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ABSTRACT
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of the Association of Research Libraries. The results show that
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years, supporting a 30% increase in staff size, even though the
salary and wage portion of expenditures has declined from about 55 to
48%, while the acquisitions portion has increased from 34 to 39%. Of
the total expenditures for acquisitions, serials account for a
gradually increasing 75-77%, up from 72-73%, and monographs for a
gradually decreasing 21-22%, down from 24-25%. The libraries' current
serial receipts and "volumes added" statistics have both declined
slightly, although both remain at levels well beyond their 1975
levels, and medical libraries are relatively active, growing, healthy
institutions. An addendum considers 12 statistics that provide
explanations for the incredible growth and prosperity of the 1950s
and '60s, the rapidly dwindling fortunes that followed, and the
modest improvements that came during the 1980s. These statistics show
clearly that librarians who blame budget cuts, materials/serials
prices, inflation, and austerity for the hardships endured in recent
years are seriously oversimplifying the problem. (17 references)
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GROWTH AND CHANGE IN 67 MEDICAL SCHOOL LIBRARIES, 1975-1989

by

Warren F. Seibert, Ph.D., and Marjorie A. Kuenz, Ph.D.

Abstract

The analyses reported here are based on the annual statistics of 67 U.S. and Canadian medical school libraries, 1975-1989, and on four primary statistics from "parent," main campus libraries, all of them members of the Association of Research Libraries. The results show that medical library growth rates, like the rates at many other libraries, are declining, and yet the average 1975 collection will have doubled, probably, by 2001. Operating expenditures have increased at a 9% rate; doubled in eight years; and supported a 15-year, 30% increase in staff size, even though the salary and wage portion of expenditures has declined from about 55 to 48%, while the acquisitions portion has increased from 34 to 39%. Of the total expenditures for acquisitions, serials account for a gradually increasing 75-77%, up from 72-73%, and monographs for a gradually decreasing 21-22%, down from 24-25%.

During the most recent years, the libraries' current serial receipts and "volumes added" statistics have both declined slightly, although both remain at levels that are well beyond their 1975 levels. Compared to their ARL-member parents, the medical library collections are 1/12 as large, they grow by adding 1/10 or 1/12 as many volumes annually, and the libraries' expenditures are 1/7 as large. Relatively, if not absolutely and unquestionably, these libraries are active, growing, healthy institutions.

An Addendum, developed just prior to publication, considers 12 statistics that provide explanations for the incredible growth and prosperity of the 1950s and '60s, the rapidly dwindling fortunes that followed, and the modest improvements that came during the 1980's. The 12 statistics reflect conditions during the last four decades and show clearly that librarians who blame budget cuts, materials/serials prices, inflation, and austerity for the hardships endured in recent years are, at best, seriously oversimplifying the problem because they ignore the influence of the near-perfect conditions that guaranteed prosperity before 1971 and ignore, too, the evidence of improvement that the 1980s provide.

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Library Growth Studies, Now and Then

This is the fourth in a recent series of library growth studies, but the first to examine growth and change in libraries other than the principal, main-campus libraries of research universities. The first study (Seibert, 1985) traced collection growth in three groups of academic libraries, and in the process, it updated trends described years earlier, either by Rider (1940, 1944[1]) or by the nine-year series of "Purdue studies" (Dunn, Seibert, and Scheuneman, 1965 [through 1973]). Following that, a much larger study (Seibert, Kuenz, Games, and Gregg, 1987) investigated trends during 35 postwar years, among the same 58 ARL members that the Purdue series had studied, so it, too, updated earlier work. Then, most recently, a sequel to the 1987 study (Seibert, Kuenz, and Games, 1990) duplicated the procedures of its forerunner, but based its analyses on the annual statistics of 35 ARL members that are, in most cases, relatively small and relatively recent additions to ARL's membership rolls.

The tracing of library growth over a period of years is the one shared purpose of this and the other cited studies, although four of them—the exceptions are Rider's work from the 1940s and Seibert's 1985 article—also look beyond collections to include analyses of spending and staffing trends, as well as correlations among the studies' principal variables. Inclusion of libraries in a trend study, and the span of years that a study covers are both

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[1] The collection statistics that were the basis for Rider's 1944 book appeared earlier in his brief 1940 newsletter article. The References list both.

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determined primarily by library similarities, including memberships that they share, and by data availability and credibility. Rider's work employed data from several small groups of academic libraries whose collection statistics extended from 1938 back into the 1800s, typically to 1876, although for two small groups, to 1831. Two decades later, the Purdue studies (and later still, the authors' 1987 study) used annual statistics from 58 well established academic libraries that were, in 1964, most of ARL's core membership[2], and the first Purdue report, in 1965, traced collection growth and other trends across a 14-year period, 1951-1964. Then, in later years, eight annual updates extended the work into a series, with analyses that spanned 22 years, 1951-1972.

In 1984, as we began to consider a revival of trend studies and then to initiate what is now the four-study series, we first needed to locate--or, God forbid, to reconstruct--the Purdue data. It was no longer available from Purdue, although it had been, during the active study years, so the search was directed elsewhere. and over a period of months we made inquiries of at least 20 librarians and others who once had some connection to those studies. The search was slow, but after months of failing, it succeeded when Prof. Maurice Marchant of Brigham Young University reported that he had a full set of the data that he was willing to share. Thus, the Purdue/Marchant data, when finally supplemented and extended through 1985, became the basis for the 1987 study and report.

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[2] During the mid-60s, 63 or 64 academic libraries comprised ARL's core membership; that number is now 107.

The 1990 sequel to the 1987 study was undertaken primarily to get a second look at trends that the earlier study had found, but especially at the sudden, early '70s reversal of library fortunes, and to search for its causes. In addition, as a second priority, the sequel would provide a second chance to look for signs of a modest recovery that had seemed to begin in 1983. The search was important because the library literature, both then and now, treats budget cuts as a significant source of many libraries' problems (e.g., Voigt, 1975, Dougherty, 1991), but the record cast doubt on that. It showed scant evidence of cuts; showed 1971 and '72 spending increases that were unusually modest, but not absent; and showed later increases, through 1982, that amounted to 130%. (Between 1972 and 1982, average expenditures of the 58 ARL libraries increased from $3.53M to $8.13M, reached $10.38M in 1985, and it is now $16-17M). There is no question that the problems experienced by research libraries were, and are, real and serious, but budget cuts were not, and are not, their cause.

Fremont Rider (1944)

From Rider's work in the 1940s on to our 1990 sequel, each of the earlier studies provides at least a few notable findings and implications, and for Rider the centerpiece must be his finding of exponential collection growth and repeated doubling intervals of about 16 years. But he is notable, too, for his inclination both to expect and to suspect the continuation of such growth. He wrote that "The Yale Library will, in 2040, have 200,000,000 volumes, which will occupy over 6,000 miles of shelves . . ." (p. 12), but four pages later, he acknowledged that "if research

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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'" (p. 16). Even so, the consequences of continuing, uncontrolled growth was a concern that prompted him to urge the adoption of microcard publishing technology.

The Purdue Studies (1965-1973)

After Rider, the Purdue studies, and in particular, the first of Purdue's nine reports, was notable, as one reviewer saw it, for demonstrating that "Fremont Rider was, in general, correct in his ominous predictions" (Garrison, 1966, p. 170), or as another one suggested, that the studies ". . . might well be dedicated to the late Fremont Rider" (Talmadge, 1966, p. 319). Purdue not only found and reported growth rates that were almost identical to Rider's, a generation earlier, but its authors were equally ambivalent about the prospects for future growth. On one--of four--hand(s), they presented one fitted curve that specifically (and correctly) predicted that the average collection would double in 17 years and reach the level of almost 1.8 million volumes in 1968 (Fig. 1, p. 21, see also, Dunn, et al, 1969, Fig. 1, p. 14). But on another hand, a second curve, this one fitted to the number of volumes added to collections (Fig. 2, p. 22), predicted much greater growth, and its credibility came from the fact that "VA" had been increasing consistently and rapidly in the past. On still another hand, Purdue acknowledged that curves fitted to the data make "no provision . . . for an eventual deceleration of growth . . . . [and] some of the fitted curves, when extended some

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years beyond 1980, indicate inconceivably high levels . . ." (p. 20). Then finally, on a fourth hand, Purdue said this:

> Records of growth since 1951, including the most recent years, and the unfaltering growth of even the largest libraries, indicate that this growth will not soon decelerate. Upper limits are not apparently being reached and [are unlikely to] be approached in the fifteen years [to 1980] immediately ahead (p. 20).

So, while there were several signs that suggested a continuation of rapid growth, Purdue, like Rider, saw that this led eventually to growth rates, to collections, and to the adding of volumes in numbers that sensible people had to question. Inevitably, then, the incredible growth of the past would either continue or it would not, and we know now that, after 1971, it clearly did not, but the "Why?" question still has no satisfactory answer.

Library Growth Studies at NLM

Seibert's 1985 article was a first small step toward a revival of trend studies and was undertaken to serve three limited purposes: 1) To determine the fate of a few of Purdue's forecasts, which were intended to extend through 1980, but which had not been reexamined since 1973; 2) to update the collection growth records of the nine "younger" and nine "older" libraries identified in Rider's Tables C and D; and 3) to fit curves to both sets of Rider's data and to project these, as Purdue had, through 1980.

The study's principal findings are, first, that some of Purdue's collection and expenditure forecasts were remarkably accurate. Sixteen years after the forecasts were made, the 58 libraries' average 1980 collection had grown to be 2.79 million volumes, vs. a predicted 2.86 million (p. 20), while spending for

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materials and binding had grown to be $2.08 million, vs. a predicted $2.11 million (p. 21). So, even though 16 years of growth had produced remarkable expansion, these predictions were accurate to within a few percent. But alas, this was not the whole story because the article, like Purdue, examined growth in the number of volumes added (if "growth" is the word for it), and found that the 1980 average bore no resemblance to Purdue's predictions. Two fitted curves, the first based on 1951-1964 data, the second on 1951-1970 data, were in almost perfect agreement that the 1980 VA average should reach the level of 226 or 228,000 volumes, but both were "wildly in error" (p. 20). What had happened, in a sense, while no one was watching, was that VA had declined sharply during the 1970s, dropping from a 1970 and '71 peak of 107,000 volumes to less than 89,000 in 1980, then dropping still further, finally "bottoming out" in 1982, at a level just less than 81,000.

The article's last section considers Rider's Table C and D data, presents curves fitted to both data sets, extends their predictions to 1980, and compares these with actual collection averages for 1960, 1970, and 1980. It found rapid growth in Rider's "younger" and "older" libraries, but found, too, that in the first case, growth was much greater than predicted, while in the second, it resembled, but was somewhat less than predicted. After reflecting on these very mixed results, we decided that they teach the same lesson Will Baumol learned first and described like this: "Forecasting always frightens me, and my standard line is that the one thing about the future that I'm sure of is that it will surprise me" (personal communication, May 16, 1988).

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The 1987 study's findings are summarized well in its Abstract and in an inserted "Amendments" page; the Abstract describes the principal findings as follows:

The [average] number of volumes held increased from .89 million volumes in 1951 to 2.80 million in 1980 and 3.18 million in 1985; [results also show] that Purdue's original forecast for 1980 was 2.86 million and that its revised forecast was much higher . . . . In general, the trends reflect rapid growth in the libraries' collections, volumes added, expenditures, and staff size from 1951 through 1970, but show different . . . trends, beginning in 1971. . . . Collections . . . appear now to be growing in linear fashion, not parabolically, as before. Nevertheless, in 1985 the average collection was 3 1/2 times as large as . . . in 1951 . . . . After 1970, increases in library staff size stopped and staff size then remained stable for a decade, although some recent increases are now apparent. All three library expenditure categories show large increases--about 22-fold--during the 35-year period, which correspond to repeated annual increases of about 9%; however, when these . . . are re-computed as "constant dollars," they show that growth stopped in 1971 or 1973 and did not begin again until 1982.

The "Amendments" page includes this:

From 1951 to 1987 . . . the median enrollment increased from 9-10,000 to 24,000+; graduate enrollment from 15-1600 to 4900; annually conferred Ph.D.'s from 64 to 280 (the 1975 peak was 336); library staff from 70 to 240; expenditures from $350,000 to $10.67 million, i.e., 30-fold; and the collection or holdings from 620,000 to 2.6 million volumes (in 1994, 3.1 million are likely). Until 1971, [the median library] prospered, then until 1983 it faltered, but some recent signs suggest recovery . . . . A central, if not the central, Purdue finding was that research libraries . . . would, on the average, double their collections in about 17 years, [which] corresponds also to a quadrupling in 34 years. By coincidence, the results . . . encompass 34 years of growth and they show, for eight composite libraries . . . that when their 1985 collections are stated as multiples of their 1951 collections, they are: 3.56, 4.03, 4.64, 4.34, 2.91, 4.17, 4.06, and 4.88 . . . . Six of the eight composite libraries have been equalling or exceeding a 17-year doubling rate.

The 1990 sequel parallels the Purdue studies, as well as its 1987 forerunner, and its findings, as summarized in the Abstract are these:

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The evidence shows that, even though the rate at which lib-
raries added volumes to collections declined in 14 or 15 of
the last 19 years--including 1986-1988--and even though "VA"
finally was 30 percent below its 1969 level, collections
still grew at rates near those that Rider and Purdue had
found. After 1969, the 17 "old" libraries' median collection
doubled in 17+ (and their average in 18+) years, and since
1976, the average and median collections of the 35 libraries
have increased at rates that would yield a doubling in 19
years or less, if past rates were maintained. Between 1976
and 1988, their average collection increased from 1.380 mil-
lion volumes to 2.036 million. Although spending increased
at slower rates than the 1987 study had found, the rates
still were near eight percent, which leads to a doubling in
nine years. . . . Trends . . . that relate to expenditures
are the most regular and predictable, and they are expected
to continue to increase at the rate of eight or perhaps nine
percent per year. Collections [seem to increase because] of
something like a "flywheel effect," i.e., the continuing
motion of a large mass that has been in motion as long as
anyone can recall. Still, it is unlikely that future dou-
bling intervals can be less than 20 years.

The sequel failed in its search for evidence that explained

the post-1971 problems of academic libraries, especially the sharp

decline in the rate at which they added volumes to collections.

Instead, its findings only confirmed that the decline was accomp-

anied by an unbroken series of spending increases, by a consistent

allocation of a majority of funds (i.e., 52-57%) to salaries and

wages, by consumer price inflation that advanced at the same pace

as expenditures, and by other evidence that cast doubt on the

"budget cut" and "inflation and austerity" explanations that echo

through much of the literature. Not that inflation or austerity

have no relevance, but that several contradictory and confounding

signals undermine such convenient assignments of blame.

Six Hunches

The five cited studies are all based on statistics from many

larger, and in most cases, ARL-member libraries that serve the

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main campuses of research universities, not on statistics from smaller and more specialized medical libraries, but those earlier results still show patterns that suggest several results that can be expected here. In another context, these expectations might be stated formally, as hypotheses, but they will lose nothing, and they might gain a more honest ring if they're described as hunches, guesses that have a reasonable chance of finding support in the data; the hunches that seem most promising are these:

1. During the last ten or 15 years, medical school library collections have probably grown at rates that will double the average library's size in 20 years, plus or minus one or two.

2. During the 1970s and into the early '80s, the rate at which volumes were added to collections probably declined, then it increased during the next few years, and since the mid-80s, it has probably declined again.

3. The libraries' total operating expenditures have probably increased at an average annual rate of 7 or 7 1/2 to 8 or 8 1/2% and doubled in 9 to 10 1/2 years.

4. In 1975, salary and wage expenditures probably represented something more than half of the total, while acquisitions and binding were a third, but in later years, the first percentage has declined gradually and the second has increased, also gradually.

5. Until some time in the early 1980s, library staff size probably showed few or no increases, and increases since then have probably been visible, but modest.

6. The nonprofessional staff probably outnumber professionals by at least two to one, and if any trend is present, it is likely to have decreased the ratio, not increased it.

Procedures

Data for this study come principally from 12 annual compilations, representing 1977-78 through 1988-89, and entitled Annual Statistics of Medical School Libraries in the United States and Canada (in shorthand, the "Lyders/AAHSLD" statistics, after their

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Editor and sponsoring organization[3]). When received, the data represented 75 libraries, all at ARL-member institutions, but eight were soon deleted, when their data revealed gaps and other problems that could not be resolved; coincidentally, the 67 that remained are half the number that are found in most recent AAHSLD reports. With the deletions accomplished, data from the remaining 67 were reviewed carefully, checked for consistency and completeness, amended/edited as necessary, and supplemented in three ways: 1) With data from the three compilations (Hendricks, 1974-75, 1975-76, 1976-77) that predate the Lyders/AAHSLD reports; 2) with AAHSLD's data base search statistics (these are published annually, but they were not included in the data received); and 3) with four statistics that reflect the collections and expenditures of the medical libraries' "parent," ARL-member libraries. When this was accomplished, the three-dimensional data base included about 20,600 entries: 67 libraries X 23 variables X 15 years, but minus almost 2500 entries, i.e., empty cells that represent data which, for various reasons, were never collected from their source. And among the entered data, approximately 740 entries (or 3.6% of the total) are interpolations or estimates. Data analysis was the last procedural step and consisted simply of calculating: The ratios, as named and defined in Tables 1 and 1a; the annual means for each variable, as shown in Table 2; and the correlations between each variable pair, each year, summarized in Table 3. The

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analyses were accomplished using the NCSS/Number Cruncher statistical software (Hintze, 1990). The 67 libraries are listed in the Appendix, and the variable names, abbreviations, and definitions are given in Tables 1 and 1a.

Results

The principal results are the means of the primary and ratio variables, 1975-1989, presented in Table 2: three trends from that Table are presented in Figs. 1-3 to demonstrate: 1) Growth in the average collection, 2) changes in the number of volumes added to collections, and 3) increases in total operating expenditures; and finally, Table 3 is a three-part correlation matrix, a summary of the correlations found in 15 year-based matrices.

Discussion

From the beginning, we assumed that the libraries included here would be larger and somewhat more robust than the average, essentially because these 67 are identified with relatively large, well established, ARL-member institutions, but experience also suggested that such differences would have little or no effect on the validity of the results. Still, to get some measure of the differences, and using 1979, 1984, and 1989 data, we compared the average collection size, number of volumes added, and total operating expenditures, as reported 'n the three annual AAHSLD reports, with averages derived from the 67 libraries' data. We found that all of the observed differences were in the expected direction and in a range from eight to 35%; e.g., in 1989, the three statistics differed by 21, 13, and 35%, respectively. But even with such differences, . . . (continued on p. 19)

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Table 1

The Principal Statistical Variables: Names, Abbreviated Names, and Brief Definitions*

Variable Name	Abbrev.	Brief Definition
Volumes Held	VH-PR	No. of physical units, in one binding or portfolio, held in the collection.
Volumes Added	VA-GR	No. of (gross) vols. added to the collection (from cataloging/binding statistics).
Percentage Increase	PINC	Vols. added (VA-GR) divided by vols. held (VH-PR).
Current Serials	CURSER	No. of current serials titles received.
Total Expenditures	TX	Total operating expenditures (US$); includes BX, SX, and "other" expenditures).
Salary-Wage Expenditures	SX	Salary-wage expenditures (US$), excluding fringe benefits.
Salary Expenditure Ratio	SALR	S-W expenditures (SX) divided by total expenditures (TX).
Monograph Expenditures	BXMONO	Expenditures for monographs (from budgeted, gifts, grants, and other sources).
Monograph Proportion	MONOPROP	Proportion of BX-REAL spent to purchase monographs (BXMONO divided by BX-REAL).
Serials Expenditures	BXCURS	Acquisition expenditures for serials (from budgeted, gifts, grants and other sources).
Serials Proportion	CURSPROP	Proportion of BX-REAL spent to purchase serials (BXCURS divided by BX-REAL).
Book, Periodical, & Binding Expenditures	BX-REAL	Acquisition expenditures (US$) for monographs, serials, other materials & binding.
Materials Expenditure Ratio	BKR	Acquisitions expenditures (BX-REAL) divided by total operating expenditures (TX).
Binding Proportion	BINDPROP	Proportion of BX-REAL spent for binding (binding expenditures divided by BX-REAL).
Cost per Volume	BXPVA	BX-REAL divided by vols. added (VA-GR).
Cost per Serial	CXPSER	BXCURS divided by CURSER.
Professional Staff Size	PSS	No. of f.t.e. professional staff.
Nonprofessional Staff Size	NPSS	No. of f.t.e. nonprofessional staff.
Total Staff Size	TSS	Total no. of f.t.e. library staff.

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Table 1 (continued)

Nonprofessional to Professional Staff Ratio	NPSR	No. of nonprofessional f.t.e.'s divided by no. of professional f.t.e.'s.
Interlibrary Loan Requests Filled	ILLREQ	No. of interlibrary loan requests filled.
Borrowing from Others	#BORROW	No. of ILL items borrowed from others.

* These 22 variables are described in or are derived from those in <u>Annual Statistics of Medical School Libraries in the United States and Canada, 1987-88.</u>

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Table 1a

Supplementary Variables/Ratios: Names, Abbreviated Names, and Brief Definitions**

Variable Name	Abbrev.	Brief Definition
University VH collection(s).	UNIVH	No. of vols. held in the "parent" library
VH Ratio	VHRATIO	Medical school library holdings (VH-PR) divided by parent library holdings (VH).
University VA	UNIVA	No. of (gross) vols. added to parent library collection(s) (VA).
VA Ratio	VARATIO	Medical school library VA-GR divided by parent university VA.
University TX	UNITX	Total operating expenditures (US$) for the parent library(ies).
TX Ratio	TXRATIO	Medical school library TX divided by parent library TX.
University SX	UNISX	Parent library salary-wage expenditures (US$), excluding fringe benefits.
SX Ratio	SXRATIO	Medical school library SX divided by parent library SX.

** These eight variables are described in or derived from the statistics defined by Stubbs and Buxton (1981).

Table 2

Annual Means for the Primary and the Ratio Variables, 1975-1989

YEAR	VH-PR	VA-GR	PINC	CURSER	TX	SX	SALR	BXMONO	MONOPROP	BXCURS	CURSPROP	BX-REAL	BKR	BINDPROP	BXPVA	CXPSER
1975	139577	6088	.050	2378	$505301	$273871	.54	N/A	N/A	N/A	N/A	$167385	.34	N/A	31.79	N/A
1976	149005	6321	.048	2467	564880	316661	.56	"	"	"	"	182066	.34	"	33.34	"
1977	154678	6609	.047	2490	637107	356589	.56	"	"	"	"	202499	.33	"	33.02	"
1978	153606	6574	.052	2524	705069	391267	.55	"	"	"	"	233362	.35	.08	37.26	"
1979	158408	6582	.048	2516	776640	381809	.49	$60407	.25	$162513	.72	252641	.35	.07	41.14	67.83
1980	164146	6874	.049	2584	880153	416275	.47	66746	.24	189092	.73	283479	.34	.07	45.71	77.18
1981	170628	6551	.042	2641	929109	458738	.49	79582	.25	220004	.75	321239	.36	.06	53.47	88.17
1982	174114	6016	.039	2616	1000183	502563	.50	81035	.24	236724	.74	347428	.36	.06	60.00	94.94
1983	178093	6564	.041	2724	1074252	536922	.50	96?.0	.26	252775	.72	381380	.37	.06	59.79	98.06
1984	184006	6367	.039	2657	1156497	574752	.49	107706	.27	270162	.71	410597	.37	.06	67.50	106.95
1985	191438	6794	.039	2768	1234631	613978	.49	113268	.26	292539	.72	440981	.37	.06	67.93	111.16
1986	197752	6997	.038	2834	1353992	670787	.50	121792	.26	314843	.72	475469	.38	.06	72.55	118.34
1987	204489	6925	.036	2881	1506331	731590	.48	123616	.22	374732	.75	556669	.38	.05	85.94	137.50
1988	209338	6741	.035	2868	1585529	776514	.48	116183	.21	417822	.77	575333	.38	.05	90.71	155.88
1989	213460	6721	.033	2816	1719062	843166	.48	132213	.21	446411	.75	632589	.39	.04	102.73	170.03

| YEAR	PSS	NPSS	TSS	NPSR	ILLREQ	#BORROW	UNIVH	VHRATIO	UNIVA	VARATIO	UNITX	TXRATIO	UNISX	SXRATIO
1975	9.9	20.5	30.4	2.25	10052	1614	$2162380	.076	89611	.081	$4369486	.139	$2584297	.131
1976	10.4	21.2	31.7	2.21	10772	1740	2137384	.079	89732	.082	4614764	.139	2699145	.138
1977	11.2	22.2	33.3	2.22	10566	1953	2234381	.078	86570	.087	4943154	.145	2897244	.141
1978	10.7	22.8	33.5	2.30	9501	1858	2309853	.076	86189	.090	5330144	.148	3081773	.146
1979	11.0	23.3	34.3	2.30	9065	1861	2364068	.077	84479	.088	5790650	.150	3313176	.132
1980	11.4	24.0	35.4	2.33	9175	2210	2380451	.078	78686	.097	6272333	.156	3539578	.132
1981	11.6	24.6	36.2	2.32	9606	2215	2427865	.079	73468	.102	6825444	.148	3872538	.132
1982	11.4	24.1	35.5	2.31	9301	2260	2498673	.078	72459	.097	7457148	.147	4194006	.135
1983	11.7	24.8	36.4	2.29	9062	2395	2576031	.078	79214	.097	8091437	.146	4463864	.135
1984	11.7	24.5	36.2	2.20	9805	2357	2639349	.079	79732	.094	8714452	.147	4723317	.139
1985	12.3	25.6	38.1	2.21	10327	2389	2729379	.079	83667	.092	9475358	.142	5053101	.134
1986	12.3	27.0	39.3	2.34	11084	2685	2783468	.079	84479	.094	10370190	.142	5457468	.136
1987	12.1	28.3	40.4	2.45	11018	2910	2839953	.084	83571	.094	11261590	.146	5828799	.138
1988	12.3	28.0	40.3	2.38	11596	2888	2913877	.081	81285	.098	12050790	.144	6262846	.137
1989	12.0	27.9	40.0	2.42	12572	2982	2989575	.080	84746	.095	13013320	.142	6724725	.136

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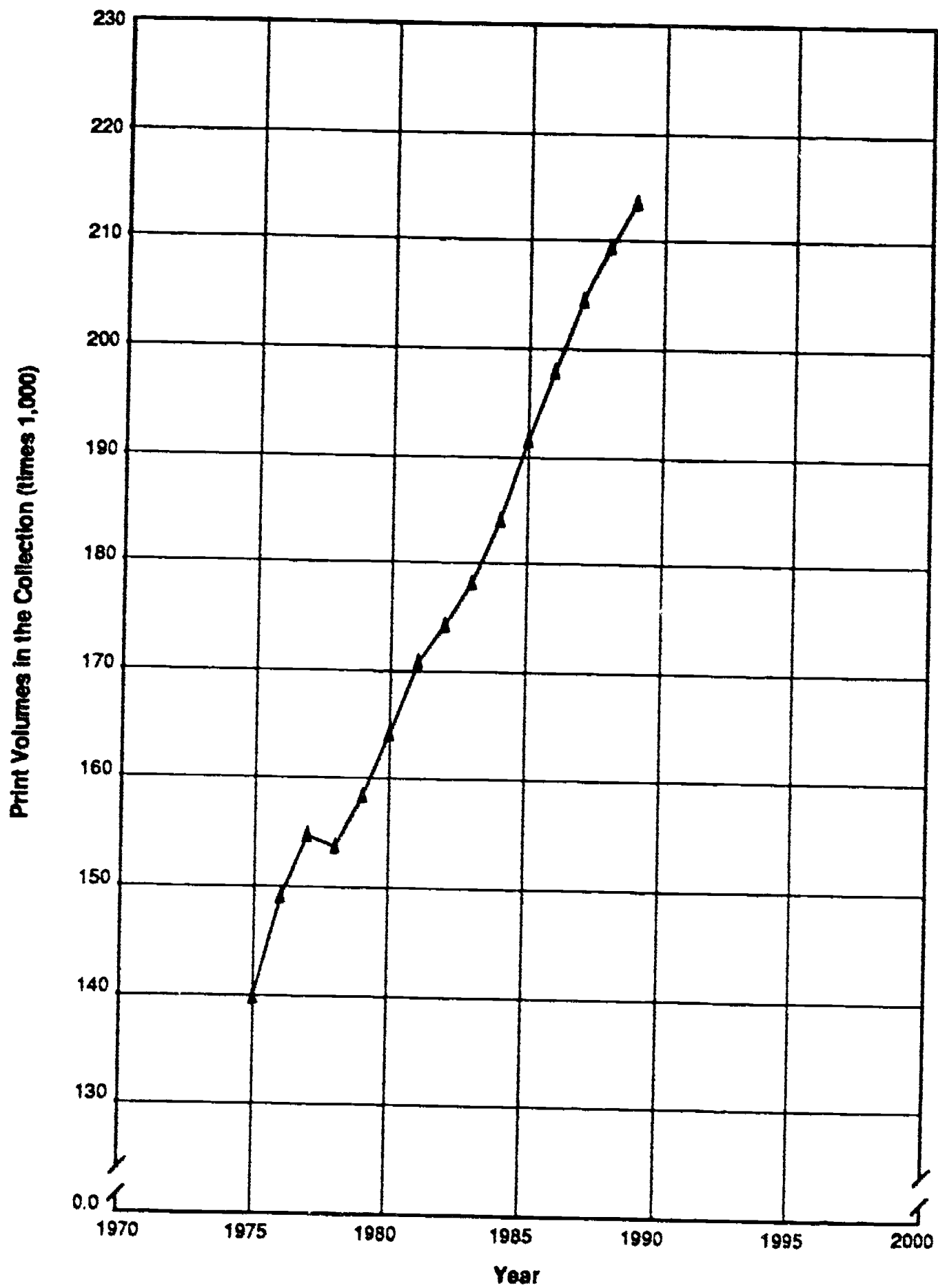
Figure 1.   Average No. of Print Volumes in the 67 Libraries' Collections, 1975-1989.
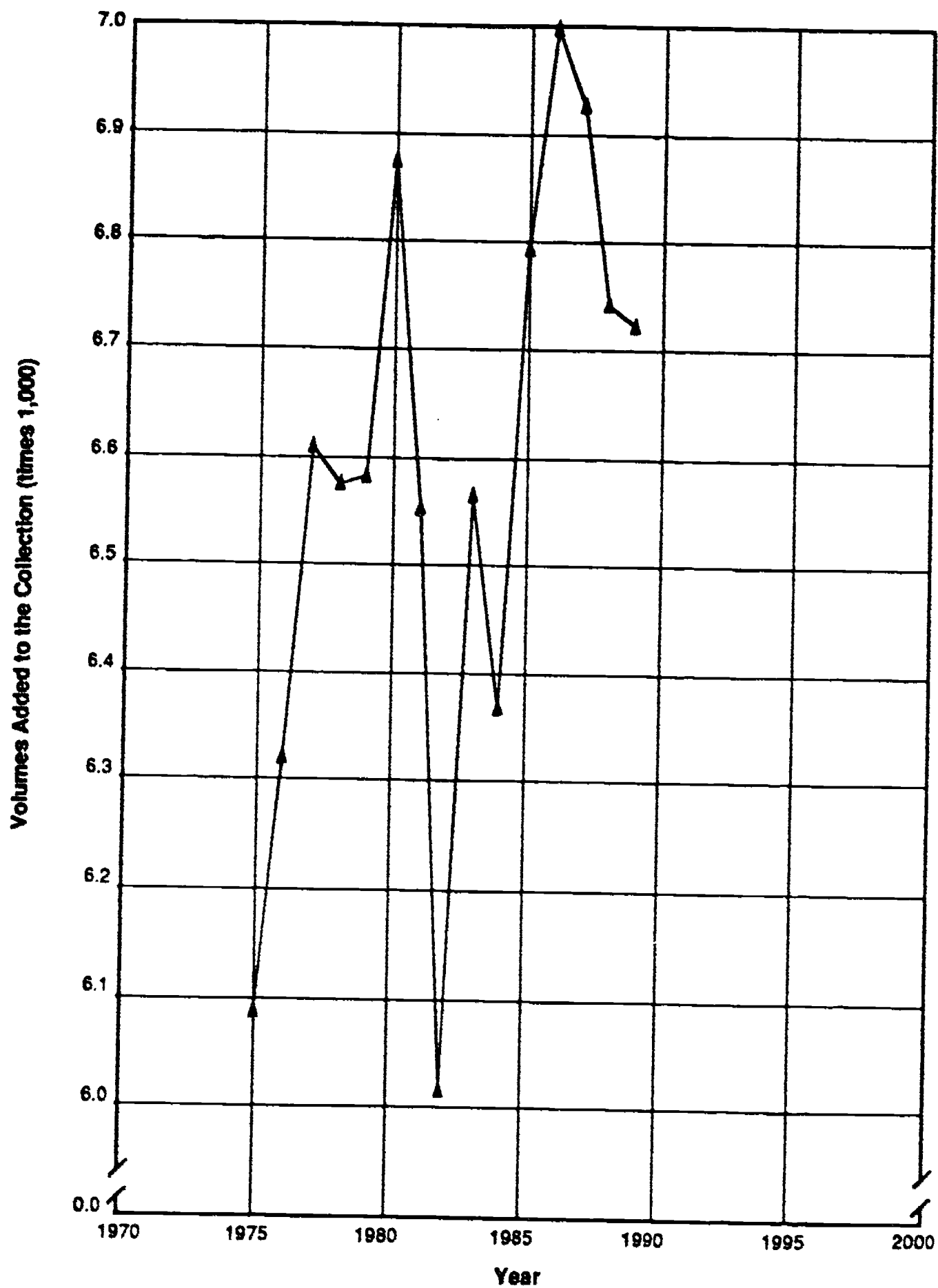
15

Figure 2. Average No. of Volumes Added to the 67 Libraries Collections, 1975-1989.
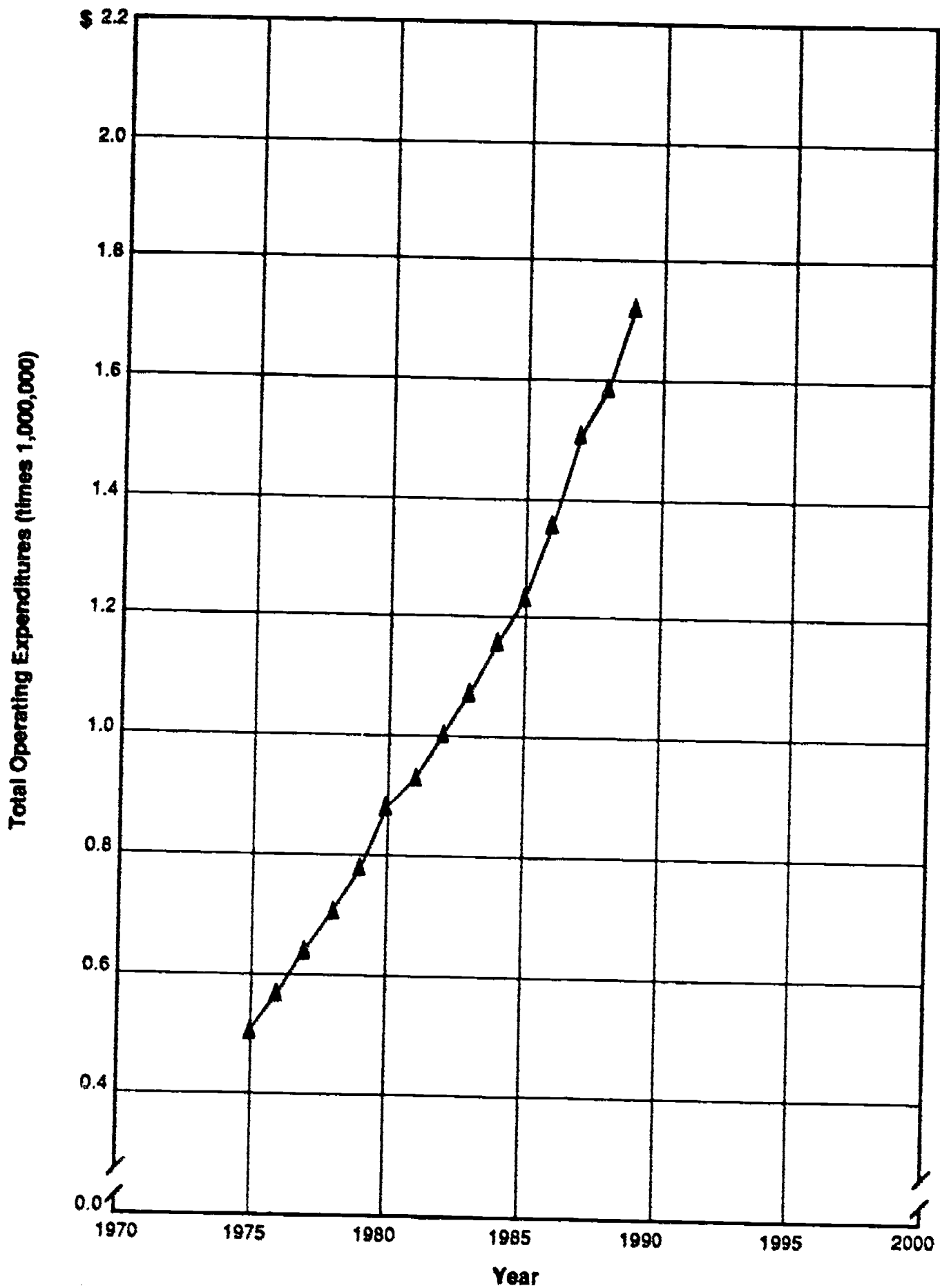
16

Figure 3.   Average Total Operating Expenditures of the 67 Libraries,
1975-1989.

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Table 3

Summary of Variable Intercorrelations (r's)*

*Decimal points omitted. Upper entry is higest annual r obtained; middle entry is median r; last entry is lowest r.

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. . . the 67 libraries included here and the very similar number of other, typically smaller libraries represented in AAHSLD's reports are likely to behave very similarly, principally because medical school libraries--and other academic research libraries, for that matter--derive their goals from the same culture and they operate in much the same environment, one that is defined by many of the same pressures, constraints, and opportunities.

Hunch No. One

The first of the six hunches listed earlier suggests that the average medical library collection has been growing at a rate that would double its size in "20 years, plus or minus one or two," but the evidence shows this guess to be too optimistic. Table 2's VH-PR averages (volumes held-print, alias collection size) show that the 1975 collection averaged almost 140,000 volumes[4] and it grew to be almost 213,500 in 1989, a 53% increase that translates into annual increases of about 3.1% and a doubling interval of 23+ years. But these implications also need to be tempered by what "PINC" reveals. PINC is a rough-hewn index that gauges (while it also slightly overstates) a collection's annual rate of growth, and PINC records a 14-year decline, from a "5" (% rate) in 1975 to a low "3" in 1989. If it declines further, as it almost certainly will, then a doubling of the 1975 collection will not be seen

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[4] Fig. 1 shows that the 1978 collection size was slightly below the 1977 level, not above it, as expected, but since 1978 was the first year of the AAHSLD reports, the decline is almost certainly an artifact, a result of some non-comparability of Hendricks' and AAHSLD's data. The other variables appear to be comparable across all 15 years.

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until after the year 2000, rather than in 1998 or '99, as past growth suggests, or in 1993 to '97, as the hunch suggests.

Hunch No. Two

The second hunch has its origins in the sharp decline in collection growth rates that is the most prominent finding of both the 1987 and 1990 studies. In both, the "volumes added" statistic, abbreviated here as VA-GR, declined sharply during most or all of the 1970s and into the early '80s, then recovered some of its energy during the next three or four years and declined again during the most recent years. A similar pattern seemed likely here, but when the present results (Table 2 or Fig. 2) are compared to those of the earlier studies, they support the last two parts of the hunch well enough, but not the first part, i.e., not the expected initial period of decline that was "supposed" to extend into the early 1980s. Before 1982, VA-GR declined just twice, and it either remained stable or it increased during the other years. So the VA-GR trend is unexpectedly mixed, primarily because of its unexpected, pre-1982 strength. Still, in 1982, and as expected, VA-GR reached its low point, then it moved ahead during three of the next four years and peaked in 1986, also as expected, and declined again during each of the next three years. There is, though, one other unexpected feature of the trend, one that may bode well for the future: The recent decline, 1987 through 1989, represents a drop of only 4%, and this, together with the statistic's unexpectedly strong showing during the late 1970s, i.e., its ability to avoid the sharp decline that other

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libraries have experienced, shows that VA-GR has been more resilient or sturdier than its VA counterpart in the earlier studies.

Hunch No. Three

It won't be obvious, but the third hunch is a confident assertion in disguise. Expenditures always increase, not necessarily for every library every year, but on the average, for the majority, and over the years, and the evidence in Table 2 and Fig. 3 is further confirmation of this. Between 1975 and 1989, the 67 libraries' average total operating expenditures increased from just over $505,000 to almost $1.72 million, an increase of 240%. This represents average annual increases of just over 9% and a doubling interval of eight years, so the hunch understates the increases that occurred. It is also worth noting that, although the slope of the Fig. 3 plot suggests that the increases were steady, rather than fluctuating, the year-to-year variations were substantial. The 1976, '77, and '80 increases, e.g., were either 12 or 13%, while the 1988 increase was only 5.25%. Nevertheless, across the years, these spending increases resemble, but they are just more "energetic" than those seen in earlier studies. They are so energetic, in fact, that by the time these words appear, early in 1992, average total expenditures will probably have increased by $500,000, to reach a level near $2.2 million.

Hunch No. Four

The fourth hunch concerns the allocation of operating funds to personnel and to acquisitions, and it qualifies now as a lucky guess, rather than a confident assertion. It seemed originally, and it seems still, that the unique circumstances of medical lib-

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raries--their relatively small size, their relatively expensive science and technology orientation, and perhaps the variety of services that they are called on to provide--might dictate allocations and trends different from those of the larger and more diversified university libraries, but such differences have not appeared, and the hunch has survived intact. It anticipated that 1975 personnel expenditures would be "more than half" of the total, then would decline gradually, while 1975 "acquisitions and binding [expenditures would be] a third" of the total and would increase, "also gradually." When these guesses are placed alongside the "SALR" and "BKR" statistics of Table 2, they make a near-perfect match; during the first four years, the salaries-wages proportion was about .55, and it declined to .48 in the last year, while the materials and binding proportion was .34 or .33 during the first three years, and it increased gradually, to reach .39 in 1989. But even though these guesses were blessed with luck, it need not strain the imagination to guess why the two complementary trends behave as they do: Libraries and librarians are continuing to cope with materials price increases, and they read a literature that dwells on these and on their real and imagined consequences, so the trends seen here look like very natural responses: As BKR goes and needs to go, so SALR doesn't, because it can't.

Hunches No. Five and Six

The fifth and sixth hunches have attempted to anticipate changes in staff size and staff composition, but they have had limited success. The fifth hunch failed to anticipate either the size of the staff increases or their timing. What it foresaw was

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"modest" increases, but in fact they exceed 30%; staff increased from an f.t.e. average of 30.4 to 40. It also foresaw that whatever those increases might be, they would be concentrated in the later, presumably more prosperous, years, but if anything, the results are the opposite. And the sixth hunch fared only a little better. Although it correctly guessed that nonprofessional staff would outnumber professionals "by at least two to one," it also guessed that the two-plus-something-to-one ratio was likely to decrease, when in fact, it has tended to do the opposite, and the "blame" here, like the "credit" elsewhere, belongs to the 1987 and 1990 studies, which show few staff increases until about 1982 or '83, while the 1990 study also shows a recent tendency for the ratio to decrease. But what those two studies do not show, and what is surely relevant here, is the 67 libraries' record of 9% expenditure increases. In recent years, the increases experienced by libraries in our 1987 and '90 studies have been less than nine, so while the difference between their 7 1/2 or 8% and the 9% seen here may seem trivial, it represents a compounding of ten to 20% differences in the libraries' available options. And while this difference may not fully explain why the two hunches have fared so poorly, it is a good place for explanations to start.

Additional Findings

Other findings, separate from the six hunches, but of interest still, include these: 1) The average number of current serials received, alias CURSER (a bellwether variable which, like "volumes added" and staff increases, says a great deal about the state of library health), increased from 2378 to a 1987 level of

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2881, then decreased during the two most recent years, and yet the good news also is that the recent decline is too small to be considered an alarm signal; 2) the proportion of acquisitions spending devoted to monographs, alias MONOPROP, has usually been near .25 or .26, but it seems now to be declining, while its serials counterpart, alias CURSPROP, has fluctuated usually in the .72 to perhaps .74 range and seems now to be increasing (parenthetically, the related binding expenditures, alias BINDPROP, which never exceeded 8% of materials-binding expenditures [2.7% of total expenditures] show a pronounced downward trend, to 1.6% of total); 3) the BXPVA and CXPSER ratios are two more rough-hewn indexes (similar to PINC) that yield estimates of the acquisition dollars spent-per-volume-added and the serials dollars spent-per-serial received, and they record a 14-year, 223% increase in per-volume spending, a 10-year, 151% increase in per-serial spending, and a practically identical 10-year, 150% per-volume increase[5]; 4) while total expenditures increased 240% in 14 years, salaries and wages increased just 208, while materials and binding increased 278%, thus providing a further indication that the fourth hunch is probably correct; 5) interlibrary loan activity shows a recent trend toward increasirg the number of requests filled, as well as a stronger, more extended trend toward increased borrowing, i.e.,

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[5] The BXPVA and CXPSER indexes provide the means for monitoring materials price changes because both are influenced primarily by changes in average unit prices. To test CXPSER's validity, e.g., one could determine whether 1982 and '85 were "good" years, as the index suggests (with increases of about 8 and 4 percent), and whether 1980, '87, and '88 were "bad" years (with increases of 14, 16, and 13 percent).

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#BORROW, increases from 1614 in 1975 to 2982 in 1989, an increase of 85%; 6) VHRATIO and the three related ratios that follow it show that the medical school libraries have collections that are 8% (about 1/12) of the size of their ARL-member parents, that they add 8 to 10% as many volumes annually, but that their expenditures represent 14% (1/7) of the parents'. Volume for volume, medical school libraries are relatively expensive, perhaps because their relatively small size denies them the economies of scale that larger libraries can achieve, because they deal predominantly in expensive science and technology materials, because of their role in supporting and maintaining human health and life, or for other reasons.

Assessing Some Correlational Signs

The correlations (alias r's) summarized in Table 3 and the trends over time that several of them show are too rich a lode and too detailed to be fully considered here, so in lieu of that, a few will be selected and discussed, and the rest left for later. Among those correlations, the most conspicuous and the least surprising are those that show collection size to be substantially correlated with the other variables that are inherent or traditional reflections of size: Volumes added, current serial receipts, expenditures of every kind, staff size, and even (as it. turns out) the size and spending of the universities' parent libraries yield r's that are typically in the .5 to .7 range. It is also surprising, however, that "volumes added" (VA-GR) correlates only about .56 with collection size (VH-PR), rather than .8 or higher, as expected, and as seen in the UNIVH-UNIVA r of .86;

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there, the university libraries' collection and VA statistics demonstrate the typical, stronger relationship. The r's of Table 3 also show that collection size correlates negatively with PINC, i.e., with annual growth rate, so like many others, these medical libraries tend to grow rapidly, if relatively small, and more slowly, if large, and the resulting average r is $-.43$. Finally, the current serials (CURSER) variable provides some confirming, "common sense" correlations with the two interlibrary loan variables by showing that libraries with many CURSER tend to fill more ILL requests than those with fewer, with a resulting average r of $.50$, while those with fewer CURSER also tend (weakly) to borrow more than those with many, with a resulting average r of $-.12$. Greatly oversimplified, those that don't have, borrow; those that do, don't.

Now What?

Only a few predictions can be made in the confident belief that they won't be quickly overturned, and a few more made tentatively, fingers crossed, but beyond those--and certainly including all long-range predictions--any others would owe more to audacity or recklessness than to insight or the quality of the evidence. Having said that, what can be said next is that the safest predictions by far are that expenditures will continue to increase, that half or perhaps something less than half will be spent on salaries and wages and another 35 to 40%, perhaps a bit more, will be spent on materials acquisition (including the usual small sum for binding). In spending for materials, serials will continue to get the lion's share, "other" materials will get a few percent, and mono-

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graphs will get the rest, resulting probably in a distribution of 75-80, 3-5, and 17-22%. But even though expenditures continue to increase, it is doubtful that annual rates will continue to average 9% and to double in eight years, as in the recent past. Instead, during the last 20 years, many academic libraries have experienced multiple years that brought smaller increases and that produced doubling intervals that are near or beyond ten years, so the 67 libraries represented here seem likely to move toward that experience, rather than continuing as before or returning to a double digit era, as the 1960s almost certainly were.

A second prediction, one that is hardly less secure than the first, is that "paperless" electronic libraries (Lancaster, 1985) for the year "2001" (Lancaster, 1980) or for the "information age" (Giuliano, 1983)--a period more commonly known as the 21st century--are not about to materialize. The present and the earlier studies show convincingly that libraries remain firmly committed to traditional roles and responsibilities and show, too, that libraries cannot afford the luxury of operating in parallel, in two worlds at once. Collections are continuing to grow essentially as expected, once allowance is made for the fact, first, that these are not the best of times, and second, that the greatly enlarged collections produced by postwar growth tend to inhibit the more recent, current, and future growth rates. Furthermore, funds continue to be allocated to acquisitions, not just routinely or customarily, but increasingly, and they tend, too, to be allocated increasingly to serials. A clear or a near-majority of funds is still allocated to personnel, as in the past, and as this percent-

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age declines gradually, the materials/serials percentages have increased, also gradually.

In the light of evidence that shows traditional commitments still in control of the central and most fundamental library decisions, belief in imminent and major change is strained to the breaking point. The 160 major libraries represented either here or in the two earlier studies do not act like institutions on their way to becoming the much-heralded libraries "of the future". (Licklider, 1965) They act instead much the same as they have for years, while they cope, as best they can, with the last years of a second decade of inhospitable conditions. Faced with the need to maintain essential services, avoid erosion, and practice damage control, libraries have few resources left with which to nourish revolution. So, when the heralds prophesy that library services are about to become fundamentally different than they are now or were in the recent past, they ask us to believe that a revolution has been afoot for a quarter century, has reached an advanced stage, and has not yet had a visible effect on salary and wage expenditures, on expenditures for serials, for monographs, for "other" materials or binding, or for those none-of-the-above items that comprise another small, but crucial percentage of every library's expenditures. Or, if that is not their message, then the alternative is that such revolutions can be waged with phantom resources: Unrecorded windfalls, handouts, ledger tricks, or "funny money." No one will take such possibilities seriously, but even if they did, and even if exemplary, year 2000 facilities were soon available, capable but not yet stocked, then librarians and

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scholars, publishers and administrators would need to reach an accord that specified which materials, among the many millions for which these groups have similar or, more likely, competing interests and claims, were to be entrusted to the still-costly, traditionally mercurial, and rapidly obsolescing technologies that are incurably vulnerable to software worms and viruses, to accidents, to piracy, and to other encroachments that alter or destroy records, just as corporate, governmental, and academic accounts, files, and other "protected" materials now are.

Why, too, we can wonder, do the heralds' names and works continue to appear so often, in print, on paper? Are these signals from true believers?

Among the 67 medical school libraries represented here, future collection growth will probably be slower than in the recent past. It first seemed likely that an average collection could double in 18 or 19 to 21 or 22 years, but past growth was too slow to achieve that, so a second guess was made, based on the assumption that future growth rates would match those of the past, and the consequence of this, we discovered, was that a doubling would occur in about 23 years, but that, too, was doubtful because growth rates have been declining steadily. Finally, then, taking both factors into account, we have to guess that a doubling of the 1975 collection will probably require 25 or 26 years, substantially longer than first thought and longer still than the 16- and 17-year intervals of Rider and Purdue. Nevertheless, the need to revise and revise again is more than just two bad guesses because it reminds us that collections grow when volumes are added, and

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that reminds us that VA-GR's (and VA's) history is the history of a one-time precocious, but a recently impetuous statistic, a very variable variable. We should also remember that, even though VA-GR has behaved recently in ways that indicate a healthy resilience, that is no reason to conclude that resilience is a durable attribute. Like its counterpart in the 1987 and 1990 studies, VA-GR could take a turn for the worse any time "it chooses," and in doing that, it could contribute toward reinstatement of conditions like those of the 1970s, distressing conditions that appear with no warning and take the fun out of librarianship.

Unlike the two earlier studies, this one has virtually ignored the trends and relationships that involve librarians' entering professional salaries, but there are indications from those studies that deserve at least to be mentioned. They are, first, that entering salaries increase by a factor of 1.3 every five years and double in 12 to 14 years, regularly, almost like clockwork. Second, as a statistic, those salaries exhibit low correlations with other library statistics, and in this way they indicate or confirm that "the market," not circumstances in individual libraries, largely determines the salary level. Third, there are indications that medical school libraries pay entering professionals slightly more than do ARL-member, main campus libraries. In addition, data in the AAHSLD reports indicate that recent increases in entering medical librarian salaries parallel those paid by ARL members ("the market" again), so a 1990 average of $22500 to $23000 can be estimated by extrapolation from 1989 data. Then, if the factor of 1.3-every-five-years (which corre-

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sponds to annual increases of about 5 1/2%) is applied to the 1990 estimate, the 1995 average comes out at $29500 and the year 2000 average, $38500. If this same strong pattern continues to hold, the average in 2010 will be somewhere near $65000, and before the year 2020 it will exceed $100000; over a relatively short span of years, 5 1/2% per year will do that.

Future increases in staff size, like future changes in "volumes added" or current serial receipts, can only be pondered or guessed at, not predicted, because all three statistics are extremely sensitive to the prosperity level--or its opposite--that libraries experience. When good times provide an extended series of double digit increases, the chances are that all three statistics will increase steadily. But history also discloses that when the increases are consistently below 9%, one or more of those three statistics will show the strain. Nevertheless, even when this has occurred, staff reductions have been rare, although a drop in the number of volumes added and in current serial receipts has not. And with no way to know whether the next several years will or won't produce healthy expenditure increases--but with majority opinion leaning toward pessimism--the future of these three bellwether statistics is anybody's guess.

Before concluding, we should probably report that this study's rationale, like those of the others that preceded it, resembles the rationale for seismologic studies of Mt. St. Helens, the San Andreas fault, and other accident-prone sites. None of them is meant to support precise predictions of either the timing or the nature (read "severity") of future events, but they are

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meant instead to contribute to the understanding of events that they monitor and to help make the inevitable and necessary guess-work more credible and more productive. In 1992, the expenditures of AAHSLD's 130+ U. S. and Canadian medical school libraries will total $240-250 million, a total that could reach $500 million by the year 2000, and $1 billion by the year 2010, long before many current careers have ended. These prospects, added to the librar-ies' crucial and more apparent role in medical education and current health care, in biomedical research, and in the health of future generations, provide abundant reason to monitor medical library functioning--the state of their health--closely. And if improved understanding is the immediate goal, then skill in early diagnosis, in "first aid" methods, and in health maintenance come next.

"Librarians and educators cannot look to the outside world for any solution to their problem of research library growth . . . . They must find a solution themselves" (Ricer, 1944, p. 19). And the thoughtful consideration of respectable evidence is still the essence of the problem solving process.

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Appendix

The 67 medical school libraries providing data for the study are:

Alabama, U. of
Arizona, U. of
Boston U.
British Columbia, U. of
California-Davis
California-Irvine
California-Los Angeles
California-San Diego
Case Western Reserve U.
Cincinnati, U. of
Colorado, U. of
Columbia U.
Connecticut, U. of
Cornell U.
Dartmouth U.
Duke U.
Emory U.
Florida, U. of
Georgetown U.
Harvard U.
Howard U.
Illinois (U-C & Chi.-Med)
Indiana, U. of
Iowa, U. of
Johns Hopkins U.
Kansas, U. of
Kentucky, U. of
Manitoba, U. of
Maryland, U. of
Massachusetts, U. of
McGill U.
McMaster U.
Miami, U. of

Michigan, U. of
Minnesota, U. of
Missouri, U. of
Nebraska, U. of
New Mexico, U. of
North Carolina, U. of
Ohio State U.
Oklahoma, U. of
Oregon, U. of
Pennsylvania, U. of
Penn State U.
Pittsburgh, U. of
Queen's U.
Rochester, U. of
Rutgers U.
Saskatchewan, U. of
South Carolina, U. of
Southern California, U. of
Southern Illinois U.
Stanford U.
SUNY-Buffalo
SUNY-Stony Brook
Temple U.
Tennessee, U. of
Texas A & M U.
Tulane U.
Utah, U. of
Vanderbilt U.
Virginia, U. of
Washington, U. of
Washington U. (St. Louis)
Wayne State U.
Wisconsin, U. of
Yale U.

Addendum: Two Decades of Suffering Explained

One year ago, when this report was completed, research libraries had already suffered through two decades of harsh conditions, decades that were marked by declining collection growth and little or no staff growth, but like most others, we knew no good reason for the predicament. An anecdote-rich literature blames materials prices and increases, budget cuts, and austerity, but it invariably misses or ignores evidence that casts doubt on those conclusions. Materials prices, and serials prices, especially, only affect a fraction of a library's spending[6], so most of the funds go elsewhere and are immunized; budget cuts have never been the norm, so spending averages have never failed to increase; and funding levels have doubled usually in eight or nine years, if not in seven years or less, a condition that hardly fits the common definition of austerity.

So, if the literature misplaces the blame, what/where are the better explanations? Why were the 1950s and '60s so different from, and so much more prosperous than, the 1970s and '80s? We believe now that there is an answer and that the dozen bold percentages below demonstrate it. They show the increases, across four decades, of three variables: 1) The Consumer Price Index (CPI), 2) average library expenditures (TX), and 3) a materials price index (BXPVA), 1951-61 . . . 1981-91. The CPI data are from the U. S. Department of Labor; TX and BXPVA data are derived from the 58 ARL libraries represented in our 1987 study.

YEAR/ DECADE	CPI	% INCREASE	TX	% INCREASE	BXPVA	% INCREASE
1951	77.8	----	$.46M	----	443	----
1961	89.6	15.2	1.06M	131.4	689	55.5
1971	121.3	35.4	3.44M	223.9	1129	63.9
1981	272.4	124.6	7.39M	114.9	3191	182.6
1991	403.5	48.1	16.30M	120.4	6400	100.6
TOTAL	----	419	----	3451	----	1345

The percentages speak for themselves, and they tell us, first, that during the 1951-61 decade, CPI inflation was a barely believable 15.2%--it averaged less than 1 1/2% per year--while

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[6] Among ARL libraries, about one dollar in three is spent for acquisitions, one-in-five for serials. Among AAHSLD's libraries, the one-in-three figure still holds, but one-in-five understates medical libraries' greater dependence on serials; there, 27 or 28 cents of every dollar (about two-in-seven) are spent for serials.

library expenditures increased 131.4%--averaging almost 9% per
year--and materials prices increased a modest 55-56%. The next
decade, as every library veteran knows, was the best one by far
that the profession has experienced (or is likely to?), and it is
easy now to see why. In those ten years, CPI increased just 35.4%
(while the libraries were spending 53 to 59 cents of every dollar
on staff [consumer] salaries and wages), expenditures increased
223.9%--averaging about 13% per year--and materials prices in-
creased just 63-64%. The 1961-71 decade got a perfect score, or
nearly so.

The horrors of the third decade began with the watershed
year, 1971[7], and by the end of the decade, CPI had increased by
124.6%; expenditures increased, too, but at a rate that was just
less than CPI's; and materials prices had increased an astonishing
180+%. Not only had everything gone haywire, but the calamities
of the '70s followed immediately the triumphs of the '60s, which
surely amplified librarians' feelings of distress. (One can won-
der, too, whether the severity of the crisis helped to mask the
fact--the possibility--that the withdrawal of double digit funding
increases was as blameworthy as the "usual suspects.") Finally,
then, the last decade was a time of good news-bad news. Its three
percentages all show improvement--the good news--but this last
decade was no match for either of the first two. Still, the CPI
increase was only 48.1%, vs. 124.6% a decade earlier; expenditures
increased 120%, vs. 114.9%; and materials prices, 101%, vs.
182.6%. And parenthetically, if these improvements have been
noted in the literature, they have been noted ever so quietly.

Summing up: The 12 percentages describe the four decades
exactly as research libraries and librarians experienced them.
Both the percentages and the experience that is encapsulated in
ARL's collection and personnel statistics show a first decade that
was marked by active growth and by other clear signs of prosperi-
ty; a second decade that was incredible, incomparable, magnifi-
cent; a third decade that was disastrous; and a fourth that was at
least survivable, if only because of what it followed.

The austerity argument can also be put to rest by considering
the effect that 20 years of "austere" increases would have had on
the salaries of first-year professionals: How much would they
have earned in 1991, if first-year salaries had increased in lock
step with library expenditures? Available evidence shows that the
average 1971 and 1991 expenditures were $3.44M and (extrapolated
from 1990 data) $16.30M--the ratio between these two numbers is
4.74; it also shows that average first-year salaries in those two
years were $8022 and $24000--the ratio here is 2.99. The answer
to the "if" question comes from multiplying $8022 by 4.74 to find
the product, $38024. From this it follows that, if recent library
austerity had been forced upon entering professionals, their 1991
salaries would be increased by $14000, an amount equal to 58%.

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[7] See Figs. 2 and 3 of our Research Library Trends . . .
(1987) report.