, first editions, fine press printings, and the like. It will want to retain material not easily and adequately reproducible in micro-card form—books with colored illustrations strike one, offhand;

as one example of this sort of material. It will want to retain research material which receives frequent use—for there is *some* research material (“Beilstein” is a good example) which is an exception to our general rule that research material is seldom used. It will want to retain—for both sentimental and legal reasons—many gift collections. So every great research institution will continue to have a library of research *books*, but with the strong probability that, at last, as just stated, this library would have become a fixed-size collection. There would be a continual accretion of new copyrighted bought material, and, simultaneously, a continual sloughing off, or “weeding out,” of older and less-used material, the weeded out books representing almost entirely books for which micro-cards were being substituted.

IV. Finally, there would be what, by inexorable mathematical law, is bound to become the main general research library of the university, covering all its curricular fields, and running (in these days that are ahead of us) into a great many millions of volumes. This “library” would be one entirely on micro-cards, housed in endless aisles of file cases. Of all the four categories which compose the university “library” it alone would be growing larger; but it would be growing larger fast. Additions to it would be pouring in all the while from a hundred or more cooperating micro-card-issuing libraries. In it the scholar would, eventually, find most of his materials, and do most of his work.

Now for a few words about the internal "working," the operating side, of this new type of university library, this new research library, this micro-card library. So far we have been discussing only its "plant," or investment, phases: i.e., the acquisition, binding, cataloging, and storage of its "books." We have said nothing, or very little, regarding its operation, the use of its books, the impact of its new techniques upon its patrons.

Just as micro-cards will effect enormous economies in the four phases of the library's "plant," or library growth, problem, so will they also effect economies—very considerable ones too—in every phase of its operation. These economies will be especially apparent in its "circulation" work, i.e., in the use of its books by its patrons. And these economies will start at the beginning, at the point where a library patron, having found in the card catalog a reference to a book which he thinks he would like to look at, takes steps to secure it.

At present—if the library is one that does not give its casual users "open access" to its stacks (and most great research libraries do not)—the usual procedure which the borrower would follow from this point would be:

1. To fill out a "call-slip" for the book he wants, putting on it usually: *a.* the book's author; *b.* its title; *c.* its call number; *d.* his own name; *e.* his address; *f.* perhaps other information—as, for instance, the date, or his seat number.

2. To take this "call-slip" over to the "circula-

tion desk," and give it to the library attendant there, for him to dispatch, by stack page or pneumatic tube, to the proper stack deck.

3. For the stack attendant there to search for the book.

4. If it is in its place on the shelves, for him to forward it, by stack page or automatic carrier, back to the circulation desk.

5. For the desk to signal the borrower and give him the book.

6. If it is not in its place in the stack, for the stack attendant to send back word to that effect to the circulation desk;

7. For the desk then to search its own "charging trays" to find out if the book is "charged out"; and, if so, to whom, and when it is due to be returned. If the book is already overdue, or if the would-be borrower has a "priority rating" so far as library use is concerned, to send for the book for him.

8. To have the circulation desk attendant file either the call slip itself (in duplicate, or book "charge slips," previously made by the library staff and placed in a "pocket" on the inside cover of the book—libraries vary in these details) in two different files, one file kept by call numbers, one file kept either by borrowers' names or by due dates. (It is desirable to have a "charging system" which will be able to answer at least two of these three questions: 1. "Who has a certain book, which is not in?" 2. "What books has a certain borrower out?" 3. "What books are due today?")



While all this procedure was going on the borrower's "waiting time" may have run, from a minimum of perhaps five minutes, up to a high of several times that much.

Now compare the above routine with probable micro-card "circulation" procedure.

1. If a patron finds in the catalog a title that he wants to examine he knows at once whether or not it is "in," because, if it is "in," it is there in the catalog drawer, under his fingers.

2. If it is not "in," he finds *in its place* a card, which tells him where it is—and *also where else in the catalog one or two additional copies of it may be found*. For we must not forget that, with micro-cards, *every catalog card*, whether it be an author card, a title card, or a subject card, has, on its back, the complete micro-text of the book which it catalogs. In other words, any library which has a micro-card book in its catalog at all *has as many duplicate copies of it there as it has catalog entry cards for it*. This means that, if the library has a "two-way," or a "three-way," catalog, there is always likely to be, somewhere in it, a copy of any book which a borrower wants. Very seldom will he have to wait for a book to be "recalled" from another borrower.

3. Desiring to take away a micro-card "book" which he has found in the catalog, the would-be borrower, just as he does in present practice, fills out a "call-slip" for it. This micro-card call-slip will be very much like our present call slips, except that: *a*. It will be the exact size of a catalog card.

*b.* It will be made out in duplicate, the second "slip" a cheap-stock, thin, colored card, the first one paper. (The borrower will, naturally, make his duplicate copy by means of a carbon-paper insert.)  
*c.* On the micro-card call-slip the borrower will put, very much as he does now, the subject, the author, and the title of the "book" he wants to take out, the only difference being that he will *write these three items in the exact wording, and in the order, in which they occur on the micro-card which he is removing from the catalog file.* *d.* Below them, as now, he will put his name and address, and the date.

4. He—or, perhaps better, a catalog attendant standing by—will remove the "book" he wants from the catalog drawer \* *and will drop in its place the card copy of his "call-slip."* From then on, until the micro-card "book" is returned to its place there, his call-slip for it will show all subsequent users of the catalog *a.* that the library has that book, *b.* who has that particular copy of it "out," and *c.* where, elsewhere in the catalog, one (or two) additional copies of it may be found.

5. The second call-slip, the real "charge slip," will be filed, under the borrower's name, as now, in

\* To facilitate the removal of individual cards from the micro-card catalog it may prove desirable for the cards to have the commercially used keyhole slot form of card hole instead of our conventional library form of round hole. The advantage of the slot hole is, of course, that a mere twist of the rod releases any card in the drawer, without the necessity of pulling out the rod. The disadvantage is that the slotted hole does not lock the cards in quite so securely. This is another minor detail that ought to be studied.

a file kept at the circulation desk. (This procedure gives the library the double charge—one by book and one by borrower—which is common to all charging systems known by librarians as “two-card” ones.)

And this, as it has just been summarized, is the full micro-card “circulation routine.” The borrower has no waiting time whatever: he gets his “book” *immediately*. There is no stack-deck searching for books, because all the “books” are right under the borrower’s hand in the catalog. The work of “charge slip filing” (and “un-filing” later) by the library staff is cut exactly in half, because one of the two “charge slips” was filed in place automatically, when the micro-card for it was taken out of the catalog. (And, of course, the reverse will be true when the “book” is returned.) Charge slip searching for “out” items is entirely eliminated, for the catalog itself automatically gives this information. Finally, there is likely to be very little “calling back” of “overdue” items (always an expensive process), because the library can usually supply a borrower at once with a duplicate micro-copy.

In practice it will probably be desirable for the library to protect its micro-cards by furnishing cheap small manila envelopes into which they can be tucked when borrowers are taking them away from the library building. Fortunately, our present catalog cards are of a size convenient to “handle,” convenient to carry in the pocket, convenient to send through the mails. Think of the ease of carry-

ing home a whole micro-card "library"—fifty to a hundred volumes perhaps—in one's coat pocket, as compared with the work of carrying home the same number of volumes in their present form. Or of mailing the same "library" away somewhere.

Two alternative methods of micro-card "circulation" are possible, and so, perhaps, deserve mention. Both may sound a bit startling; yet both are entirely within the bounds of immediate practicality. There are on the market at present several different models of snap-shot-picture-taking machines of the automatic coin-in-a-slot type. There is no reason why one of these same machines could not be modified slightly to make it available for library use. How? Libraries would purchase them for installation at various points in their micro-card catalog room (or rooms!). With such a machine at his elbow any library patron, who wished to do so, could drop a nickel in it, insert a micro-card in the proper slot, and receive back from the machine, a few seconds later, the original micro-card (which he would then return to its catalog drawer) and a new micro-card copy of it of his own—duly photographed, developed, "fixed," and dried—which copy he could carry away with him. He could either throw it away when he was through with it; or add it to his own personal micro-card "library."

It is not at all impossible that the library might *prefer* to employ this automatic micro-card copying technique to take care of *all* of its "circulation," rather than to "circulate" its own micro-cards. In-

deed it might so much prefer it as to be willing itself to pay part of the cost of making the automatic copies, i.e., to let the patron get his micro-card copy for two cents or three cents. Judging from such figures of circulation cost as are available it might be actually cheaper for it to do this. It sounds indeed fantastic to say that it might prove to be cheaper to give away books than to lend them; but we are dealing with factors so new to library practice that we must not be surprised at anything!

There is still another alternative method of micro-card "circulation," which is also entirely practicable, but this is one in the nature of a special service for those library patrons who want it badly enough to pay the extra cost of it. In its photostat department every library could install an enlarging device, by the use of which any micro-card text could be "blown up," on photostat paper, either to its original size, or at least to a size which could be easily read again with the naked eye. This would, naturally, be much more expensive than straight micro-card reproduction; but some library users, knowing they are going to have to use a certain book intensively over a considerable length of time, might be very glad to pay the cost of this photostatic enlargement. To all intents and purposes they would be getting a copy of the original book back again, made to order for them, while they waited!

Where will library patrons find reading machines with which to read micro-cards? When micro-cards have become "the library," the answer will be

"Everywhere"! Every faculty member, in fact every regular research user of the library, will, as a matter of course, have a reading machine of some sort of his own, and probably two or three, one of them easily portable (i.e., of brief case size). Machines will also be sprinkled freely, not only all over the library, but everywhere else around the university—in seminar libraries, in classrooms, in faculty studies, in laboratories. They will be omnipresent; more constantly used, by students and faculty alike, than radios, or typewriters, or telephones. In one large university there will be hundreds of them, of various types.

Naturally any such mass demand as this for reading machines is bound to result in enormous technical improvement in them. They "work" now. But in this new era that is coming, they are going to be *much* lighter in weight, *much* more compact in bulk, *much* simpler to use, *much* easier on the eyes, and, last but by no means least, *much* cheaper. All of these things always result from mass production and mass use.

There will be those who will assert that our reading machines are already almost perfect. But with the perfect reading machine, micro-text will be at least as easily, and as clearly, readable as was the original book page from which it was taken. Micro-reading machines are, as yet, no nearer perfection than our radios are—and *they* have still some distance to go! Not that the makers of reading machines are to be blamed for that. We have here

a perfect example of the vicious circle. When the situation is that, once a month, one library, after thinking about it for a long while, decides to buy one reading machine, the library market for reading machines is not one for either the inventor or the manufacturer to get excited over. On the other hand, so long as the micro-texts which these machines offer us are blurred, and poorly lighted, and strain the eyes, and snag and tear our films, and are generally uninviting to use, they offer slight incentive to the library to buy. Now come micro-cards, to offer to both parties in interest a way to break out of this vicious circle! When orders for reading machines come tumbling in from large research libraries twenty or fifty machines at a time—as some day they will—technical improvement in our machines is going to follow very quickly.

One other minor but nevertheless not unimportant point. If library card catalogs are going to swell, as we can see them swelling under the impact of micro-cards, their own storage efficiency ought to be carefully re-examined. In the future, wastage of catalog filing space can no longer be dismissed as something of slight importance. Catalogs of a million cards are one thing; catalogs of ten million, or fifty million, cards deserve thought.

If the matter is considered it will be seen that the crucial factor in card catalog filing capacity is exactly the same as the crucial factor in book shelving capacity, viz. the area of the vertical plane facing on the two sides of an aisle.

One of the things that this means is that catalog drawers should be longer. Almost all our card catalog drawers now come in one of two lengths: fifteen inches for single drawers, twenty-three inches for double ones—the double drawers being not (easily) removable. There is no good reason why the length of *single* drawers should not be doubled, or almost doubled: this change alone would double the card capacity of our files. To be sure, drawers as long as this would be somewhat more awkward to use, and somewhat heavier to lift around; but the post-war use of plastics or of light metals might solve the weight phase of the problem. Nor would doubling their length make them impossibly heavy in any event, partly because, in practice, they are seldom full of cards.



## CHAPTER 7

### THE PUBLICATION AND SALE OF MICRO-CARDS

THERE will be those who will believe that the publishing of micro-cards might be done most effectively by some sort of single great central organization. It is only, they will say, by such a centralized handling of the cataloging, filming, printing, and distributing of them that it will be possible to secure that uniformity of format and subject-headings, and that scholarly adequacy, accuracy, and comprehensiveness that are admittedly essential. The force of some of their arguments cannot be denied. But there are also difficulties in the way of such a centralization, difficulties that would seem to be too real and too strong to be effectively overcome.

The main one is this: behind every micro-card there must be, not merely an original copy—and in most cases several original copies—of the book copied: there must also be behind it, at the constant call of its makers, all its background literature, i.e., a library in its subject field. Every cataloger knows that, properly to catalog and abstract one book, it is often necessary to consult ten related

books. In other words, before any centralized micro-card publishing organization could even start to do its work it would have to build up for itself an enormous centralized library. And "enormous" would be no mere rhetorical phrase; for this organization would be proposing to reproduce by means of micro-cards the research materials of *every* subject field, of *every* discipline, every profession, and every social interest. The building up of such a new library as this would be neither practicable nor practical.\*

Instead of such a central micro-card library and issuing agency, which would be bound, to a very great extent, to duplicate already existing library facilities, besides presenting political and administrative problems of the first order, it would seem

\* It may be replied that we would have no need to build up such a new central library because we already have the Library of Congress: in other words it may be asked, why cannot the Library of Congress itself take over this micro-card project. Of course it could—if it wanted to; but one can see very great difficulties. For such a library as is here envisaged the present Library of Congress, great as it is, represents no more than a small initial nucleus. Not merely in theory, but in sober fact, the micro-card idea, like the division-of-fields idea, contemplates, not merely a *great* library corpus, but, eventually, a *complete* library corpus—which is a very different matter indeed. Furthermore the micro-card plan of publication involves, as we have already seen, the preliminary gathering together, not of *one*, but of at least *three* copies, of every book covered. As between the various libraries of the division-of-fields group these three copies could be easily acquired through a system of gradual interchange of materials; but, with the Library of Congress, it would be a case of all-acquisition, or, at least of relatively very little exchange. To ask Congress to provide funds to buy and to house—*just as soon as possible*—a library of from thirty to fifty million volumes, and to provide funds for a corresponding staff, plus all the entirely new staff required for micro-card publication is something that could be done, but, as was said, one can see very serious difficulties.

better, from every angle, to decentralize the project and to build upon the excellent foundations that already exist in our various research libraries. Furthermore, since this means a division of micro-card publishing among them, it would seem altogether logical to ask these libraries *to work out a division of this publishing along subject lines which would closely parallel the division-of-fields collecting lines* proposed for them by the Metcalf Committee.

Let us go back for a moment to that proposal. It will be recalled that it is: that all American research libraries divide up among themselves all the various subject fields of library acquisition, each library choosing for itself some one collecting field in the light of its existing holdings, its financial resources, and its probable future needs. One library might say, for example: "We will agree to take the national sponsorship for Italian literature: that is, we will *try* to secure, catalog, and store everything newly published in this particular field." Another might say: "We already have the best collection of material on medicine in the country; we will take it upon ourselves to make this our special responsibility, to make every reasonable endeavor to secure everything new published in this field." Another: "Our holdings on the history of France are already outstandingly good: count on us to make them the best that can be made." And so on.

The Committee's plan, as it thus tentatively set it out, was one for cooperation-in-acquisition only;

the various libraries entering into it were to be merely collecting, cataloging, and holding centers. Other libraries might borrow their sponsorship books from them in accordance with the established rules governing inter-library loans; but otherwise these books would be available for use only as scholars traveled to them for that purpose.

Micro-cards propose a still further step in the division-of-fields plan. They propose to make *all* the re-printable sponsorship material of *all* of these libraries available *everywhere*—in micro-reduced form. Each library would buy only such micro-cards as it wished; but, if any library did wish to buy everything, it could be as complete in its own holdings of research materials (so far as they had been reproduced in micro-card form) as all the libraries of the country were *collectively* (in their original book form). Micro-cards propose co-operation-in-dissemination; they propose that the division-of-fields libraries, instead of being merely collecting centers, be distributing centers, distributing to their sister research libraries micro-copies of a large part of the older material that they have and of some areas at least of the new material that they are currently collecting. Clearly, this extension of their functions is neither unreasonable nor illogical. Collecting and holding, however important, are merely static functions: publishing and disseminating are dynamic functions.

Nor does the point need laboring that the adding of these dynamic functions would in turn help

the Metcalf Committee; would encourage and accelerate that acceptance of specialization sponsorship which it desires to bring about. For micro-card publishing would give increased meaning to that sponsorship, a working reason for it of the most compelling sort. Once any library saw that, by coming into a subject division-of-fields plan, it would become, not merely a holding center for scholarly materials, but also a publishing center, it would all the more want to come in: it would feel that it was going to contribute to, and be an essential link in, an integrated and correlated whole of productive national scholarship. And that, when one thinks of it, would be a rather bracing atmosphere in which to conduct the library of any institution of higher education.

But micro-card publishing would be much more than just a psychological benefit to a library, to its university, and to the division-of-fields plan. It would also be a financial benefit. There is no reason whatever why any library's publication of micro-cards should be an expense to it. To be sure, its "sales" of its micro-cards to its fellow research libraries would be likely to be very largely "offsets," i.e., bookkeeping credits against the costs of similar micro-cards being supplied to it by them. But, even though its inter-library micro-card business was conducted very largely on an "exchange" business, this exchange business would have a real cash value; for, if it had no cards to supply it with "credits," the library would have to pay cash for

all the cards that it bought. In addition, besides its exchange business with the other sponsorship libraries, every micro-card issuing library would also have non-library customers; and, on these sales of cards to the outside world it could, with perfect propriety, secure for itself a reasonable profit, just as it secures a profit—or endeavors to—on the book publications of its university press. It should never be forgotten that micro-cards, particularly those issued in certain subject fields, will find a sale to thousands of private buyers—to physicians, lawyers, engineers, and other professional men, to manufacturers, banks, and commercial firms, to laboratories, hospitals, and social agencies, etc., etc.

The larger division-of-fields libraries that become, jointly, the principal agency of micro-card publishing (for the library field), might find it desirable to set up for themselves micro-card printing departments, just as they already have binderies, and photostating, and micro-filming departments. If the sponsoring library were a very small one, this last requirement would not, however, need to deter it from accepting a sponsorship. Various alternative arrangements for doing the "manufacturing" of micro-cards would be possible. A small library might accept a division-of-fields obligation and do the cataloging of all the micro-cards for it, but leave the physical making of them, either to some large neighbor library equipped to handle it, or to some commercial firm prepared to do micro-card filming and printing. In this it would

be acting in exactly the same way that most libraries do now, when, reluctant to put in printing plants and binderies of their own, they have their printing and binding done for them by outside commercial firms. There is no reason to think that such commercial micro-card manufacturing plants will not, in due course, be established.

This mention of commercial micro-card making brings up another point which should, perhaps, be made perfectly clear before we go further. There will be no effort or intent of any sort whatsoever to restrict the printing, or the publishing, of micro-cards to libraries. There is no way by which it could be so restricted even if we, as librarians, thought that it might be desirable to do so. Personally I do not think it would be desirable. As a field for publishing, micro-cards ought to be, and will be, open to anyone: to present book and periodical publishers, to individuals who never have been publishers, to institutions not libraries, and to libraries. The more different agencies there are issuing micro-cards, the more rapid their effective improvement will be; for, of all the economic axioms, this is one of the most fundamental: that the more minds there are, competitively at work in a free market making any given product, the better, and the cheaper, that product is going to become.

At the same time, the corollary of this axiom should be equally, and just as emphatically, made clear. Although the micro-card printing and publishing fields will be open to anyone, they will be

open, so far as research library patronage is concerned, only to those who are willing to issue micro-cards that conform strictly to certain established library micro-card standards that will be set up for them. (This phase of the matter will be further discussed in the next chapter.)

Just as with all other sorts of publishing, micro-card "publishing," regardless of who does it, will be of three types: original (i.e., of material not before published in any form); reprint (i.e., of material previously published in either book or periodical form); and simultaneous (i.e., of material which is being issued simultaneously in both micro-card form and book or periodical form).

The field for reprint, and for simultaneous, micro-card publishing is obvious. But that micro-cards also offer a logical method for certain kinds of original publication may not, perhaps, be at first so clear. There is, however, no sort of research material at present being published for scholars in "near print" form for which micro-cards do not offer a less expensive, and more effective, medium.

The way in which library micro-cards will be sold stems directly from the method of their publication. All library micro-card sales will be "global" sales, i.e., by annual subscriptions covering designated subject fields. There will not be, and there cannot be, with micro-cards, any such "individual item" sale as books have. This matter of the size of the micro-card "sales unit" is very much more important than might at first appear. In fact it is



vital. It is the chief factor governing the cost of the cards—just as it now is the chief factor governing the cost of Library of Congress catalog cards. The actual manufacturing cost of Library of Congress cards may possibly run to as much as half a cent apiece. Why then—even with no allowance, or a very meagre allowance, for profit—does the Library of Congress have to sell them for  $1\frac{1}{2}$  to  $3\frac{1}{2}$  cents each? The answer is simple. The chief cost which the Library of Congress is under, in selling its cards, is not for the *making* of them at all, but for the *finding* of them after they are made, and for the maintaining of a stock of many millions of cards on hand to fill orders for them as it gets them. The Library of Congress does fill individual orders for individual cards, a vast multiplicity of infinitesimally small orders. And it is *this* expense—the expense of handling these innumerable tiny separate orders—that micro-cards will politely, but very firmly and positively, get completely away from.

Although all the library buying and selling of micro-cards will be by global subscription, and not by individual titles, every effort will be made to see that, in splitting up the whole field of human knowledge into subject fields, or global “sales units,” each distinctively differentiated field of scholarly and commercial interest is segregated publicationally. Would-be micro-card buyers may not be able to buy micro-cards for separate titles; but they will be able to pick out the exact subject field, or fields, which they are especially interested

in, without hiatuses on the one hand, or overlapping duplications on the other. We would have, for example, not merely a split-up of the whole field of knowledge into such broad subfields as LAW, MEDICINE, LITERATURE and ART; but a further split-up of such broad sub-fields as these into much smaller units, PATENT LAW, DENTISTRY, GERMAN LITERATURE, PAINTING, for example, any one of which could be subscribed for separately. One can foresee perhaps three hundred, perhaps five hundred, of these separate subscriptional subject fields, some very large, some very small, but all separately available, on annual subscription, as global units.

This splitting up would be carefully planned to afford sufficient freedom of purchase choice to meet almost any buyer's need. Each separate departmental field of a college or university, for example, would be available as a separate subject subscription field, because each college would probably want to subscribe only for those subjects within its curricular range. A law, medical, or agricultural school library could, similarly, meet *its* special curricular needs. Personal subscribers might want to carry their specialization in subject subscription fields even further. A firm of patent attorneys would want all patent law micro-cards, and perhaps nothing else; an obstetrician all the micro-cards in his special field only; a firm of architects all architectural micro-cards; and so on. When one remembers that, in each case, the micro-card subscriber would be (ultimately) securing, not only a

card catalog of the literature of his subject, but also an actual "library" of it (a library in microscopic form, taking up only microscopic space, and purchasable at a microscopic price!) the possibilities of micro-card sale, and the combinations of subjects which could be subscribed for, are obviously endless.

But micro-cards would be able to offer their subscribers flexibility in another and hardly less important direction. Not only would each subscriber be able to subscribe only for the micro-cards in its special subject field, or fields, but also the *number* of sets that it subscribed for would be entirely under its own control. That is where the "three-way," multiple-entry, headings described in Chapter 4 come in again. If a subscriber desired to have a "three-way" (subject-author-title) approach to its micro-card materials, it would have to subscribe for three sets of all the micro-cards it bought (just as a library now has to buy three—or four or five—copies of every Library of Congress card to do its own cataloging). But, if it desired to economize, it might feel that it could get along without a title catalog, for example—at a proportionate saving. Most businesses, and many small educational institutions, might very well find that even a single set \*

\* One thing, by the way, every library will save on. It will not have to purchase a set of micro-cards to make a "shelf-list" catalog for them. For shelf-lists are another bit of present-day library machinery that micro-cards make entirely unnecessary. Getting rid of the shelf-list means also another saving in library staff labor, in equipment cost, and in space.

of micro-cards, filed either by author or by subject, would be enough to meet their needs.

On the other hand, large universities, and large commercial firms, might very well want *extra* sets (i.e., more sets than the basic three required for a "three-way" catalog). A university, for example, might want to have more or less completely duplicative sets of its main catalog installed in each of its separate college, school, and department libraries. (Particularly would this be the case if these were widely separated geographically.) Or it might want to maintain a complete three-way catalog at the main library, and a subject catalog only at the school or departmental library. A large business concern might wish to keep sets of micro-card material, in certain subject fields, at its main office, and other sets at its regional offices, or sets at its main manufacturing plant, and other sets at its subsidiary plants.\*

Except from the cost side, it may, perhaps, be thought at first that the inability to buy micro-cards item by item is a disadvantage. But it is not. The sale of micro-cards globally, by subject fields, is a positive advantage. Remember that micro-cards are cards for research materials; that they are materials for scholars; and that completeness of coverage is of the essence of research materials. A scholar

\* I suspect also that we shall find many college professors subscribing to at least single sets of the micro-cards covering their special fields. A century ago it was possible for a teacher to get the entire literature of his field within the four walls of his study, and possible to do so at a comparatively modest cost, too. After a century interim, micro-cards make this scholarly ideal again realizable.

may be well aware that his micro-cards are not giving him complete coverage; but the qualifications that impair such coverage have been stated to him, and are known. If, subject to these qualifications, he is able to feel that, in buying his micro-cards, he is getting *everything*—or at least is gradually approximating it—in the field he is buying, he is getting a surplus value in being put in touch with material that he did not previously know about.

The number of micro-cards issued annually in each of the various subject fields will, of course, vary greatly—some of them may run to only a few hundred a year; some will surely run to tens of thousands. *All micro-cards will be sold at so many cents per card.* Probably, so far, at least, as inter-library sale is concerned, this price per card will be a uniform one for all fields, and one set high enough to cover all costs. Probably also, for obvious reasons, it would be desirable to allow subscribers a slight discount per *card* on all additional sets of cards after the first. But these and many other financial details can be worked out and settled later.

Finally, a few words on one very important point: on what basis will the micro-card issuing libraries select their material for micro-card publication? They obviously can't publish everything all at once; it will take decades for them to begin to cover their fields; what then are they going to select for publication *first*? The answer, as an answer, is an extremely simple one: it is only the application of it that is hard. For the answer is in

brief: these libraries are really, all of them, in business, a special sort of publishing business: every business exists to provide its customers with what *they* want: these libraries, therefore, out of all the materials which are available to them for micro-carding, should publish first, step by step, what they think will be of the greatest possible use to the greatest number of their subscribers.

How will they know what this might be? One of the great advantages of having *libraries* do micro-card publishing is that, just because they are libraries, they ought to have a very much better idea than any outsiders could possibly have, as to what types of material, and even as to what titles, will be of the greatest immediate use to their fellow libraries and ought, therefore, to be micro-carded first. But, if they are in any doubt, or want suggestions, it would be easy for them to ask advice—by questionnaires or otherwise—either of their subscribing libraries or of research authorities in the field involved.

## CHAPTER 8

### LIBRARY CONTROL OVER MICRO-CARD PUBLISHING

SOME of the preceding paragraphs may have suggested the solution for one problem that had, from the start, been a puzzling one. Micro-cards are not patented. It is quite possible that no patent protection upon them could have been secured; but, in any event, no effort was made to get any. Because they are not protected by patent the library world has no legal control of any sort over them. Any one may make them; use them; buy them; sell them.

With no sort of legal control over them, there is obvious danger that they may, as they develop, take on the same extremely individualistic variation in form that makes books so expensive for libraries to store and to catalog. But this danger, though obvious, is not inevitable. The library and scholarly worlds are, with micro-cards, starting from scratch, as it were, with a brand-new publishing medium, and a medium specially devised for their use. If they clearly resolve to do so it is entirely possible—and easily possible—for them to standardize, for their own use, its essential char-

acteristics. Knowing what enormous wastes a lack of standardization would involve, it would be indeed profoundly unfortunate if micro-cards were permitted to evolve into an inchoate mass of mismatched, mis-sized, mis-headed, and otherwise unintegratable elements.

In its broader aspects this particular problem is, in miniature, the problem which all society faces: the problem of preserving, so that both may work together for its good, the supremely important urges of competitive effort and individualistic ingenuity on the one hand, and the supremely important efficiencies deriving from standardization and coordination of effort on the other. It is socially desirable to throw the making of micro-cards open to everyone; it is equally socially desirable to see that all of them that are made (for library use) are automatically inter-filable and "inter-usable."

Fortunately it would seem entirely possible to secure all the standardization we need for library purposes by cooperative decision and voluntary conformity; and to secure it without inhibiting micro-card development outside of the library field in any direction it may choose to go. It is unnecessary here to do more than suggest the lines along which this result may be arrived at.

In the first place, the supervision of all the making of micro-cards for research library use should be placed in the hands of a Library Micro-card Committee. Exactly who should compose this Committee need not be discussed here; but it would



certainly seem that those libraries that propose to engage in micro-card publishing should have representation upon it. It is obvious that it should co-operate closely with such organizations as the Association of College and Reference Libraries, the Association of Research Libraries, the National Association of Book Publishers, the Library of Congress, the Council of Learned Societies, the Social Science Research Council, etc., etc. That it should make every endeavor to work in close association with the Metcalf Committee is equally obvious.

The work of the Library Micro-card Committee would be advisory only. It would recommend, not dictate. Even so, such a committee would have a number of important duties; and, if it performed them with tact and wisdom, its recommendations would almost surely be generally, if not unanimously, adopted. It would have to establish certain standards for micro-card format, and certain special rules for micro-card cataloging practice. It would have to decide upon a form, and a scheme, of subject-headings for them. Besides these bibliographical decisions, it would have a large number of publishing decisions to make. It would have to correlate its division of subject fields with the division-of-fields that the Metcalf Committee set up on the one hand, and with the practical exigencies of micro-card sale on the other hand. It would almost surely have to deal with some subject-field publishing for libraries by commercial firms. It

would endeavor to see to it that all subject fields were covered, yet without duplication. It would have to formulate sales and marketing policies to govern the library distribution of micro-cards, and assist the cooperating libraries in setting up a practical schedule of micro-card sales prices.

The executive work of most committees is done, and has to be done, by its officers. This Committee would be no exception. And it is clear, from the above outline of its duties, that these officers should be possessed of an unusually broad outlook and background of experience. Naturally they should have had both library training and executive library experience. They should be intimately, and sympathetically, familiar with scholarship—its needs, viewpoints, and bibliographical usages—preferably at first hand. And it would also be clearly desirable that they should have had a first-hand experience in commercial book and periodical publishing. For the production of micro-cards is, after all, primarily a publishing enterprise; and its efficient execution will require continued contact with book and periodical publishers, and an intimate knowledge both of their ways of thought and of their practical problems.

Because the Micro-card Committee would have, at the start at least, to do a considerable amount of real work, it would have to have a certain amount of secretarial help, and there would be involved also travelling expenses and office expenses. How would all these necessary expenses be financed?

One obvious answer would be to seek foundation support. And, at the start, while the project is still in its embryonic stages, help from this direction would undoubtedly be extremely helpful.

But foundation support, if it should be obtained, should be viewed as a purely temporary matter. The Micro-card Committee will have to be a permanently functioning body; it should therefore stand soundly on its own feet; and should develop, just as soon as possible, proper and adequate methods of meeting its own expenses. Various ways of accomplishing this end could be suggested. For example, every micro-card "licensee"—that is, every individual, or corporation, or library, which has been officially "approved" by the Micro-card Committee, to produce either micro-cards, or micro-card equipment, for *library use*—might pay a nominal fee to support the Committee in its necessary coordinational and organizational work. This fee might, for example, in the case of libraries be one per cent on its gross annual sales of micro-cards, and in the case of commercial firms selling to libraries two percent on their gross sales of micro-cards or micro-card equipment.

The only control which the Committee would be able to exercise over its "licensees" would be a very simple understanding, viz. that no cooperating research library would buy either micro-cards, or micro-card equipment, which did not meet the standards of library practice which it set up for them. This would leave micro-card publishers and

micro-card equipment manufacturers free to develop in any direction they chose. They could conform to the standards set up by the Micro-card Committee or not, as they chose; but, if they wanted to secure *library* business, they would have to follow *library* rules. To this requirement no legitimate complaint could be made; while, if the Committee were upheld in this way in its decisions, a national uniformity in micro-cards for library use, their complete interfilability and inter-changeability, would be a fact.

Any subject division-of-fields plan formulated, ought to have four outstanding characteristics. In the first place it should be simple and easily understood, unequivocal and unambiguous, omitting nothing essential and leaving nothing to be assumed. In the second place it should threaten no coercion; but invite a voluntary cooperation. In the third place it should be long-visioned, far-sightedly comprehensive in its ultimate reach.

But the fourth characteristic that it should have is no less important: sweepingly comprehensive though it may be, it should not propose, or advocate, any sort of a grandiose start. It should realize perfectly well that, though complete coverage is its ultimate ideal, such coverage is not to be attained in a moment; in fact that it can never be completely attained, but only slowly worked toward. In other words, although it should set its ultimate aim high, it should keep its feet on the ground. It

should see clearly that even a modest advance gained is far better than no advance at all; and that, by not attempting to do too much in a hurry, the progress which it makes will be in the end far surer, and in the meantime far less costly. Once the details of its course of action have been settled upon, it would take but one single acceptance of sponsorship—one single library agreeing to take over one single subject field—to place its division-of-fields plan into operation. From then on development would be a matter of gradual but steady growth. In its deliberate avoidance of the grandiose, its willingness to start small, the Committee would show, more than by any other one thing, how “well thought out,” how practical in the best sense of that word, its proposals were.

These outstanding characteristics which are recommended to guide the procedure of the Micro-card Committee would seem to be those which the Metcalf Committee has also adopted for its procedure. Like the Micro-card Committee it has a basic idea that is, in its essentials, amazingly simple. Like it, it leaves the library acceptance, or non-acceptance, of its plan an entirely voluntary matter. Like it, its *ultimate* ideal is sweepingly comprehensive, nothing less than a complete coverage of the whole range of recorded human knowledge.

But the Metcalf Committee wisely realizes that this ultimate ideal can, in practice, be only an

ideal, something to be kept in mind and slowly worked toward. It too discourages anything in the nature of a grandiose approach to its task. It sees clearly that the soundest start into any unknown field must always be a modest and tentative one. And, since it is entirely possible to have subdivision-of-fields begin when one single library says "we are ready to start," it will not be disdainful of just that extremely modest sort of a beginning.

One word of caution may, perhaps, be desirable at this point. Like the Metcalf Committee the Micro-card Committee will have an immense amount of work to do that is genuinely essential, work that is intensely practical and very definitely constructive. It will therefore be obliged to set its face resolutely against all siren-voiced proposals that it waste precious time in purely theoretical "preliminary studies" of all sorts of special micro-card questions.

Not that micro-card publication requires no preliminary study. It does—plenty of it—enough of it to swamp any committee. And, just because there is so much for it to do that it is absolutely necessary that it do, the Committee should weigh its every act with two stern questions, like a sort of *Memento mori*, staring it in the face. If micro-cards do what it would appear not unreasonable to expect that they can do, they will save American research libraries alone, on the basis of their present

size, at least two million dollars a year. Later, at their present rate of growth, the annual saving would be many times that sum. Two million dollars a year is over \$5,000 a day. Faced with a possibly avoidable waste of \$5,000 a day it would seem that every "preliminary study" presented to the Committee for consideration ought to be submitted by it to these two acid tests: 1. is it a study *absolutely essential* to the immediate inauguration of the micro-card program, or is it merely something that it sounds interesting to "get data on"? and, 2. if it is essential, how quickly—at a cost of \$5,000 a day!—can it be jammed through to completion, so that the practical results which are to be based on it can be initiated?

In one of my previous articles \* there were two paragraphs which emphasized how urgently necessary it would seem to be that librarians take a definite constructive action *soon* on their library growth problem. I said: "There would seem to be grave danger—and here we come back to our text †—that, if we wait too long, the . . . reorientation which the situation calls for will not be one planned by librarians but one directed by strangers largely or wholly ignorant of library needs and

\* "Alternatives for the Present Dictionary Card Catalog," in "The Acquisition and Cataloging of Books," edited by William M. Randall, 1940, p. 145-6.

† The remark of Paul North Rice, associate librarian of the New York Public Library, that "The problem of cataloging costs must be attacked by catalogers themselves or it will be attacked by executives less able to judge fairly as to what should be modified or eliminated."

techniques. For 'things,' we must remember, never 'happen.' They are always *done*. If they are done by people with expert knowledge, able to think keenly and then to act aggressively, they are done well. But sometimes, unfortunately, they are done by people lacking all qualifications except the willingness to act aggressively. Do librarians see nothing incongruous, or even alarming, in the fact that the largest union cataloging project ever attempted, the largest bibliographical project ever carried on, the largest printed catalog ever completed, the most searching criticism of cataloging methods uttered of recent years, *were each and every one of them directed not by a professionally trained cataloger but by someone drawn from an alien field?*

"Is it not possible, therefore, that it may be our present duty, as librarians, to ask ourselves, and to ask very soberly and thoughtfully: 'Are we doing all that we should to assure that the future of our research libraries, and of their librarianship, is going to be directed by librarians, or are we in danger of letting that direction go, by default as it were, elsewhere—to our trustees and educational executives, to our architects, to lawyers and engineers, to teachers and physicians, to writers and radio announcers, to members it would seem of every profession except the one . . . equipped by special training and experience to meet the grave responsibility that faces it?' Genuinely puzzled by this library problem of ours . . . our colleagues look



to us for guidance, for informed and courageous guidance." And "guidance" means more than "studies" and committee reports. Sooner or later, it means *action*, action by trial and error to some extent perhaps, but action.

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## CHAPTER 9

### COPYRIGHT AND MICRO-CARD PUBLICATION

EVERY advocate of micro-reproduction has, from its first inception, emphasized the necessity of having it conform strictly, both in letter and in spirit, with all the requirements of copyright law. This attitude should be equally the rule in every phase of micro-card development. For micro-cards to start off as exemplars of open, or covert, literary piracy would be to have them start off under very bad auspices indeed. Complete equity, as well as complete legality, in their handling of all the copyrighted materials they desire to reproduce *will have to be an essential sine qua non of all micro-card procedure.*

The National Association of Book Publishers and the Joint Committee on Materials for Research of the American Council of Learned Societies and the Social Science Research Council drew up, some years ago, an excellent "code" for the micro-filming of copyrighted materials, a code which seems to have worked to the satisfaction of all concerned. Here are the essential portions of its text: \*

\* Quoted from Herman H. Fussler, "Photographic Reproduction for Libraries," 1942, p. 176-7.

"A library, archives office, museum, or similar institution owning books or periodical volumes in which copyright still subsists may make and deliver a single photographic reproduction, or reduction, of a part thereof to a scholar representing in writing that he desires such reproduction, in lieu of a loan of such publication, or in place of manual transcription, and solely for the purpose of research; provided

"(1) That the person receiving it is given due notice in writing that he is not exempt from liability to the copyright proprietor for any infringement of copyright by misuse of the reproduction constituting an infringement under the copyright law;

"(2) That such reproduction is made and furnished without profit to itself by the institution making it . . .

"Under the law of copyright, authors or their agents are assured of 'the exclusive right to print, reprint, publish, copy and vend the copyrighted work,' all or any part. This means that legally no individual or institution can reproduce by photography or photo-mechanical means, mimeograph or other methods of reproduction a page, or any part of a book, without the written permission of the owner of the copyright.

"While the right of quotation without permission is not provided in law, the courts have recognized the right to a 'fair use' of book quotations, the length of a 'fair' quotation being dependent upon the type of work quoted from, and the 'fairness' to the author's interest. Extensive quotation is obviously inimical to the author's interest . . .

"In order to guard against any possible infringement of copyright, . . . libraries . . . should require each applicant for photo-mechanical reproductions of material to assume full responsibility for such copying . . . The applicant . . . is obligated under the law not to use the material thus copied from books for any further reproduction without the express permission of the copyright owner.

"It would not be fair to the author or publisher to make

possible the substitution of the photostats for the purchase of a copy of the book itself either for an individual library, or for any permanent collection in a public or research library. Orders for photo-copying which, by reason of their extensiveness, or for any other reasons, violate this principle should not be accepted . . .

"Out-of-print books should likewise be reproduced only with permission, even if this reproduction is solely for the use of the institution making it and not for sale."

So much for the existing "code" governing photographically reproduced materials. It is at once obvious, however, that micro-cards raise copyright questions which micro-films and photostats did not have to face; for, as the "code" itself makes very clear, it covers, and is definitely intended to cover, only what might be termed a casual reproduction of materials, that is a reproduction of them in one-copy form, for the use of a single individual. Micro-cards represent, on the other hand, not individual-use, not one-copy reproduction; but a new form of publication, or of re-publication, in multiple-copy form. Their illicit production would, therefore, be a flagrant violation of copyright.

Fortunately, the interpretation of the law does not offer micro-cards any unusual or especially puzzling problems. And because violation would be so clear, because micro-cards have no excuse to avoid, or evade, or infringe copyright, the Library Micro-card Committee will have one duty that will be paramount, viz. to see that all of its "licensees" meet, strictly, fairly, and fully, all of the obligations of the copyright law. On the other

hand, to say that the copyright obligations which micro-cards are under are clear and easily recognized, and that they will be strictly met, does not mean that copyright can press a deadening hand on micro-card development, can cripple it or smother it. Micro-cards will have ample opportunity for growth along entirely proper lines.

For, the moment we begin to talk about all-inclusive coverage in any subject field, there stretch out, in every direction, vast ranges of material which were never under copyright at all, and other vast ranges on which copyright has long since expired. In these two categories of material, both legally and ethically fully in the public domain, lie most public documents, most society and institutional publications, and many millions of books, pamphlets and periodical articles—enough material to keep every one interested in micro-card publication busy for generations to come without any necessity of going any further.

From a copyright standpoint there remain two other categories: unpublished manuscript material, and published copyrighted material.

All unpublished manuscript material is protected by common law copyright, a copyright subsisting, of course, with the author, if the material in question is still in his legal possession. There should be no micro-card publication of it until his consent to publish has been secured, and his rights in his literary property in every way properly protected. He may demand a royalty; and, if so, this

must be duly arranged for before micro-card publication can be proceeded with. It is true, of course, that the micro-card sale of any item would, in actual dollars and cents, amount to so small a money total that any royalty possible from it would hardly be worth an author's bothering about. It is true, furthermore, that *original* publication in micro-card form would occur, usually, only for research material, that is, for material for which the sales market is too slender to justify regular publication. In other words, the author would be in the position of having to choose between micro-card publication, nominal or nil though its monetary return to him might be, and no publication at all. Fortunately most authors of material of the research type do not expect—in fact they may not even desire—to secure financial return from its publication. If they know that a public sale of their work is possible, they will, naturally, ignore micro-cards and seek regular commercial book form publication for it.

A rather curious copyright question arises in the case of unpublished manuscript materials which are owned by a library—bought by it, or given to it—which it wishes to publish in micro-card form. The copyright in such materials (i.e., the right to publish them) exists as a legal right quite distinct from the right of ownership in the physical manuscript. Usually the library acquired, by its gift or purchase of the manuscript, both rights; and it is generally presumed to have done so unless the

copyright was expressly reserved by the author. But, when it acquires such materials, every library is well advised to see to it that it clearly does acquire both rights; for common law copyright, unlike statutory copyright, does not run for any stated term; and cases have arisen where the heirs of the original author have claimed common law copyright in unpublished manuscript materials which have been owned by a library, and have rested undisturbed in its possession, for a century or more.

When we come to the final category, i.e., already printed and copyrighted material, we come to material on which micro-card republication is impossible until due legal arrangement to republish has been made with the owner of the copyright (who will usually be the original publisher). His attitude will normally be: 1. How much, if any, will micro-card re-publication hurt my sale of this material in its originally published form? 2. What, if any, additional revenue can I secure from a micro-card reprinting, if I permit one to be made?

A library would naturally like, when it is buying micro-cards of anything, to be able to save on all four factors of its cost. But it may be worth its while to buy them even though it saves on only two or three. We saw, for example, in the comparative tables of cost quoted a while back, that a library might be money ahead to subscribe for a periodical and throw it away, using the micro-cards of it to save on its binding, cataloging, and storage costs.

If this were always the case, it might appear, at

first blush, that it offered a reasonable *modus vivendi*: the original publisher would be asked to permit micro-card republication of his book, or periodical, provided all the buyers of micro-cards for it first bought it in its originally published form. But this suggestion, though ingenious, is not practical; for there is no way by which the micro-card publisher may know which of his micro-card subscribers have, or have not, so bought. Furthermore, even if he did know, he could not—in his own sales—distinguish between them. For his sales, we remember, are to be “global” sales. *All* of his cards must go to *all* of his subscribers: he cannot check up on their “right” to secure, or not to secure, micro-cards for any given individual item.

It looks, therefore, as though, for current copyrighted materials, micro-cards cannot come into the picture very much. When they do, it must be through some such ways as the following:

The possibility that, with certain types of publications, with which total research library subscription sales are an extremely insignificant part of the publisher's total income, the publisher might ignore the possibility of losing some portion of that part of his income; and, as a matter of “scholarly comity,” or whatever else one may choose to call it, might say to the would-be micro-card publisher, “Go ahead.” This is a conceivable, but hardly likely, possibility.

The possibility that the “go ahead” signal might be encouraged by some “consideration,” paid by



the micro-card publisher to secure from the original publisher the "micro-card rights." The trouble here is that the micro-card income on any one item is so small that any honorarium which a micro-card publisher could afford to pay would hardly be worth a regular publisher's wasting time even to talk about.

The possibility, however, that the honorarium plan might prove to be really practicable for:

*a.* Foreign periodical research publications (mainly German) on which the subscription price has heretofore been so extravagantly high that comparatively few of our libraries have been able to afford subscription.

*b.* Foreign new publications (mainly English) on which no United States copyright exists because of the so-called "manufacturing clause" in our existing copyright law. These are the books for which American publishers "import sheets." The sale of this material is always small, and has been very largely to libraries.

The possibility that the micro-card republication of new copyrighted books might become practicable *after they have ceased to be new*. When a given book has ceased to sell, when all its avenues of possible sale have been exploited, when its plates have been melted up and its last copies have been sold out or remaindered, then its publisher might be willing to give micro-card republication the "go ahead signal" without asking for any sort of consideration. It may be asked: would libraries then

have any reason to want micro-cards? The answer is: yes. In choosing an item of this sort for micro-card republication the issuing library says, in effect, that it considers the item to have research library value. If the receiving libraries never bought the given book in book form, they would now get it in micro-card form. That is clearly worth their while. But, even if they already have the book in book form, it may very well be that, for permanent storage, they would prefer to have it in micro-card form. They could then dispose of their original copy.

## CHAPTER 10

### THE USE OF MICRO-CARDS FOR CERTAIN SPECIAL CLASSES OF MATERIAL

#### *Theses*

THESES are, at present, one of the great headaches of the research librarian. It is doubtful if there can be found in the whole United States even one library, not excepting our largest ones, which is handling them to its entire satisfaction. They come pouring out—many thousands of them every year—from colleges and universities all over the world. Some of them are almost valueless; but many of them are of great importance in the development of further research. Lest they should miss something of vital value, research libraries are under obligation to collect all of them in the subject fields that they cover; and, because they are very inadequately listed anywhere, and because they are issued irregularly, in many countries and languages, and at hundreds of different issuing points, the mere collection of them is, of itself, a time-consuming and difficult task.

And, when they have finally been collected, a library's troubles have only begun. Most of them

come in unbound, and should be bound. And, whether they come in bound or not, they cannot be said to be really available for research use until they have been cataloged. Binding them is purely a question of expense; but, when it comes to cataloging them, the difficulties encountered are much more than merely financial and much harder to surmount. A large proportion of all theses are written in foreign languages, some of them in languages very foreign indeed! By their very character, they are bound to be esoteric in their subject matters. Between the far-reaching ranges of their contents and the difficulties of translation, their adequate cataloging becomes a work of great bibliographical and scholarly difficulty, coupled with a comparatively great expense.

But suppose—just let's suppose!—that, so far as libraries are concerned, the handling of all of the world's dissertations was so organized that three copies of them—just three—came in regularly to some one single point (or, possibly, to a half dozen, or a dozen, carefully selected points, each one covering a given sector of the whole field of knowledge). Suppose that, at that point, they were cataloged by a staff who were bibliographically, philologically, and scholastically expert in their respective fields. Suppose that they were not only cataloged, but duly micro-carded. And suppose, finally, that complete sets of all these dissertation micro-cards—each card bearing on its back the complete micro-text of its thesis, and on its front a full cataloging, an accurate

subject heading, *and a careful abstract* of the thesis (this last, remember, regardless of its abstruseness or of the language in which it happened to be written)—were sent out *each week*, to all the world's research libraries which desired to cooperate, two or three hundred of them!

The text of probably 98% of these theses would go on a single card; very few would run to more than two cards. This means that any library that wanted them all could obtain the complete texts of all the world's theses, all cataloged and ready for use, at a cost, probably, of not over four thousand dollars a year. But, as is true of all other types of research material, few libraries would desire all. Subscribed for by separate "subject" fields, each library, at relatively small cost—at, perhaps, an almost nominal cost—could meet the research needs of its own institution.

### *Maps and Charts*

FOR the widespread microphotographic distribution of map materials of every sort micro-cards are ideal. From a use standpoint every map and chart is a unit, a separate item. Atlases are nothing but collections of individual maps. (Indeed, some of the great "classic" atlases were more or less bound up to order, and sometimes no two extant copies have quite the same contents.) No research worker ever wants to use an "atlas": he wants to use "a map of Blank"—which may, or may not, happen

to be in an atlas. All of which means that, if they are to be used with maximum efficiency, all maps and charts should be individually "analyzed." Why haven't we done this? For no reason at all except the cost of it.

But micro-cards actually invite us to do this map analysis, for the reason that a single map or chart, wherever the original may happen to have been located, fits neatly, in micro-print, on the back of a catalog card. In other words, here, as in so many other cases, the natural cataloging "unit," the natural unit of common use, and the micro-text capacity of a micro-card, arrive at a happy coincidence! No longer shall we be obliged to catalog our atlases only as atlases, or to catalog huge sets of governmental sheet maps, like the *British Ordnance Survey* maps, or our own *U. S. Topographic Survey* sheets, as "sets" of sheet maps. With micro-cards we can reproduce, and we can catalog, each individual map as a unit, and so can make it easily available to the research user.

We can go even further, a whole lot further! Not only can atlases be "broken down" into their constituent maps; but thousands of invaluable maps hidden away in guide-books, travel books, government documents, and all sorts of miscellaneous volumes can be individually micro-reproduced, and individually "brought out," for the would-be user, by analytical cataloging.

And, finally, once each map and chart has been micro-printed and cataloged on a separate card, the

resulting collection of map micro-cards will be so flexible that it will be possible to arrange them according to any filing scheme desired—geographically, or chronologically, or by maker, or by publisher, or even “typically,” or by “projection,” etc. If a library desired to buy two or three sets of map micro-cards, it could maintain several different map files.

As for cost: consider what this map micro-card technique means when it is applied to a Blaeu or an Ortelius. Such rare atlases as these, although they are cartographically fundamental, have now gone quite out of the financial reach of any but the most wealthy of college and university libraries. In micro-card facsimile—perfect photographic reproductions (except for color!)—a whole atlas can be brought to any library for a very few dollars, and can be brought, furthermore, already completely and “analytically” cataloged. It is likely that all of the contents of—shall we say—five hundred of the most important of the world’s existing atlases, old and new, together with complete sets of the sheet map and chart publications of all the map-issuing governments of the world, and perhaps 20,000 miscellaneous individual maps—in other words a really excellent “map collection,” a collection which would meet the research needs of almost any library, a collection which, in its original form, might well cost the library acquiring it somewhere up to a quarter of a million dollars, a collection which would further require in its original form,

a map room and many hundreds of feet of expensive map filing equipment—could, in micro-card form, be made available to any library, filable in one small card cabinet, at a total cost which would probably not run over \$5,000 and might—depending very largely on the number of subscribers—run to less than \$3,000.

### *Newspapers*

ONE would, of course, be foolish to assert that micro-cards are going to usurp the entire field of micro-reduction for library use. Newspapers may very well be one of the forms of printed matter for which micro-film in reel form may *not* give way to micro-cards.

There are, however, some types of newspapers that lend themselves excellently to micro-card republication. Here, just for example, is a special micro-card project that might very well be undertaken by some such library as that of the American Antiquarian Society: the micro-card publication of a complete set—or at least of as complete a set as can be assembled and collected from all sources—of *all* American newspapers prior to 1800 (or 1820, or some other set date). Most of these early newspapers were small folios, issued weekly. None of them ran over four pages an issue. Either a complete single issue of them could be placed on each micro-card, which would be a convenience in filing and use (and also in intercalating now missing, but



later discovered, issues); or as many as four issues could be put on a single card (if maximum micro-compactness was desired). In either case a couple of dozen drawers of micro-cards would probably hold the entire newspaper output of the country prior to the year 1800. For such a consolidated file as this even the unique holdings of private collectors could almost surely be drawn on.

Such a set of all our pioneer newspapers, distributed to from fifty to a hundred research libraries the country over, would be worth its cost merely as a fire-and-war-insurance move. But it would also be of inestimable convenience to genealogists, to historians, to economists and to all other scholars working in the period which these newspapers covered.

### *Manuscript Materials*

**M**ICRO-CARD publication is especially suitable for the publication of manuscript material. This material divides itself into two classes: 1. the rare, early source material (which it is now impossible to examine in its holographic form except in the library where it is being treasured); and 2. the contemporary material—not rare, but useful (whose interest appeal is, however, too narrow to secure for it any sort of conventional publication).

For the rare early material micro-cards, like micro-film, offer the scholar his ideal reproduction,

viz. an actual photographic copy of the original. But, unlike micro-film, micro-cards are able to offer the scholar his photographed result, pre-calendared for him, pre-cataloged for him, and cut up for him into easily usable sections, i.e., *completely prepared for his easy use*. We must remember that the calendaring and cataloging of rare manuscript materials is in itself a job for scholars, intricate and time-consuming,—and so expensive that even the wealthy library can take it on but a little at a time. Micro-carded, however, this calendaring and cataloging cost could be widely shared; split among fifty or a hundred libraries, it would become almost nominal. Given micro-cards, we would no longer need to wait indefinitely for the publication of now vault-buried collections of “Letters” and “Papers.” In book form their publication would require heavy subsidization. Micro-cards can give them *immediate publication, cheap publication, perfect copy publication*.

For unpublished current manuscript material, of value, but of value only to a limited few, micro-cards offer a method of “publication” costing very little more than the expense of typing a clean copy of the text.

This phrase—“typing a clean copy”—brings up the question of the proper type-script for micro-card reproduction. Micro-cards *can* be made from any sort of copy, using any kind of typewriter type-face, and any size of type page. If, however, the

typist chooses a typeface especially adapted for micro-card work,\* if a carbon-paper ribbon is used, and if the typist takes pains to secure a sharp and uniform impression, the micro-card result is naturally going to be very much more legible. If, furthermore, the size of the typewriter type-page and the method of its "imposition" are planned definitely to fit micro-card requirements, the utmost efficiency in the use of the card area available is made possible, and a much more attractive card will result.

We do not yet have a really satisfactory typewriter for micro-photographic reproduction. Such a typewriter was described by the writer in an article in the *Library Quarterly* six years ago,† after he had attempted—in vain—for several years to get one of the typewriter manufacturers to develop a machine along the lines which the article in question suggested. The "variable spacing" typewriter, just mentioned, does meet one of the most important of the specifications asked for in this article, and embodies, as a result, one of the most revolutionary improvements made in typewriters since their first invention. But we very much need the other things asked for: provision for multiple alphabets on the same machine, auto-

\* Such as that on the new "variable-spacing typewriter" which the International Business Machines Company is expecting to put on the market as soon as conditions permit, or one of the large variety of type faces offered by the Varietyper Company with its ingenious removable-type-bar machines.

† "The Possibility of Discarding the Card Catalog," *Library Quarterly*, July, 1938, p. 342-3.

matic line "justification," removable "sorts" type bars, ligatured letters, etc. All of these improvements—except, perhaps, line justification (which *does* seem an almost unsolvable problem)—are entirely and easily practicable. And, because type-writing, not merely for micro-cards, but for all other sorts of photographic reproduction, is going to become increasingly important every year, it is altogether likely that, before long, some one of our typewriter manufacturers will wake up to the opportunity which this trend offers, and will develop and place on the market, such a really effective "composing machine typewriter" as this article of six years ago called for.

### *Government Documents*

GOVERNMENT publications are as varied in form, size, origin, importance, and complexity as the general book publications whose growth they parallel. To show the application of the micro-card techniques to them let's take as a sample, not an average, but a hard, case of "documents," a case that presents them in their most difficult and most puzzling phases; viz. "near-print," federal government publications. If micro-cards are able to smooth the librarian's path any for *them*, the case for the micro-carding of government documents may be considered proved.

The librarian's difficulties with "near-print" publications of this type begin before he gets them:

he has at present no way of knowing what has been published! When he finally finds this out, he is but little ahead, for the bureau that published the document he is after is likely to be quite apathetic to his needs; and, anyway, the printing order on it was very small, and no copies are now left.

Even if his library happens to be one of the lucky ones this time, and does secure its precious copy of the bulletin, "study," report, letter, "directive," or what-have-you, that it is after, there still faces it every one of the three remaining factors of cost that are always involved—binding, cataloging, and storage—and each one of them in a more forbidding and more expensive form than usual. For most near-print government publications are difficult to collate and to catalog, expensive to bind out of all proportion to their bulk and importance, and come in such odd and mis-matched sizes that they seem never to "fit in" anywhere when it comes to their storage. At a very rough estimate indeed, a reasonably complete set of federal near-print publications—not in any sense a bibliographically complete set, be it understood, but just a tolerably complete set—would cost a library today, to acquire, bind, "process," catalog, and store, not less than \$10,000 a year, and probably nearer \$20,000. And \$20,000 a year is real money to any library. Yet in these same documents, hidden away in an appalling mass of sheer rubbish, lies also an immense amount of research material of the very highest economic, historical and scientific value for those

few scholars who want it and know how to use it. Our problem is, in some way, to make it available to those few without such an exorbitant cost.

Compare the above procedure with what might be the micro-card way of handling the same material. Let us suppose that one hundred research libraries contributed \$500 a year each—not \$20,000 a year each, but \$500—to establish at Washington, for their joint service, a Government Document Micro-card Publishing Agency, whose job it would be to collect, micro-card, and distribute, to the one hundred cooperating libraries, *all federal documents not distributed by the Office of the Superintendent of Documents*. This Agency would work in close cooperation with the Superintendent of Documents, and with the Library of Congress and the Government Printing Office (all of which are often just as much at a loss, at present, when it comes to publications of this type, as the most helpless of little college libraries).

This Agency would, first of all, develop a carefully planned and organized "searching" staff, which would maintain a close, and friendly, liaison with all the government bureaus doing this type of publishing—and an even closer, and more friendly, *liaison with their respective printing departments* (for the place to *ensure* getting this material is to have copies of it laid aside systematically—if this can possibly be arranged—at its manufacturing point of origin). This searching staff—and it would be a staff of some size and complexity—would, with

the aid of thoroughly organized records, the exercise of every ingenuity of method, and the cultivation of every pertinent personal contact, ferret out and secure, not one hundred copies, but just *three* copies, of every publication it could get knowledge of. A sufficient number of copies to supply one hundred libraries would be in many cases impossible to get, for the reason that that many copies were never printed; but three copies are a reasonably realizable goal.

Each document would then be *promptly* and *expertly* cataloged by a cataloging staff which had been selected and trained for the cataloging of this specific material. It would then be micro-carded, and the resulting cards would be mailed out *weekly*—each card, as always, containing the complete text of its document, duly cataloged, abstracted, and ready to file—to the one hundred cooperating libraries. If two hundred libraries subscribed the total cost could be cut to \$300; and it is not at all unlikely that two hundred such “global” subscriptions could be secured.

Furthermore it should be remembered, that, as always, besides the global subscriptions to this material, part subscriptions, covering special subject sub-fields, would be obtainable—*thousands* of them—from banks, accountants, importers and exporters, industrial concerns with special libraries, lawyers, insurance companies, tax consultants, railroads, oil companies, and the like. These commercial concerns are tremendously interested to get

*promptly* the *complete texts* of all bureau outpourings in the special fields in which they are interested. These commercial subscriptions would go far to reduce the over-all pro-rata cost of operating the Agency: in fact it is not at all impossible that it would wake up some morning to find that it was making money!

There is no particular point in suggesting that one is afraid that the patrons of one's library wouldn't like micro-texts of government documents. And the reason that there is no point is because, in a great many cases, the original documents are simply not to be had. And, even if they were, would they be worth the difference between \$500 and \$20,000?

### *Micro-cards—in Other Fields*

IT is not within the province of this book to discuss the possible extension of the micro-card idea to fields other than the library field. But, just as library index cards and all sorts of other vertical filing devices came to have business and commercial uses which are now many times greater in volume than the library uses for which they were originally devised, so there is little doubt that micro-cards will eventually have business and commercial uses in a thousand directions, which will, collectively, greatly outweigh their library use. All that will be done here is to suggest, very briefly indeed, a few of them.



Life insurance, fire insurance, and other insurance companies might have micro-cards for their policy-holders, with their headings filable three-ways in regular micro-card heading fashion. For life insurance companies the three ways might, for example, be by policy-holder's name, by policy number, and by geographical location. On the back of each card, there might be given, in micro-text—in the case of the life insurance companies—the policy holder's original application, his medical inspection, the text of his policy, loans, if any, against it, assignments of interest, if any, etc., etc., i.e., a complete history of the policy. Very cheaply reproducible, these "policy cards" would be available to maintain duplicate files in various departments of the home office, filed differently in each department as its special needs might dictate, and (split up into geographical sections) in the company's branch offices.

Schools, colleges and universities could maintain similar micro-card files of their students, with their applications for admission, medical histories, scholastic records, personal photographs, etc., all reproduced in full, in micro-text, on the back of a single catalog card. These cards could then, likewise, be easily and cheaply duplicated to maintain similar files in the dean's office, the registrar's office, the office of the physical education department, the treasurer's office, etc., etc. These cards also could be given possible three-way, or two-way, filings; and they could be made, duplicated, and stored, at a

small fraction of the cost of the photostating which is often presently used for the same data. They would also store in very much less space, and at very much less filing equipment cost.

Architectural, contracting, and manufacturing concerns could reduce plans, charts and blueprints to the backs of micro-cards, which could be fully indexed (and in two or three ways, if desired) on their fronts. These micro-cards could then be filed in vaults for permanent holding. If wanted later they could either be referred to "as is" by reading machine, or "blown up" by photographic enlargement, should they be wanted again for use in the field. When the blueprints for a single job run to tons, as they sometimes do, the permanent storage of them afterwards becomes a real problem.

Similarly, manufacturing concerns, patent attorneys, and others interested in machinery design might micro-card their drawings of machine details.

Hospitals, asylums, placing agencies, welfare associations, sociological investigators, and the like, would find it easy to maintain on micro-cards the case records of their patients, for permanent filing away in a minimum of space with a maximum of easy accessibility. Name indexed, as usual, on their fronts, these cards would have complete case histories micro-texted on their backs. All the bulky original papers could then be discarded.

Within the last few months a special problem developed in one of the New England states for which

micro-cards were the ideal answer, and for which there seemed to be no other answer. A special state archivist was appointed whose duties were to be to collect all available records of every conceivable sort on the present war—soldiers' letters, pamphlets, newspaper clippings, programs of local war meetings, draft board records, rationing board records, soldiers' photographs, photographs of war events, etc., etc.—first to collect, and then to correlate, file, store, index, and make available for later research use.

We were going to have to deal here, in other words, with an enormous mass of inchoate, undigested material, most of it in manuscript form, the greater part of it unavailable to the state in its original form (i.e., it had, in some way, to be copied), coming to us in an endless variety of forms and sizes. The archival appropriation was so small that photostating this material was out of the question. The possibility of micro-filming it was, of course, discussed; but the problem of filing and indexing which would then result seemed almost insuperable. How could one make accessible for convenient later use, either long rolls of film, each a veritable hodge-podge of small units of material; or, on the other hand, how could one handle bibliographically these same rolls cut apart into separate snippets of film, when most of the snippet units would consist of two or three frames only?

The micro-card reproduction and indexing of this material would seem to be the almost perfect

answer. Estimated very roughly indeed, this one archival "project," covering one comparatively small state, would require—if thoroughly done—from three to ten million micro-cards.

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## CHAPTER 11

### MICRO-CARDS—WHEN?

**H**ow soon is it going to be possible to initiate micro-card publication?

The ultra-conservative librarian would perhaps reply, probably not for two or three years at best. He would say that micro-cards are such a new concept, so utterly and completely new, that, before even a start can be made to make them an established part of library practice, a number of basic and extremely far-reaching decisions regarding their manufacture and use will have to be reached. And he would add that basic and far-reaching decisions ought not to be made offhand; and that therefore the decisions to be reached in this case deserve—and indeed demand—long and careful study.

But it is possible to draw an exactly opposite conclusion from the very same original premises. It can be pointed out that, just because micro-cards are a new concept, no one can be foresighted enough to see in advance all the problems that are going to arise in the use of them, or all the possibilities of use for them that are going to develop. It can be argued—and argued with even more force—that to delay using them in order to settle every detail

before we start is simply to waste time and money to accomplish nothing. It is quite true that there are a few fundamental micro-card determinations that will have to be made before anything can be done; but, when we examine them, most of these decisions are found to settle themselves. If we try to settle every last detail in advance, we can easily waste years in an endless—and really almost entirely theoretical—discussion of the minutiae of micro-card practice.

Let us see if it is not true that most of our fundamental determinations settle themselves for us.

*Size of micro-card?* Isn't this, for example, a question that has, to all intents and purposes, been decided before we start? It is true that there has been a little discussion \* of the possible advantages of using, for cataloging purposes, a "half-size" card. But this discussion was had over a catalog card that was intended to be a catalog card, and nothing more. Now the situation is entirely changed. We want to use the back of our card for a micro-text, and to add an abstract to the usual cataloging entry on the front. Argument can still be made—and not entirely unfounded argument either—for a half-size micro-card. But, considering *all* the facts—the additional material that we want to get on the cards, the general "handiness" of our standard  $7\frac{1}{2} \times 12\frac{1}{2}$  cm. size for circulation purposes, our long familiarity with that size, and the existence of

\* "The Possibility of Discarding the Card Catalog," *Library Quarterly*, July, 1938, p. 333-4.

an enormous amount of filing equipment that fits it—it would appear that a decision in favor of adopting, for micro-cards, our standard catalog card size is one that may be taken for granted.

*Catalog entry and abstract to be placed on the front of the micro-card: micro-text to be placed on its back?* This basic decision seems equally obvious and logical; indeed, no alternative decision seems possible.

*Shall we standardize the degree of micro-reduction? and, if so, at what power?* Here we initiate controversy. Actually, however desirable such a standardization as this might be at some time, it is not, at the present time, possible of attainment. We are not yet standardized as to reading machines; and, at the present stage of the art, we cannot be. All our machines are still in their embryonic stages. Looking at them with an unprejudiced, long range eye they are all crude, bulky, unclear, and unduly expensive contrivances. It is not even by any means sure that we are as yet on the most efficient track with them, either optically or mechanically. This being the outlook, we are certainly in no position now to attempt to standardize such a detail as the degree of magnification of our micro-text, important though that detail may be.

Nor do we need to. With the machines that we have we can read the micro-texts that we have. With the better machines that we shall get in the future we shall always be able to read whatever micro-texts we accumulate in the meanwhile. The thing

to do is to *start at once*—improving both the reduction and the definition of our texts, and the efficiency of our reading devices, as we go along.

*A standardized form of catalog entry.* Let's face the facts. After nearly a century of argument, catalogers haven't yet been able to reach world-wide agreement on a standardized form of catalog entry. Is there then the slightest likelihood that they would succeed any better if they tried to set up a standardized form of catalog entry for micro-cards? And why do we need to wait while they discuss it? The Library of Congress form of catalog entry, even if it is not unanimously approved, is certainly an excellent and adequate one. Until catalogers agree on something better, why could we not start our micro-cards with that as our model? Probably it would be desirable to modify it slightly for micro-card use; but whatever modifications are desirable can be put into effect at any time. Neither cataloging format nor form of entry has to be final. The Library of Congress has changed its own form of entry repeatedly over the years, and undoubtedly will continue to do so. So can micro-cards.

*Abstracting forms and methods?* Here again months might be spent arguing over the details of a code of rules for micro-card abstracting. But why? There exist already excellent models in such journals as *Chemical Abstracts*, *Mathematical Abstracts*, the *A.L.A. Booklist*, etc. Without too much preliminary argument over details why cannot micro-cards follow these excellent models? It will



always be possible for us to improve further on them later.

*The form of micro-card headings? especially their subject headings?* This would seem to be our most puzzling immediate problem, in fact almost our only one. On this one question there would seem to be necessity for some very thoughtful consideration; for, if some of the suggestions made in this book have any validity, this matter of micro-card subject headings will directly affect a considerable number of other micro-card decisions—all important. A concentration of Committee study upon this one question, ought, however, to develop reasonable answers to it in a few months, if not in a few weeks.

Yes, "in a few weeks." The library and scholarly worlds face a situation that demands of them at the present time, not merely study but action, forward-looking, courageous action, definite and intensely practical action. In taking any such action we are going to make some initial mistakes. Of course we are! But there is only one mistake that we can make that cannot in due course be corrected later, *and that is the mistake of indefinite postponement!*

It was remarked somewhere earlier in this book that a "pilot plant approach" to all new library ideas is always the desirable approach. We don't have to wait until the division-of-fields set-up has been completely organized. Once any one library has been assured of the exact limits of *its* field it can begin.

Nor does that library have to feel that it cannot start publishing its micro-cards until it is ready to cover all of its field. It will be a long, long time before it reaches that point! It can *begin*. At once. With a little. Certain titles only out of all its field. Certain most useful, most wanted, and hardest-to-get things. Scarce early material. Out-of-print material. Hard-to-catalog material. Each field will offer its own special problems of choice; but every field will offer endless opportunities to *begin to issue something at once*.

Perhaps, at the end of its first year, a given library will find that it has not issued over a thousand micro-cards; it may hardly have made a dent in its field. But it will have no reason to feel dissatisfied. For in that year it will have learned the ropes; will have seen and corrected its initial mistakes; will have found ways to cut its first costs; will have discovered better production techniques; will have improved the physical appearance of its cards. The second year it will be ready really to go to work; the second year it may issue ten thousand cards instead of the one thousand it issued its first year. And so on.

This is the logical, the safe, the sound way for micro-cards to develop. It is also the easy way and the inexpensive way. In one respect we of the library world are incredibly fortunate: micro-card publishing requires less initial "plant" equipment investment, and less technical skill, than any other sort of publishing, or printing, whatsoever. *That*

enables every library, unskilled as it may be both in micro-card printing and in any kind of publishing procedure, to "start small"—very, very small—and feel its way.

By sheer coincidence, it happens that, at this very moment, another problem is pressing upon the scholarly and library worlds for collective, constructive action, for which micro-cards would seem to offer almost the ideal solution. All over the world—but particularly in Europe—great research libraries have been destroyed by enemy action. Many more are going to be destroyed before the war is over. And not only libraries, but booksellers' and publishers' stocks of books, millions of books. The extent of the destruction done is not only unprecedented: in a very real sense it is irreparable. We are assured by every highly competent source of information that, for many types of scholarly materials—for example, for sets of certain key research periodicals—an acute and world-wide dearth is going to become apparent once peace has come again. Accompanying this dearth of certain of the basic materials of research, at the very time when the reviving world is going desperately to need those materials in widely available form, there is going to exist, in all of these devastated libraries, a corresponding dearth of funds, of funds not only to buy them with, but also of funds to catalog them with after they have been bought, of funds to bind them with, and of funds to build vast new stacks, the world over, to house them in.

This devastated-library problem has already received wide and thoughtful study. It has been proposed to reprint by photo-lithography, or to micro-film, or to photostat—each of these three methods has been suggested—certain of these essential research materials, and, having done this (either with government funds, or foundation funds, or both), to distribute sets of them to a hundred or more of the destroyed libraries of Europe and Asia.

May it be suggested here that, instead of using any one of the three above-mentioned processes, these research materials be micro-carded. Even if we had only the first cost, the manufacturing cost, to consider, micro-cards would still seem to be the first choice, simply because micro-card copies are by far the cheapest to make.

But, as has been pointed out again and again all through this book, this first cost, purchase cost, is by no means the only cost that librarians face. Instead, it is only the first of four costs, and it is not even the largest one of the four. To meet the other three costs, neither photostating, nor photo-lithographic reproduction, nor micro-filming can aid in any way. But micro-cards can, and do. If micro-cards were used for the wholesale reproduction of research materials, there would be saved, to all these devastated libraries, not only all of their purchase cost on these materials, but also all of their binding costs, all of their cataloging costs, practically all of their transportation costs, and all of their housing costs. And it would save them on all five of these

costs at a time when it is desperately necessary for them to save *in every direction that they possibly can*.

And finally—but by no means whatever least—the micro-carding of all this key research material would accomplish another thing. While we were making micro-cards of it for these foreign libraries, it would be possible, at very slight additional cost indeed, to micro-card additional copies of it to supply it to scores of our own American college and university libraries, libraries which have long wanted it but have not been able to afford it. These American libraries would not ask to get it free. They would be glad to pay its small cost.

In other words, to put it bluntly: the very war situation we are in offers us a unique opportunity *to initiate the micro-card era—if only we move quickly* to take advantage of it. But we shall have to move quickly: alternative steps in other directions are already under way, steps *greatly more costly*, and *greatly less useful*, to the libraries we are seeking to serve.