The past ten years have witnessed a radical increase in the number of major libraries on large university campuses designed specifically for undergraduates. Between 1960 and 1968 at least a dozen such libraries were opened, and almost as many more are on the verge of occupancy or in various stages of construction or serious planning. All evidence points to a fair continuance of this pace in the decade ahead.

Rising enrollment, space pressures in existing buildings and genuine concern for undergraduate education are factors responsible for this current acceleration, yet each new library still traces its lineage back to the opening of Lamont in 1949. Design, size and location may change, but the Lamont pattern of enlarged, carefully planned and centralized undergraduate services has been a dominant influence.

At most institutions with undergraduate libraries, the single central building concept has given way to a two-building central library, one of which is especially devoted to undergraduate service. However, not all institutions have accepted the separated two-building approach. Some have continued large-scale undergraduate libraries within expanded or new main buildings. Some have endorsed the "college library," an open-shelf collection of commonly used materials serving the entire university; for less frequently consulted items, the user is referred to the research stack. Others have been strong proponents of the educational value for undergraduates in using the research collection as opposed to smaller undergraduate collections. Even here, there is little quarrel with a sizable separate collection such as Lamont for a larger university such as Harvard; it is questionable mostly for smaller institutions with libraries of less than a half million volumes. Since those major undergraduate libraries established in the past decade have been at universities whose research collections contain more than a half million volumes, sheer

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size of collection is a prime factor. Of equal importance has been the serious need for additional library space at these institutions. Another determining element involves the desirability of dividing collections and users into smaller, more manageable units when a library system becomes overwhelmingly complex. For some institutions this latter device may conceivably also provide an economical solution to a difficult capital funding question.

Compounding the problem is the impact of increased enrollment. The conflict between graduate and undergraduate students for the same space is one that predictably will intensify as the trend toward independent study sends undergraduates to libraries with increasing frequency. Undergraduate libraries are seen as partially alleviating this by improved service through separate facilities. While the main collection concentrates on graduate students and faculty, both libraries would remain open to all, and the character of the two collections is viewed as encouraging transition from one to the other as need arises. Present experience at Stanford seems to bear this out. There use of both library collections has increased, and undergraduate library circulation has not reduced main library circulation, of which 23 percent is to undergraduates. In addition, 1968 fall quarter circulation figures at Stanford’s undergraduate library were up 20 percent over the same period in 1967.

Undeniably the undergraduate library has its attractions for decentralizing large university collections and services. Such rationales have persuaded an increasing number of universities to adopt major undergraduate facilities. For that reason much of the remainder of this article is compiled from answers to a detailed questionnaire forwarded to those universities where extensive undergraduate libraries were known to be in existence, in construction, or in various stages of planning.

New and separate libraries have been erected on the campuses of Michigan, South Carolina, Texas, North Carolina, Stanford, Ohio State, Pennsylvania State, and Illinois. A similar building at Tennessee is now on the verge of occupancy. At Cornell and UCLA the original main library buildings have been remodeled and reopened for undergraduate use, while new buildings at Washington, Wisconsin, Maryland, Berkeley and Oklahoma are well along in planning or under actual construction. Nebraska is remodeling an older campus building as its separate undergraduate library, Michigan State has constructed a new research library and remodeled its
original building for undergraduate library use, joining both by a common service core, and Emory is planning to renovate its present library building to house a proposed undergraduate library once its new library for advanced studies is completed.\textsuperscript{18}

The major portion of the ground floor of the University of Miami's main library is designed as an undergraduate reading room with centralized services and general reading rooms on two floors above and controlled stacks on six floors of a nine-floor tower. Indiana's new library employs a similar three-in-one principle with one tower designed for undergraduate students, a taller tower containing the general collection for advanced students and faculty use with both sharing a common base for services needed by all.\textsuperscript{19} Notre Dame's library utilizes two floors for more commonly used books to serve undergraduates and the general campus and eight floors of a tower for the research library. Present plans at the University of Iowa call for creation of an undergraduate library on the whole of the second floor, including both existing and new space, in a projected new addition to its main library. Two lower floors in the new high-rise library at New York University will be devoted to undergraduate services. That such facilities are almost a universal concern is evidenced by the fact that the University of British Columbia is seriously planning a new undergraduate library\textsuperscript{20} and that a separate undergraduate library building is being planned for the University of Leeds, presumably the first of its kind to be opened in Great Britain since 1939.\textsuperscript{21}

The separate undergraduate library, however, has clearly been the trend in recent years.\textsuperscript{22} Fifteen universities have chosen it to meet the needs of their large undergraduate populations and as a response to the growing complexity of university libraries and the increased emphasis on faculty research and graduate education. These separately housed libraries differ from traditional university libraries by providing more open access to the collection, by focusing and simplifying services to undergraduates, by providing a specially selected collection, by attempting to make the library an instructional tool, by providing additional services and by designing a building with an undergraduate's habits of use in mind.\textsuperscript{23}

If enrollment, at least for large public universities, is an important factor in the establishment of undergraduate libraries, geographic dispersion of the modern university campus is an equally important
factor for branch locations that supplement central campus lower-
divisional libraries. Ohio State’s master plan calls for three separate
libraries for undergraduates, while at Wisconsin the new college
library, the largest library for the entire undergraduate student body,
is to be supplemented by limited collections and seating in combina-
tion with two science libraries, one providing facilities for students
at the west side of the campus and another for those living south of
the campus. Pennsylvania State has a unique system of four under-
graduate libraries—a main collection in the central library in the
heart of the classroom area and three branch collections in each of
the three residence hall areas of the university. Two branches are not
now in separate buildings, but priority consideration is being given to
construction of a separate library building for the east halls area.24
Residence hall libraries are still another dispersed mechanism of sup-
port, although they are not truly undergraduate libraries of the type
considered in this article, being generally smaller and without pro-
fessional staff. These latter run the gamut from the Harvard “house”25
and Yale “college” libraries and those of Indiana26 or Princeton,27 to
small collections of a few hundred books and periodicals in dormitory
wings and residence halls.

The largest number of undergraduate libraries in separate struc-
tures on the central campus are located immediately adjacent to or
within reasonable walking distance of the main library. Distances
range from a few hundred feet to several blocks. Those at greater
distances are admittedly located for maximum student convenience
to dormitories or classrooms. Nebraska’s undergraduate library, one-
half mile from the general library, is central to dormitory complexes
and commuter parking. Ohio State’s West Campus Library/Learning
Resources Center is one and a half miles west of the main campus
and near classes and parking; its East Campus undergraduate library
is one quarter mile from the main library and equidistant from two
of three dormitory complexes with access to “Greek” houses and to
public transportation. South Carolina’s separate library is two blocks
from the main library; Pennsylvania State’s Pollock-South Branch is
four blocks from the main undergraduate library. Intermediate or
longer distance does create some time loss for staff returning to the
main building for record consultation, meetings and other purposes;
transfer of books and materials from the main library is listed as a
disadvantage in at least one instance. Mail service consisting of one
or two daily pickups and deliveries is used in most cases for the distant locations. UCLA's undergraduate library also has a pneumatic tube for books linking it with the main building.

With access by students emphasized, the ideal site for undergraduate libraries is on or at mainstreams of student pedestrian traffic, although with enlarging campuses, site problems may not appear until the future larger campus pattern develops. Nearness to student unions is also sought. Since the philosophy of the undergraduate library is to encourage use of backup resources in the main library, reasonable proximity to the central building has been stressed. Stanford's Meyer Library rests astride a direct route from residence areas to classrooms and the student union and is adjacent to the main library building. Student traffic to or through the library from three directions is possible at ground floor level, with entrance via a bridge to the second floor on a fourth side.

An unusual situation was faced by the planners of the University of Illinois' new undergraduate library. Site studies pointed to the north-south mall directly east of the main library as an ideal location in relation to undergraduate classrooms and residence halls, as well as for access to central library resources. However, to maintain the openness of the mall and to avoid shading of venerable adjacent agricultural research plots, the new undergraduate library was set below grade. Exterior lighting and outdoor seating are provided through a large sunken central courtyard, and the whole is surrounded by a lighted and landscaped plaza at campus level. An underground tunnel links the central library basement with the new library's upper level.

One minor disadvantage of proximity to a main building is a tendency by undergraduates to go to the main library with needs that could be answered by the undergraduate library. Another problem is that of congested parking for both structures in the central campus.

Rising construction costs and regional variance in labor make meaningful listings of project costs difficult. In some cases, only estimates are available for buildings still under construction or in various program stages. A selected table of reported costs, nevertheless, may be useful for planners. Figures shown are for new separate structures only.

Lead time planning ranged from two to four years for most buildings, with actual construction requiring from two to two and one-half years. About half of the finished buildings were completed on time.
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<td>Illinois</td>
<td>(1969)</td>
<td>$4,240,125</td>
<td>$400,000</td>
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<td>1,905</td>
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<td>Stanford</td>
<td>(1966)</td>
<td>5,250,000</td>
<td>695,000</td>
<td>115,400</td>
<td>91,400*</td>
<td>1,943</td>
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<tr>
<td>Texas</td>
<td>(1963)</td>
<td>4,451,262</td>
<td>550,000</td>
<td>214,933</td>
<td>179,956**</td>
<td>1,978</td>
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<td>Ohio State</td>
<td>(1969 est.)</td>
<td>4,330,000</td>
<td>500,000</td>
<td>240,000</td>
<td>190,000</td>
<td>6,075</td>
<td>150,000</td>
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<tr>
<td>Washington</td>
<td>(1967 est.)</td>
<td>4,204,094**</td>
<td>500,000</td>
<td>148,000</td>
<td>128,000</td>
<td>2,184***</td>
<td>180,000</td>
</tr>
<tr>
<td>Berkeley</td>
<td>(1969 est.)</td>
<td>4,800,000</td>
<td>125,000</td>
<td>78,781</td>
<td>1,800–2,000</td>
<td>150,000+</td>
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* Within building walls; includes first floor lobby; excludes 136 outdoor seats on roof terraces.

** Includes research collections and other services on three floors; net assigned to undergraduates: 86,450.

*** Includes food service facility; seating for 960 in this area is not included with library seating figures.
Remodeling an older building for undergraduate use has a certain immediate attraction for planners in view of reduced construction costs. Interior remodeling of UCLA’s original building (ca. 1929) totaled $914,500. This included enclosing the central core for turnstile control, opening and air-conditioning the stacks, dividing the main reading room into reading alcoves and improving the lighting in all public areas, all of which was completed in 1966, and recent installation of a small audio room ($53,000) to be open for service this year. Approximately $80,000 of the total was spent for furnishings. Cornell’s cost in 1962 was $1,087,787, with $158,961 for furnishings. These are substantial reductions over new building costs, but net square footages obtained are also somewhat lower.

The real values of remodeling, however, are perhaps less apparent. It is true that older buildings possess eccentricities of interior design, walls are of enduring load-bearing quality and not easily moved, and there is less flexibility in relating or transferring functions. Yet in their essentials they were designed for collections and services far more appropriate to undergraduate library uses than to modern and massive research centers. Both UCLA and Cornell expect their buildings to be suitable for reader and book needs for the foreseeable future. There is also a charm and character expressed that is rarely possible in newer and more formal architecture. Uris’ Clock Tower and the Powell Library’s rose-colored ornamental brick partly inspired by Milan’s San Ambrogio are still landmarks on the central campuses. UCLA has “discovered an unexpected bonus in the excellent acoustics of the second floor rotunda which has become the setting for a quarterly series of concerts.”

Despite the monumental interiors, imaginative remodeling has scaled what were formerly veritable rabbit warrens for books into something similar for readers. In so doing, these structures have returned intimacy and study privacy to the undergraduate, a need for which new buildings have striven by including alcove shelving, individual seating and reading pavilions. Future remodeling is in store at UCLA with a fine editions and poetry room, a periodicals area and complete air-conditioning.

On the reverse of the coin, adequate remodeling poses problems in electrical wiring, plumbing and general refurbishing. Improvements in lighting usually must be extensive, and noise control demands attention. Cornell, for instance, has carpeted its former main reading room and feels it “is clearly the best choice of floor covering...
for all but entrance areas and stairways" due to "its noise suppression qualities as well as the aesthetic advantages."\textsuperscript{30} Relatively inflexible interiors pose problems in the flow of reader traffic. Service desks need centralization, something not always possible in older buildings, and there is expressed preference for distribution of the collection throughout rather than the distinct separateness enforced through continued use of older bookstacks.

For undergraduate libraries housed within main buildings, access to research collections and a more complete range of services are seen as advantages. Some economies in staffing costs are indicated, particularly to the degree all services are centralized.

At Michigan State the original building was remodeled with an undergraduate library confined to two floors and with building access to an adjoining new research library addition. Total project cost for both buildings was approximately $4,200,000. Indiana's new centrally located building has a separate area of five floors for undergraduate students and a twelve-floor, high-rise unit with eight of the upper floors for advanced research use. Total project cost is listed at $14,871,000.\textsuperscript{31} At Notre Dame, the college library occupies the first two floors of the central library building with controlled access to the research collection. Total project cost was $12,000,000.

Some real problems have apparently been encountered at institutions in which both the undergraduate library and the general library share the same building and where some attempt has been made to regulate use of each by different groups of users. Difficulty has been experienced in reader orientation to the two different types of collections in such close proximity and in a lack of understanding by the library public of the differing purpose, function and use of both collections. Undergraduates, graduate students and faculty often see no real distinction between libraries located in the same building. One undergraduate librarian sharing such a building reports that after a year's operating experience with specific problems encountered over and over again she and her staff "are increasingly convinced that Undergraduate Library facilities should be physically separate from the Main Library building."\textsuperscript{32}

Notre Dame cites problems with its combined building in breaks in periodical runs and some confusion over location of materials; Michigan State indicates that the proximity of the main circulation desk has caused problems in returning reserve books. Pennsylvania State's main undergraduate library in its central building has become
almost too popular with faculty and graduate students who at times desire special privileges. At Stanford good seating in attractive surroundings as well as access to duplicate core material have proven to be strong lures for faculty and graduate students.

Facilities shared with other agencies in separate buildings offer both problems and opportunities. At Texas, temporary quarters are provided for the education-psychology library; no disadvantages are seen if space is released for ultimate undergraduate library expansion. A unique concept also occurs at Texas where contemporary rare book materials and special collections are organized around an outdoor reading room terrace on the fourth floor of the undergraduate library, while the University’s Campus Teaching Materials Center with classrooms and general offices is located on the ground floor with separate access. A large octagonal lecture hall, featuring sophisticated seating and audio-visual devices for experimental teaching, is in an adjoining structure. Together these are intended to combine library and related facilities under circumstances designed to encourage wider educational activity and independent study by undergraduates.83

UCLA’s college library shares space with two branch libraries and the library school; Michigan shares its separate building with two branch libraries; and Wisconsin will share its new building with the library school, two academic departments and two lower levels given over to general campus parking. Maryland also plans some shared space. Some sharing is undoubtedly inevitable with modern campus space being at a premium, although libraries generally hope eventually to expand into some or all of these shared areas. Sharing demands careful building design, especially as to user access, and phasing-out schedules of other agency space may not always match library growth and need.

Nebraska will use the second and third floors of a 1928 building, the largest building owned by the University. No library floor space will be shared as such, but the University Museum will use the fourth and fifth floors of the same building, and there will be offices and classrooms on the ground floor. The ground level will also house a bookstore and a small automat for food service. None of these areas is seen as presenting problems at present. Lamont provides some classroom space, and, due to lack of space in Widener Library, the documents division and map collection are now housed in the lower levels of Lamont. The basement of the Meyer Library at Stan-
Ford was planned for double-deck stacking from the beginning; all of it is now used as storage overflow with controlled access for main library collections. However, it can be used for undergraduate expansion if necessary, as can a future fifth floor which could be constructed within present building walls and elevations. Berkeley is considering a small classroom wing for its library expansion space.

The language laboratory at Stanford, consisting of four classrooms and an audio-control center, occupies approximately one-quarter of the ground floor level of the Meyer Library. It is not administered by the Library. Initial experience involved some problems of class scheduling conflicts, keying, building security and exit traffic control, as well as service arrangements in maintaining equipment. An unfortunate flash-fire in the laboratory’s control room made necessary strict adherence to “no smoking” policies which had been established throughout the rest of the building but had not been completely enforced by the separately administered laboratory. However, no problems are now reported after two and one-half years of occupancy.

A food service facility seating approximately 900 will occupy the lower level of the proposed combined undergraduate library-food services building at the University of Washington. Primary function is to provide pleasant dining space for students and staff during the noon hour rush and to allow snack and “coffee break” convenience as well as complete lunches. Small dining-seminar rooms are intended for group study and discussion, and to augment library seating during non-peak food service hours. Meeting room space, hard-to-find elsewhere, will also be included, as will a retail paperback outlet. Both food service and library areas are to be well separated; each will have independent ventilation systems. Noise control is receiving special attention. The majority of daily food service use is expected to be by undergraduates and campus commuters. Access to the facility is available from both the library and the building exterior.

Indiana’s new building will provide a cafeteria and snack area operated by its Union and located on the ground level in the central part of the structure joining the undergraduate and research library towers. At ground level of the undergraduate tower are quarters for Indiana’s graduate library school. Both school and cafeteria have separate outside entrances, but may be entered from within the library building. Stanford provides a small vending area at ground level which is, however, completely independent of the building en-
trances. Both Berkeley and Wisconsin plan small vending areas. In some cases proximity of the student union makes more complete vending service unnecessary.

Vending areas create their own special problems of odors, trash removal and clean-up. Coffee and other non-can liquid dispensing machines require water lines, and advance planning is necessary for these and for electrical outlets. Sand urns placed nearby often become handy garbage disposals and other waste containers of sufficient size must be available and kept clean. Inflammable containers are essential. Flat-top types with center disposal holes should be of dark colors as a protection against cigarette burnmarks and spillage.

Individual building programs for undergraduate libraries provide a running theme of the importance of the carefully selected collection as the essential heart of the student library. There has been some acceptance of approximately 40,000-55,000 monographic titles (50,000-60,000 volumes) as being a valid initial undergraduate library collection.35

The quantitative factors involved in actual construction of a number of published lists of undergraduate library holdings have been used in a recently published formula estimating minimum holdings for academic library collections. Threshold adequacy for a basic undergraduate collection is suggested as being 35,000 titles (42,000 volumes), 250 periodical titles (3,750 volumes) and 5,000 document volumes, a total core of 50,750 volumes.36

Opinion as to optimum size of undergraduate collections varies among institutions; maximum ceilings at present or projected libraries now range from 120,000 to 200,000 volumes, with the upper limit normally at those universities with very large student populations.

The University of Michigan collection presently stands at 145,000 volumes (70,000 titles) with a maximum of 160,000 possible. Lamont now houses 120,000, Wisconsin has an estimated maximum capacity of 130,000, and Cornell of 125,000; Berkeley is planning for 150,000 plus, and Meyer has space for 140,000, not counting future expansion. One hundred thousand volumes are planned for Indiana, 150,000 for Illinois, Texas, North Carolina and the new East Campus building at Ohio State. Washington is estimating 180,000 volumes at maximum, and Notre Dame, Michigan State, UCLA and Maryland, 200,000. South Carolina, now serving a campus undergraduate student body of 12,000, has a current maximum of 65,000. The University of Miami's undergraduate reading room has a maximum shelf
Undergraduate Libraries in a University

capacity of 50,000. Pennsylvania State's central library contains the major reserve collection and is building a general collection that will stabilize at 75,000 volumes. Each of its branch libraries will have book collections of approximately 15,000 volumes.

Most undergraduate libraries, both present and projected, have some expansion possibilities. These range from fair to good, with individual problems generally related to shared space. However, many libraries also indicate plans to control growth and maintain useful collections by extensive weeding. Lamont weeds its collection every three years with faculty cooperation and uses one full-time professional in this project. While this has been successful, Lamont can, if necessary, add a significant amount of additional shelving within the present building.

Reference collections have been centralized in most undergraduate libraries; holdings range from 550 to 4,500 volumes. Stanford's "reference alcoves" act as entryways to academic subject collections located in eight reading pavilions and in two open areas on the fourth floor. These alcoves contain subject bibliographies and current periodicals germane to nearby subject collections. Maryland will provide a small reference collection at each service desk with considerable duplication, including major bibliographic tools and indexes so readers may be sent to the main library with proper citations. Stanford houses its general periodical indexes at a central location with subject indexes in reference alcoves. Cornell reports long-standing concern over a relatively low demand for reference services.

Generally accepted standards for determining book, reader and staff space have been used by the majority of undergraduate library planners. Most often quoted have been ten volumes per square foot with twenty-five to thirty square feet per reader and from 100 to 200 square feet per staff member. The larger universities with large undergraduate enrollments, however, have not provided seating ratios to the recommended minimum standard of 25 percent of student enrollment. Admittedly, a severe problem here is the need to maintain maximum seating and an appropriately sized collection without overcrowding. Michigan had to add 370 seats due to increases in undergraduate enrollment; for this reason and other service changes, its first floor does not represent what they consider an ideal arrangement. Long hours offset some seating limitations. Undergraduate libraries are open from 107 hours weekly to as long as 124 hours in some instances. Building use has been universally high.
Some libraries have peripheral areas open for late-hour use. Stanford has seven seminar rooms in a separate wing which can double as late-hour facilities. Maryland plans a glassed-off area with its own entrance.

Space for reserve books is basic. Shelving for an average of 10,000-15,000 volumes has been usual with varying room for expansion in approximately half of the libraries. A few indicate controls on reserve expansion; others indicate dissatisfaction with the lack of expansion. Texas has a maximum capacity of 12,000 volumes and notes it could use double this space. Michigan has a maximum of 20,000. Wisconsin is planning reserve space for 65,000 volumes. Reserves are usually returned to open shelves in the undergraduate libraries after course use, although in-building storage is available in some libraries. Some reserves are returned to other libraries on campus.

Staff office space has been generally arranged for individual desk seating. At Stanford need for more desk space away from open public areas was found necessary and a group study room with a lockable door, as well as an unused secretarial office, were adapted for staff members. Staff lounges, kitchenette facilities and staff lockers are found in most large separate structures. In present buildings staff rest rooms, except for female staff in three libraries, have not generally been provided. Maryland, Wisconsin and Berkeley are planning for separate staff rest rooms in each of their new buildings. Staff conference rooms have not been included as a rule. Staff lounges, group study rooms or other multi-purpose rooms have served instead, although this creates scheduling difficulties. Since centralized processing is used in almost all instances, staff work space has been kept to a minimal level. Some staffs have felt that perhaps too minimal a space has been allowed. Work concentration is on reserve book processing, catalog maintenance, periodical and binding records and phonorecord processing. Staff bulletin boards in non-public areas are essential. While head librarians' offices have been fairly ample, waiting room space has often not been sufficient.

The sizes of staff varies greatly in present buildings, from one professional and five non-professionals at South Carolina to thirteen and seventeen at Michigan. Average total staff size ranges from sixteen to twenty. Maryland is planning for twenty professionals, twenty to twenty-five non-professionals, and Illinois, two professionals, eight non-professionals. Student staff runs from fifteen to a

[ 200 ]
planned forty-five at Maryland. Illinois is planning for seventy to ninety students as well as ten graduate assistants.

Seating in undergraduate libraries, following the premise of independent study and inviting atmosphere, has emphasized variety and flexibility in seating patterns. One planner notes the most difficult problem is combining a relatively high number of reader stations with a fairly small collection in an aesthetic and functional manner. Individual study carrels and divided reading tables account for a significant portion of total seating. Both divided and open or plain-top tables have been used in inter-mixed groupings. Four-man or six-man tables are usual. Only one or two libraries have used the almost too large eight-man table. The latter have been refurbished older tables for the most part. The larger the table, many libraries report, the lesser used the middle seats. Individual reading tables have been included less often. Michigan has a number of enclosed tables for private study. Stanford arranged its individual tables on opposite sides of the interior light well; these carried specially designed under-table book or purse boxes, with a slightly raised edging around three sides of the table surface. Modesty panels for carrels or individual tables are useful, and individual tables and separate or paired carrels can be floor bolted to maintain seating patterns. Individual carrels and tables at Stanford were floor fastened where they abutted building or interior walls; wall fastenings were also used on interior walls or railings. One library noted unhappiness with too many multiple seating tables. Texas’ design for its divided tables which it uses in place of carrels was adopted at Stanford. These have four by twelve foot tops with two by three foot individual stations made possible through eight inch high dividers. The eight inch divider is just high enough to conceal hand and reading motions from adjacent users, yet avoids the “horse-stall” isolation of carrel partitions.

Lounge seating is popular. From 100 to 200 lounge-type chairs are common, except where space is tight, or in cases of very heavy student population. Here bright, modern fabrics, informal lounge clusters and window views point up the relaxed, inviting atmosphere of the undergraduate library. Table lamps are used in a few lounge situations, particularly in smoking/reading areas. Floor lamps are relatively rare and cause floor wire, canted shade and tipping problems. Use of lamps further entails careful attention to electrical floor
WARREN B. KUHN

plans. A minor change in outlet pattern may mean a major change in furnishing schemes. Couch seating, while allowing an extra dimension to lounge arrangements, is also an irresistible lure to the weary. Berkeley intends to divide its couches into separate seating. Padded benches in exhibit areas may also prove over-inviting. In one library a student sans shoes but with white naval blanket used one hidden bench effectively for daily naps before it was removed to a more public area. End tables and coffee tables provide inevitable footstools everywhere.

Padded vinyl seat and backs have been standard with some large libraries using wooden chairs, which though economical, do lack something in color and comfort. During initial furnishing selection at one library, chairs were provided for student sampling in the main library building. Almost universally, students preferred the deeper, roomier chair.

Outdoor seating areas have generally not been used in the east or midwest, although Illinois will provide for such an area by its sunken courtyard. Stanford has four roof terraces with wire-mesh chairs and slate tables. Berkeley will have extensive balcony area. Outdoor seating is not located in the undergraduate library area at Texas where it has been found less practical than interior seating and air-conditioning. Both Miami and Stanford have colonnaded terraces surrounding all or most of their ground floors.

Air-conditioning is standard in most present undergraduate structures, with heating usually of the forced air system variety. Berkeley is planning a "heats of light" installation with additional perimeter wall fins for heating and a forced draft chilled water system for cooling and ventilation. Uneven temperature control is a matter of concern at Stanford. Heat, rising through the center well to the fourth floor, is a problem, and some modification of air distribution is underway.

Illumination levels and types of lighting within undergraduate libraries are almost universally fluorescent, with incandescent lighting retained in stack areas of older, remodeled buildings. A range of from 50 to 100 foot-candles is maintained in reading areas. Lamont provides fluorescent lighting to maintain twenty-five foot-candles. This intensity was provided in the original 1949 installation and can be doubled by adjusting the ballasts, although after twenty years of use there has apparently been no need for change. Polarizing light
panels have been used throughout Stanford’s Meyer Library, producing glare- and shadow-free illumination.

Suspended acoustical tile ceilings or acoustical plaster are used in the newer buildings. Cornell’s Uris Library utilizes suspended ceilings and, in some areas, blown-on sound absorbing material. Vinyl tile and carpeting are standard floor coverings with slate, terrazo or concrete aggregate in entryways or lobbies. Berkeley will use slate in its main floor central area. Stanford has encountered some noise conditions in its internal light well and has recently carpeted its main staircase and third floor corridors.

Directories, visual sign devices, and publications deserve special attention, perhaps more than has been generally given. Large wall and free-standing directories of various manufacture have been used, with handbooks and leaflets for more detailed information. Michigan, Cornell, Texas, Stanford and Pennsylvania State have a number of attractively designed publications. Stanford utilizes colored plastic panels with contrasting baked-on lettering for its directories.

Interior building design has seemed to be generally satisfactory in existing buildings. Completely open shelves are standard. Free-standing and wall shelving has been used in the newer buildings to form alcove patterns.

In multi-floored buildings with open stacks, supervision is somewhat difficult. Cornell reports good supervision of its stack area, although it would have preferred all service desks on one floor. House phones have been located strategically in some newer libraries for students seeking staff assistance. At Stanford phones are in all reference alcoves, and one reference desk has been moved into a more central location. A small shelf at wall phones is recommended. Illinois will have house phones, a public address system for emergency paging and a chime system instead of the more usual bell system for classes; Berkeley is planning an elaborate intercom system; and Michigan uses a bell call system. While Stanford has installed an annunciator for its central loan desk, this is not general practice.

Entrance/exit controls are important for heavily used open stack collections. Reliance on charging desks for this duty is not too satisfactory. Single exits are ordinarily preferable, although heavy traffic and ease of access have promoted the use of second entrance/exits. Both, of course, must be adequately manned at all hours. Turnstiles have been used extensively, some are reversible. Automatic book
alarm devices are used at Ohio State and to control the total building at Michigan State. A two-level counter control desk at Stanford allows patrons to rest briefcases on the lower counter for inspection. Small lockers for flashlights and other equipment are helpful at control points, permitting these to be locked away when the desk is not in use. Magnetic chains at Meyer permit “psychological” closing of entry points while still fulfilling panic exit requirements; the chains are long enough to bar entry, short enough to prevent accidental tripping if dislodged. Main entry at Miami is through a wide concourse to a general lobby servicing all floors, with immediate access at ground level to the undergraduate library.

Internal building access is provided by at least one or two public elevators, in addition to stairwells. Escalators are included at Miami and will be used at Maryland. Washington is planning for a book lift.

Special or unique furniture designs have been included in some buildings, usually for index tables, catalog reference tables, display tables and benches for exhibit areas. Illinois is using wall-mounted reference index tables, and Stanford developed special designs for card reference tables, racks for its book catalogs, a book display table and individual study tables. A unique three-sided small directory tops the special course reserve card index tables in the Meyer Library. Also included in these tables are display slots for reference leaflets and recessed card trays for reserve book indexes, a design adapted from Berkeley. In remodeled buildings, unique older tables have been successfully refurbished, including special study tables at Cornell (ca. 1891) and bibliography tables and atlas cases at UCLA (ca. 1929).

Art galleries are usually not included, although wall and case exhibit facilities are available in a large proportion of the libraries. Stanford's art print study alcove has been converted into a study area, presumably because its location on the fourth floor proved too remote to fulfill its original purpose. Miami has a combined lecture and exhibit hall immediately adjacent.

Group studies have been provided in a number of present or planned structures. These range from 120 to 250 square feet. Texas provides sixty-six of these, seating four readers each. Stanford has a variety of these smaller rooms, some seating two, others four, as well as larger rooms with banks of built-in carrel seating; access to the smaller units are by individual doors, off the larger area, with all interior walls of wire-glass partitions. Group study rooms have
proven very popular at Stanford, with the librarian indicating that the variety of study facilities provided, including these study rooms, account in large measure for the success of the building. "The variety of study spaces makes it possible for a student to choose the kind of seating and study atmosphere that suits his particular need." In the newer libraries particular attention has been placed on multi-purpose audio-visual use of these rooms. Under-carrel lockers are provided in some libraries; these require periodic inspection. Coin-return lockers for students are provided elsewhere in a number of buildings.

In the reporting libraries, from three to thirty-six typing carrels or typing rooms seating up to fifteen are included. On its three upper floors Stanford has utilized a small two-man study room for coin-operated typewriters in a separate typing room. Coin-operated typewriters to some degree are found in all undergraduate libraries. All libraries, with one exception, have coin-operated photoreproduction equipment. Wisconsin is planning for seven such machines throughout its new building. Varying expansion of this service is being considered by almost all. UCLA has an additional staff-manned photoreproduction service.

Provision has been made for disabled readers in most of the libraries. Rooms for blind readers are fairly common; extensive provision has been made at Michigan with three rooms, a tape recorder and Braille dictionary. Four rooms on the ground floor are provided at Texas with an office for an advisor and equipment; some standard books in Braille are available on an upper floor. UCLA has a unique Braille map of the campus. Miami has a recording suite for the blind adjacent to its undergraduate library entrance operated by the local Zonta Club and automatic doors for wheelchairs on one side of the entrance concourse. Other usual provisions are ramps, no steps at ground level entrances, use of elevators, special height water fountains and enlarged rest room stalls with grab bars. In older buildings steps are a particular problem for the disabled.

Public telephones are available to varying degrees, as are some campus-use phones. Emergency phones in elevators are installed at Texas and Stanford. Some sound problems have been encountered with in-building phone booths.

The special problem of smoking has been met in most libraries by providing special areas, either in separate lounges or in designated parts of the building. Abuse on unsupervised floors seems to be in-
evitable despite signs and other notices. Some distinction has been attempted by restricting smoking to non-carpeted areas. Ashtray spillage and sand urns are additional complications. Michigan, Wisconsin and UCLA allow smoking throughout their buildings, except for the main reading room at UCLA. Special areas are reserved for non-smokers at Wisconsin.

Automation in undergraduate libraries is still at an early stage, although Michigan will soon be using an automated data collection system for circulation and reserve use. Other library automation activities are centered in main library development with some undergraduate circulation/reserve programming underway, with plans to participate as present on-line systems become operating realities. Conduits are installed in most of the newer structures. Several libraries indicate terminals for both staff and reader use; others plan primarily for staff only.

Based on experiences of librarians involved in the foregoing buildings, there are several basic decisions that must be resolved in programming or designing an undergraduate library. In addition to such normal considerations as reader percentages, collection size, smoking arrangements, the degree of audio-visual access, and whether the building will be new or an adapted older structure, the most pertinent factors to be considered would seem to be:

1) Is the university of sufficient size to warrant such a library? Is there a clear need?
2) Can it be located for maximum convenience to students as well as in relation to the main library collection? Should branch locations be considered?
3) If the building is to be shared, will the library function predominate? Will sharing be temporary or permanent?
4) Will space allow variety in seating patterns with maximum privacy for study stations?
5) With maximum seating and a relatively smaller collection, will the shelving arrangement still be logical for the user? Provide flexibility for changes in emphasis? Do shelving patterns enhance seating privacy and variety?
6) Are reserves and staff space provided for in expansion?

In summary, the undergraduate library would seem to be providing a number of effective answers for today's large universities. Removed from the immediate overwhelming shadow cast by the
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central research collection, spacious, attractive and offering as much individual privacy as possible under heavy enrollments, it represents not so much a lowering of limits as a more effective means of transition from the high school to the college library and ultimately to broader levels of learning. For the administrator there are corollary benefits of increased reading space and the opportunity to concentrate services to distinct groups of readers, although little reduction in main library circulation or use can be expected. Today's undergraduate is far more academically sophisticated than he was some twenty years ago when the present concept of undergraduate libraries took form. University libraries must be aware of this and plan accordingly. As one librarian emphasizes, "for an increasing number of undergraduates, the undergraduate library will be only a starting point" and the main library as well as other libraries must be equally available and accessible to the underclassman.

Understandably, not every university needs to develop a separate undergraduate library. One librarian of a building often visited by library planners and architects warns that local situations must be carefully studied, possibly through the use of outside consultants, a practice not always followed. Medium-sized collections remain a stimulating challenge for the undergraduate exposed to them, but in some situations space or enrollment pressures may be so overriding as to make a distinct facility imperative. However, mere provision of a handsome, well-stocked library catering to thousands of undergraduate students is not enough. The undergraduate library particularly must take the lead in developing not only fresh relationships with the faculty and the curriculum but in developing its own potential as an educational mechanism.

While librarians through introduction of undergraduate facilities have shared present academic concern in paying fresh attention to the needs of student learning, these same facilities are undoubtedly just a first step toward smaller and more personalized library-learning environments. This progression is likely to be even more pronounced as decentralized campuses and satellite colleges place their own share of wedges into the cracks of the mammoth central library. If the university experience is to be one in which the profound relationship between books and life-long learning can be initiated for students, the undergraduate library would seem a valid means of stimulating and reinforcing this process and in opening up for students the wider bibliographical territory beyond.
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