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Abstract

This report considers problems and solutions related to the design and establishment of college health facilities. This includes the results of a study invclving Colcrado, Knox, and Wittenberg Colleges in which personal visits and expert testimony concluded that the health services of small colleges in the central and western states were seriously inadequate. A prototype solution was developed by an architectural firm to meet the needs of small independent liberal arts colleges. Specific considerations included--(1) internal expansion and flexibility, (2) study and recreational facilities, and (3) supervision and space relationships. This solution consisted of a circular building with patient rocms on the perimeter and a raised central nursing station, with auxiliary waiting and treatment rocms and an attached nurses residence. An important feature was the provision of study space which could be replaced with emergency beds. The prototype is intended as a low cost combination clinic and infirmary. Specifications, layouts, and elevations are given with the supporting design analysis. This document was previously announced as ED 015 630. (MM)

Case Studies of Educational Facilities #6

A College Health Center

Prepared by Bernard Bard with
An Architectural Answer
by Caudill, Rowlett & Scott
Architects • Planners • Engineers

A Report from Educational Facilities Laboratories

EFL

"College dormitories, classroom buildings, and student centers—these are the showrooms. That's where we take prospective donors, old alumni, and next year's freshmen. Look, there's old Mark Hopkins over there by the log fire. And, there, that's one of our students having coffee with a professor. All of this is eminently salable. But back of the showroom is the repair shop—the infirmary. We don't advertise this. It has been repeatedly a stepchild facility on too many campuses. There is too often a grudging acceptance that it has to be there at all."

LOUIS T. BENEZET
President, Colorado College

THE INFIRMARY AT ONE MIDWEST UNIVERSITY is a single room in the corner of the gym. There are no provisions for the overnight care of a sick student. A bad case of measles or an attack of virus results in the student being sent home, if he lives nearby, or being admitted to the local hospital, three miles away, if there is room. A student with a mild ailment may be sent to an improvised sick bay in the dorm, but the house mother or campus nurse has to neglect her other duties to care for the unexpected patient.

A professor died at another Midwest college some years ago and bequeathed his old house to the administration. No one knew precisely what to do with it, so it was converted into a health center for the 716 students. There isn't enough space to segregate male and female patients properly in the

upstairs infirmary. There is no elevator, and on several occasions nurses have tripped carting trays of food upstairs.

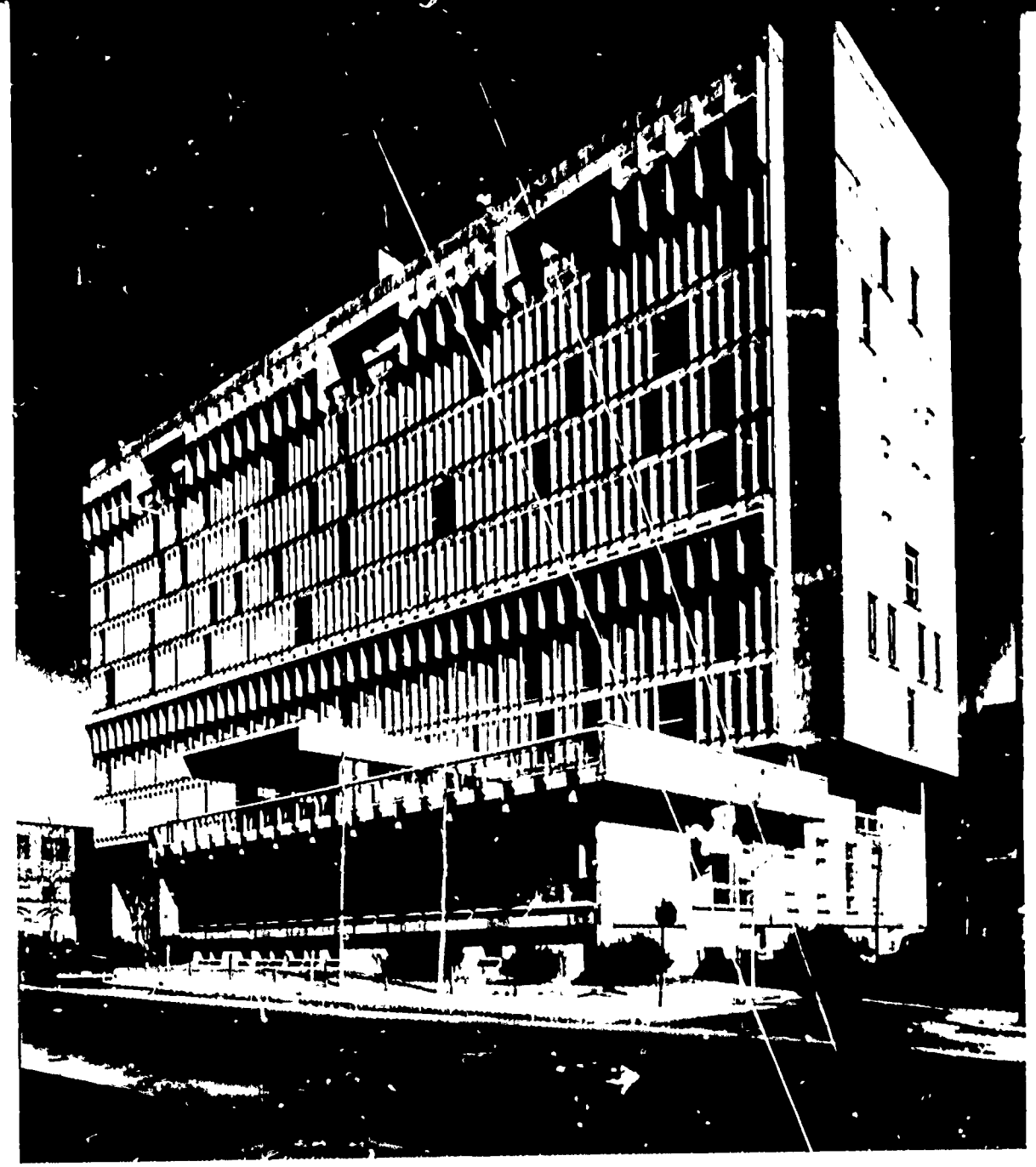
"We've asked for a dumbwaiter," says the head nurse, "but so far haven't been able to get it. It would cost $200 or $300. We've been told it's in the planning stage. There has been some talk about remodeling the building, but I think the only real solution is a new building."

A murder was committed in 1928 in an old farmhouse near the campus of a teachers college in Pennsylvania. The structure stood empty for years because people were afraid to buy it. Eventually the State acquired title, and turned it over to the college for an infirmary. The upper two floors were remodeled into bed-space for 11 patients, but, two years ago, "an efficiency expert stepped in and they took it away from us," says the assistant director of health services. The top floors were converted into an annex for the expanding dormitory population. Now the only bed is downstairs in the lamp room. Students who get sick are removed to the nearest hospital.

The status of health centers on American college campuses—sharply differentiated between "haves" and "have-nots"—has been a source of growing concern and alarm among medical experts and college administrators. The facilities range from zero to the five-story University Health Service building newly opened at Harvard University. The Cambridge center, with underground parking on two levels for approximately 180 cars, is the exception. The rule is a makeshift structure, sometimes a step away from condemnation and often starved for equipment and personnel.

"No one knows, nor is there any data to answer the question as to whether college health services are providing *quality* medical care," the American Medical Association Council on Medical Services said after a nationwide survey on November 7, 1961. "Thus far this is an unanswered question. It is certain that some colleges are providing quality medical care, and some are not. It is a fact that a substantial number are *not* providing *any* medical care at all according to the survey reports."

An earlier survey (1953) by the American College Health Association drew responses from 1,545 colleges and universities. That inquiry, the most



Harvard: A High point in college medical service and design. Sert, Jackson & Gourley, Architects

comprehensive to date, revealed that while hundreds of thousands of students have available "the finest skills and facilities" for treating illness and maintaining good health, hundreds of thousands of less fortunate students attend colleges "which contribute essentially nothing to the protection and improvement" of health. The picture is essentially the same today.

Traditionally, the larger colleges and universities have been able to afford the multi-million-dollar health pavilions with solariums on the roof that have won rave notices in medical publications. And traditionally, it is the smaller, independent liberal arts colleges with shorter histories, tighter budgets, and fewer students that have had to make do with a few beds shoehorned into the corner of the dorm. Health services at many teachers colleges, often neglected in state university budgets, are also on the sick list.

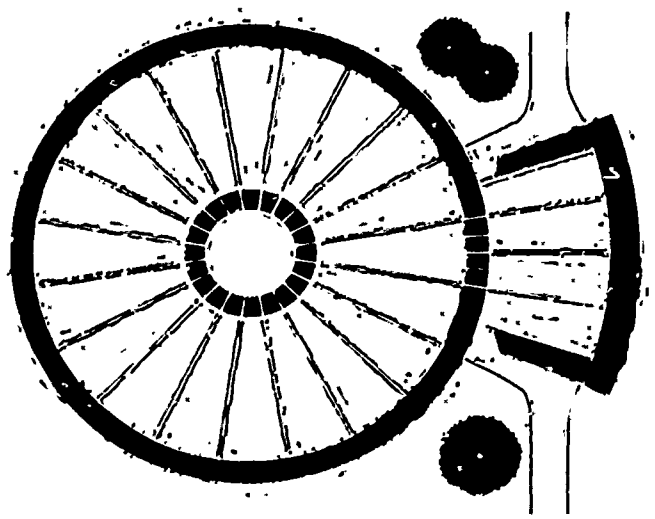
In this setting, against a backdrop of mounting criticism from campus health experts and a growing awareness of the colleges' responsibilities in the field of student health, three colleges pioneered a study of a proposed health center that could be a model for small, liberal arts institutions.

Joining in the study were Colorado College, a mile high in the shadow of Pikes Peak in Colorado Springs; Knox College in Galesburg, Illinois, in the flatlands not far from the Mississippi; and Wittenberg University, in Springfield, Ohio, just north of Route 40, a main road linking St. Louis and Columbus. All three are smaller, independent liberal arts colleges. All three face a common problem—an undernourished campus health facility.

The study, underwritten by a $10,000 grant from Educational Facilities Laboratories, confirmed through personal visits and the testimony of experts what was long suspected—health services at a majority of small colleges in the central and western states were patently inadequate.

The prescription, as written by the architectural firm of Caudill, Rowlett & Scott of Houston, was a proposed low-cost, super-functional health center that would be appealing to the eye, the budget officer, and the patient.

The suggested prototype college health center would be an infirmary-in-the-round. While circular buildings are not new to the campus, nor in hospital planning, the circul r route had never been traveled before in designing



a campus health center. This is some of the reasoning behind the design as expressed by William C. Caudill:

"There are three basic concepts designed into this center: internal expansion in case of a sudden upswing in patient load, central control by one duty-nurse in a raised nurses' station, and a keep-the-student-in-school kind of medical setup.

"In my mind, this last is perhaps the most important. This is not just a hospital. It's designed to keep the students in the business of education. They will remain close to college and books. They can even take exams while they're getting well. The objective is to keep the student in an educational environment, whenever possible.

"There would be fold-in desks near every bed, or study carrels in the study area outside the patient alcoves. There's no reason why closed-circuit television can't be piped into the health center if the college puts its lectures on videotape.

"This is a lean and clean structure, nothing superfluous. There's no gingerbread on it. The circular design gives a lot for the money. You can enclose more inside space with less outside wall space. It's simple geometry. Also, it's pretty difficult to get 10 or more rooms into a small unit without making it a circle. This does the job it sets out to do with efficiency and economy.

"A health center should say in no uncertain terms, 'I have a job to do—to keep these boys and girls in school, to keep them healthy.' When you look at many health centers on American college campuses, they say, 'I'm an old house, and nothing more, just a bare structural cell. And the kids in here are in cold storage.' "

The key to the proposed health center is a series of three concentric rings. (See illustration, page 21.) The outer ring, where the tire would be on a wheel, would contain patients' rooms, an entrance lobby, and special rooms for X-ray work, consultations, and examinations. The inner circle, to which ambulatory patients would have free access, would be reserved as a study area. The study area would function as a "bellows," easily convertible to more bed-space as the patient load demands. A circular nurses' station, the inside ring, would

Patient quarters at Northwestern University's health center offer a substantial degree of student comfort, including private phones.

Searle Hall, the student infirmary at the Evanston, Ill,. campus of Northwestern University, is attractive from the outside . . . and the inside. Photograph below: students awaiting their turn at sick call. Holabird & Root, Architects.

offer around-the-clock control by offering a full view of all patients, whether they are in their rooms or at a study carrel in the "work" area. An operable wall, made up of sliding panels and suspended from a latticework of overhead tracks, would provide segregation between the men's and women's infirmary. The wall could be swung into different positions around the study area as the patient load varied in sex. In case the patients were evenly divided between men and women, the wall would bisect the study area down the middle. The health center would not be committed to a men's or a women's infirmary of static size.

The peaked roof would incorporate a circular skylight that would throw direct sunlight into the "cold interior," in Mr. Caudill's words, in the deepest recesses of the health center—the study area and nurses' station.

Separated from the center by a breezeway, a self-contained nurses' apartment, including bedroom, dining-and-living room, and kitchen, would offer the chief nurse and perhaps one of her assistants a nearby haven—adjacent to their patients in case of emergency, yet removed to afford them privacy and freedom in off-duty hours. The location of the nurses' station at the center of the study area, and the location of an apartment adjacent to the health center, could bring payroll savings to smaller colleges. If necessary, one nurse could man the station during busy daytime hours. She could retire to her apartment in the evening, with student aides taking her place at the nurses' station to assure around-the-clock control and supervision.

At a series of conferences in 1961 and 1962 at Colorado College, Knox College, and the Houston offices of Caudill, Rowlett & Scott, college representatives expressed unanimous enthusiasm for the "let-them-study-while-they-get-well" concept that is the cornerstone of the proposed health center. All the deans and medical men knew the penalty imposed on students by a prolonged hospital stay, or the necessity of being sent home. Removal from the mainstream of academic life for several crucial days, or more, could mean the loss of a semester—or the abrupt termination of a college career. It was understood that the health center would not replace a hospital, to which students would be assigned in case of a severe medical emergency. But it

would represent an opportunity for a quick return to study, on a limited basis, during the period of recuperation.

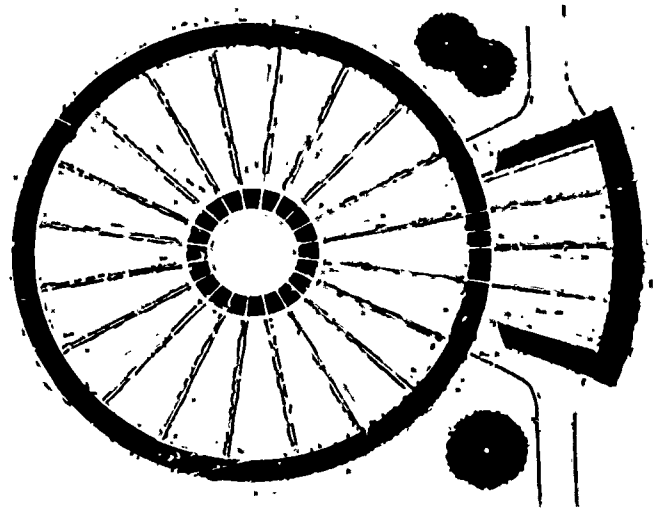
A major problem on all college campuses is the possibility of an epidemic. Asian flu struck an estimated 300,000 college students during 1957-58. The proposed small college health center makes no pretense of being able to accommodate victims of a major epidemic. A facility of that size would be financially unfeasible. "You can't build hospitals for epidemics, any more than you can design churches for the big Easter crowd," Mr. Caudill told the academicians. "So we've designed something that will stretch like a balloon to cope with a limited upsurge in patient load." The "balloon" would be the study area. Desks and lounge furniture could be removed and replaced by beds in case of a minor epidemic. Expansion of facilities would come from within. In cases where a rapid increase in enrollment overtaxes the health center, external expansion could be accomplished by adding "satellite" health centers to the existing building.

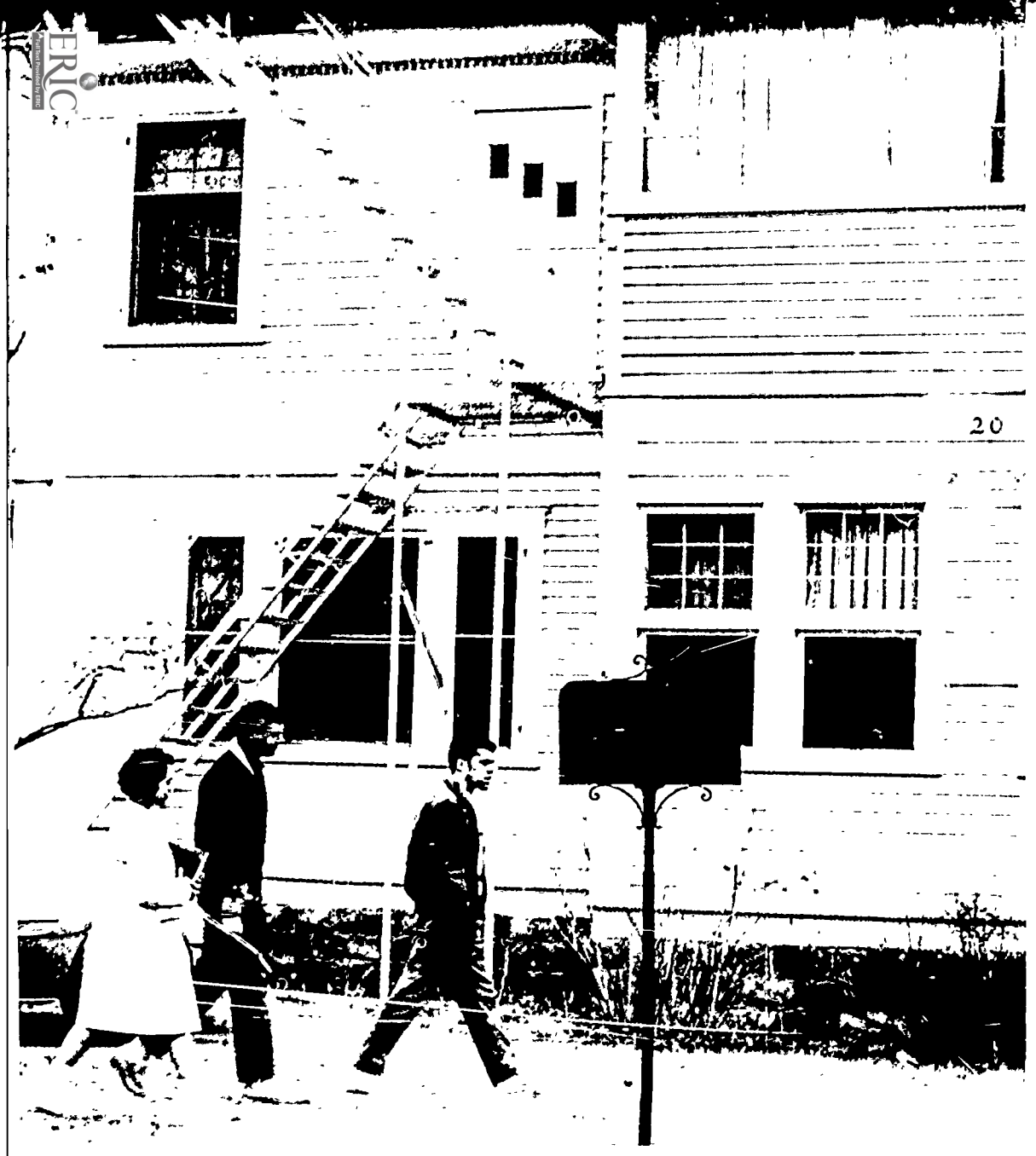
Each bed alcove might contain two or four beds, depending on doctors' preferences. Each would have its own bathroom. The alcove could be screened off for privacy for each bed-patient from the overflow study area.

Almost all the advantages built into the circular health center could be adapted into a more conventional, rectangular structure *(Illustrations 14 and 15)*. The choice would depend on the college.

Construction would be of pre-cast concrete beams, columns, and roof sections, with the outer wall of poured concrete. Cost would depend on local labor conditions, but preliminary estimates for Colorado College indicate that a faithful replica of the Caudill design would range from $175,000 to $200,000. This would provide 23 beds, including the isolation room.

Of the three colleges that pooled their common experiences and problems to come up with a common solution, Colorado College appears the closest to building the first prototype circular health center in the nation. Louis T. Benezet, College President—a tall, lanky, transplanted New Englander—has been making the rounds of major foundations and prospective donors seeking to raise construction funds. His college will receive $2,200,000 in matching-





This old frame house serves Colorado College as a health center. "The fire department wouldn't let us in today," the director reports, "but now that we're here they can't get us out." To minimize hazard, the fire inspectors office ordered a fire escape installed—right down the front of the aging structure.

fund grants from the Ford Foundation provided the College can raise $5,500,000 on its own. A $655,000 advance has already been received from Ford. President Benezet, excited over the new concepts in the health center and the boon that would accrue to students, is anxious to "fold in" the health center with his first fund-raising campaign inspired by the Ford gift.

Colorado, with 1,386 students in the 1962-63 academic year, has been getting by with an infirmary that Dean of Men Juan Reid confesses is "makeshift." It is a converted old house, a half-century old and showing its years. It looks out of place alongside the strong contemporary architecture of the Tutt Library and Olin Hall of Science, its neighbors.

"It looks like a 1925 duplex-house in a midwestern town," says President Benezet, "in the lower middle class district. Respectable, as I say, but not very shining."

"We make out; we make out very well," says Dr. Roger Whitney, Colorado College's medical advisor, "but we have our problems. Our biggest trouble is contagious and infectious diseases. One room is a clean room, and another room is a germy room. But there's always the danger of cross-infection. For each sex, we have only one bathroom. Also, because of lack of proper isolation facilities, the students get a deck of cards and stand around and swap germs. Isolation is largely impossible.

"We're not fireproof. Let's face it; this is just an old frame house. The Fire Department would never let us get in here in the first place, if it was up to them today, but now that we're here they can't get us out. They made us put in better fire escapes, right down the front of the building, and we've had to put up a fire wall down the center of the second floor. It's the kind of building that would appeal to Mark Twain.

"Have we had trouble lately with the fire inspectors? Well, the last time a fireman was here, I was very busy taking care of a girl who had taken poison, so I never did find out what he wanted."

Dr. Whitney has reservations about some of the design features of the proposed new health center—"I'm one of these people who zigs when the rest of the world zags"—but in general agrees that it would be a drastic im-

provement. "It's a building you'd like to have hanging on your watch chain—real cute. Doc Weiler over at Knox would take it as is in a minute. But I think I'd make some changes first. Most of all, I'd want tighter central control over the students. These college kids can get mighty cozy with visitors, and there can be an awful lot of visiting back and forth in lounge pyjamas and less. We'd have to lay down hard rules on it. But as between what we have now and what is proposed, I'd pick this new building in a minute."

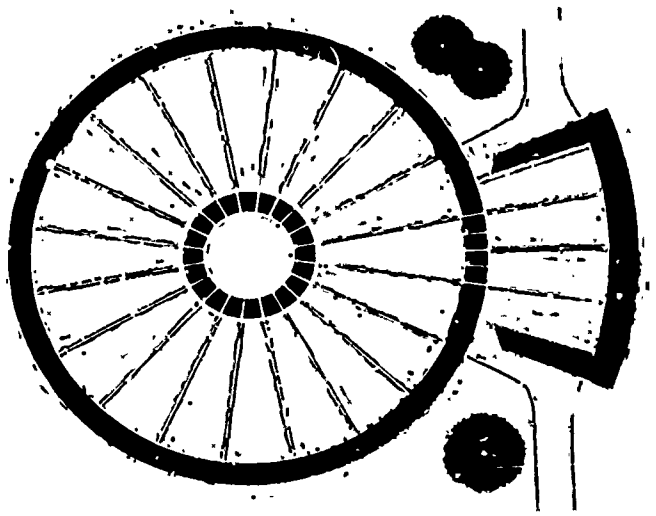
Colorado, the oldest college in the state (founded in 1874, in the Territorial days), is one of the most up-and-coming liberal arts schools in the Midwest. It has just claimed its fourth Rhodes Scholarship. Its students come in large numbers from all over the West (California, 123; Washington, 26; New Mexico, 30; Texas, 43; Wyoming, 10; Oregon, 14), from the East (New York, 46; Pennsylvania, 16; Connecticut, 25) and of course from Colorado (538). The College population is overwhelmingly residential.

The College location, Colorado Springs, is 6,000 feet above sea level—formerly a resort and convalescent town and now a center for light industry and the hub of a complex of major military installations. The North American Air Defense Command has headquarters right in town. Fort Carson is 10 miles south. The U. S. Air Force Academy is 10 miles north. "We've got lots of three- and four-star generals around town," says one campus official. "It's quite a change from the sleepy tourist town in the old days."

When Colorado students get sick, they can be moved to Penrose Hospital, a half-mile away, if their complaint is serious. But most ailments are "minor," according to Dean Reid, and the college health center is their first line of defense.

As at most colleges, peak periods for sickness come around exam time, or after school reopens following the summer vacation or a mid-year holiday. The "occupational hazards" of college students, as discerned at Colorado, fall into three main categories—colds, viruses, and flu; athletic injuries; and emotional breakdowns.

Colorado College has no psychiatrist on its staff, but a consultant visits the campus one day a week. There is no office space for him at the infirmary,



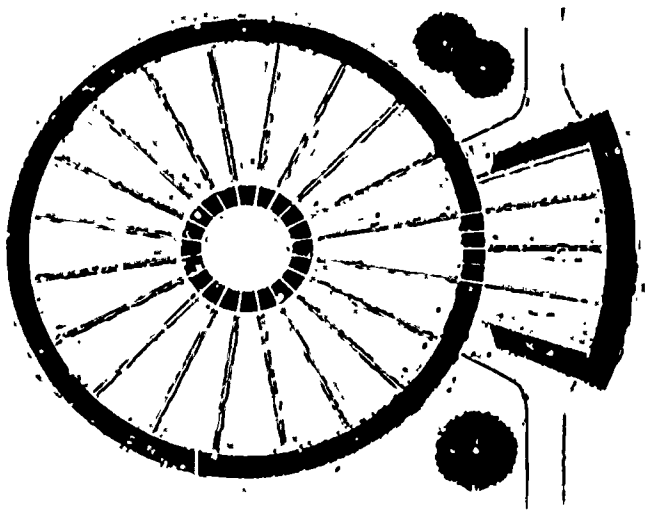
so he sets up shop in a room made available at the counseling center—an unsatisfactory arrangement, according to Dean Reid, who feels it would be better if the psychiatrist had "direct consultation" with Dr. Whitney at the health center. (The proposed new health center would provide an office for students with mental health problems. The approach would be that a student going to see the psychiatrist would head for the infirmary just like a student going to see another type of doctor. There would be no semblance of a stigma attached to seeking psychiatric help, as is sometimes the case when his offices are apart.)

President Benezet is convinced that smaller liberal arts colleges around the country (he estimates the number at 700) must do more in preventive medicine, a field which includes everything from good dietary habits to making sure the water is hot enough in the cafeteria dishwasher, and preservation of student health. At the same time, he is aware of some of the reasons for past neglect.

"The small college is perennially poor," he says, "and everybody is scared to death of the cost of sick people. Further, the whole overtone of college is that you're getting the flower of youth, and sickness is something you don't want to even think about. That's why, strictly speaking, colleges like to think of all their students as models of physical perfection. There is a deep-seated feeling on the part of many college physicians—justified in many cases—that college health is something that has been grudgingly taken on by the administration.

"We must realize, if we haven't already, that sickness can be costly in money and in time. And the two things going together can be devastating for a student. The new pressures for academic excellence have brought a feeling approaching panic to students who get sick at college. They wonder how they can catch up. They see a semester wrecked by the slightest complication that removes them from the academic mainstream. To be laid up, in most colleges, is a disaster.

"We see, in this proposed new health center, a revolutionary approach. It will be a place where students and professors can drop in to keep the student



up on his work, if he feels up to it. It might be called paternalism—and dry-nursing, but I don't think so. It won't be a place to goof off, or to be cast out of the academic stream entirely. Rather, it will be a quiet pool in the stream where one can go to catch his breath, so he can return to the mainstream again. Illness is a real morale problem at many colleges. It is one of the critical experiences in student attrition.

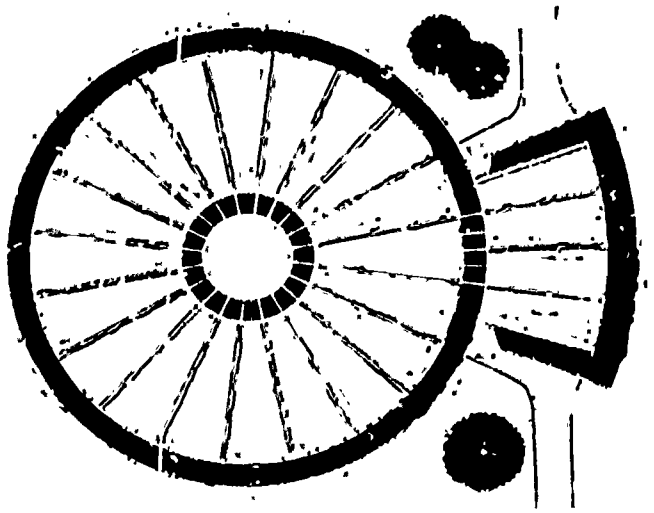
"If small colleges all over the country can convert the infirmary to the educational process, countless students will be saved from the academic scrap-heap. Nothing magical will happen. They will still be sick and will still need care. And it will take more than a structure to return them to health; it will take skilled and dedicated professionals. But there will at least be a feeling they are making a comeback. They will sense it, all around them."

Colorado College has one inadequate infirmary, but Knox College has two—a pair of converted old residences, side by side in a section of the campus scheduled to be cleared for the construction of a new women's dormitory and quadrangle. One structure houses the clinic, two examining rooms, a small lab, the office of Dr. James Weiler, Director of Student Health, and beds for male patients. The neighboring house contains nurses' quarters, and, upstairs, beds for coed patients.

"The facilities we now have are quite cramped," says Wilbur F. Pillsbury, Dean of Students. "There's not enough examining space. To get to one examining room, you have to pass through another. It's laid out like a railroad flat. They're awfully small rooms. We've had to convert what was the kitchen pantry into a laboratory. It's not large enough for all our medical supplies, so some of the supplies have spilled over into one of the examining rooms. The pantry is about four by five feet, just about the size of a book closet."

A major drawback is lack of space in the patients' rooms. There is no room for writing or study desks. Students with the will to open a book do so propped up in bed. The absence of what Dean Pillsbury calls "an educational environment" means that students fear an infirmary stay, and sign themselves in only as a last resort. "They're afraid of falling behind," he

These two old mansions, converted residences, are the infirmary facilities at Knox College, Galesburg, Ill. Male patients are bedded down in the upper floor of the building in the foreground. Women patients occupy the second structure.



explains. "So they wait until they're very, very ill."

The infirmary lacks any facilities for treating psychological troubles. For minor fits of depression or tenseness, a student is referred to a psychologist in town. If severe difficulties arise, calling for extended therapy or medication, the student "generally goes home," according to Dean Pillsbury.

Mental health problems, as at many colleges, are not infrequent. A fairly typical case, recited by Dean Pillsbury, recently involved a student who "just didn't know where he was going; he wanted to drop out." The student, failing his courses in a pre-medical program, knew he could never gain admission to medical school. He swallowed 10 stay-awake pills in a suicide attempt. His parents had to be called to take him home. He "simply could not cope," according to college officials. Another common psychological affliction comes under the general heading of "boy-girl troubles." The sometimes rocky road to romance leads many to the point of wanting to quit school.

Respiratory ailments and gastro-intestinal disturbances are common. So is chronic fatigue, especially around exam time. Dr. Weiler has found that girls seem "more prey to severe fatigue" than are boys. He can usually calm down men students "with just talking, but the girls border on hysteria sometimes." He usually prescribes forced bed-rest in the infirmary for girls in the grip of excess fatigue brought on by overwork.

The usual run of athletic injuries, sprains, fractures, cuts, and bruises pass regularly through the infirmary. Occasionally there is a novel variation, such as a ripped muscle caused by finger-wrestling in one of the boys' dorms. "Foolishness, I call it," says Dr. Weiler, "or maybe just too much youthful exuberance."

"One of the main inadequacies here, in my view, is examination and treatment space," says Dr. Weiler. "My office is completely inadequate for examining, or even for taking a history because of the lack of privacy. Voices carry from one room to another. The place is just an old house. It wasn't designed as an infirmary.

"Because of the layout of the examining rooms, we have a continuous bottleneck. The students must wait longer for an examination than they

should have to. It backs things up. As a result of this, and the generally inadequate facilities, we have found they're reluctant to come to the infirmary. They feel they can lie in bed in their rooms as well as over here."

Knox is an independent liberal arts college with 1,100 students in a declining residential area of Galesburg. A slum section two blocks away from the campus has just been purchased by the college. The houses will be razed as part of a long-range expansion program. The town of 37,000 is a center for manufacturing (refrigerators and freezers, tires, grain bins), a business and shopping magnet for corn and hog farmers from the surrounding countryside, and a railroad center on the main line of the Burlington and Santa Fe. The students come from 42 states and 11 countries, but the great majority are from upper middle class homes in the Midwest. An extensive scholarship program provides aid, in varying amounts, for 50 per cent. Some 65 per cent of the male graduates, and 40 per cent of the female, pursue graduate studies in teaching, medicine, law, or business administration. Enrollments have risen by 50 a semester for the past 10 years. The College intends to level off enrollments at 1,250, "and then we will stop," says Dean Pillsbury.

To keep pace with its steady growth, Knox is planning new men's and women's dorms, a Fine Arts Center, and, possibly in five or six years "if we can find the money," a modern campus health center. Dr. Weiler is enthralled with the improvements that would result if the College decides on the circular design that emerged from the Colorado-Knox-Wittenberg study.

"What we have now is very definitely out of place, and out of character with the rest of the campus," he says. "And it's growing more so every day. I'm convinced we could build what we want and need for $250,000 or less. It would be exciting to establish the prototype. The first college to build it will really find the bugs, if there are any. But I think they'll be minor. I think this is workable."

Wittenberg University converted a seminary building into an infirmary in 1962 at a cost of $60,000. It's a substantial improvement over what once served as the health center—an old frame house with many fire hazards. The converted seminary is still far from being ideally functional. The complaints

This was the first infirmary building at Wittenberg University —abandoned as a fire hazard.

The present infirmary at Wittenberg is a converted seminary building. Some $60,000 was spent on the renovation job, but the ventilation system still blows hot and cold—directly on bed patients.

of Dr. Joseph H. Rinehart are three: the heating and ventilation system blows hot air directly on the patients' faces as they lie in bed; lack of an elevator means students have to be called in off the campus to help carry severely injured athletes to the physiotherapy room in the basement; and poor acoustics force him to keep his voice to a virtual whisper to assure privacy when he's taking a history.

But while the new infirmary is not perfect, Wittenberg learned how much even the slightest improvement can overcome student resistance to seeking medical help. In the old infirmary, sick call rarely attracted more than 20 patients. Today, "now that there's a great deal of enthusiasm" says Dr. Rinehart, "the staff sees 80 to 100 students a day."

"We used to have to fight them to come in," recalls Dr. Rinehart. "We had to threaten them that no absence from class could be excused unless there was a record of an infirmary visit. Now they're happy to come in voluntarily."

Leamer Hall, the converted seminary, provides enough bed space, "but there are several things not right," according to the director. Forced draft heaters installed during the renovation are so noisy that patients' sleep is disturbed. In addition, the placement of beds within wards, parallel or at right angles to heaters, means that, first, hot air blows on the patients, making them uncomfortably warm. They kick off their blankets—just as the cycle goes into cooling so that cold air blows down on them.

"This makes it very difficult for them to get over upper respiratory troubles," says Dr. Rinehart. "It takes three and four and five days for them to knock a cold out of their systems."

Another problem is lack of air conditioning, which Dr. Rinehart feels "should be a must in any infirmary." The temperature gets uncomfortably high in April, May, and June.

The girls' infirmary is upstairs. The boys' infirmary, pharmacy, waiting room, sterilizing room, and staff offices are on the ground floor. The basement contains treatment rooms for minor surgery and physiotherapy. Emergency cases calling for treatment in the basement create a minor crisis. The patient must be carried bodily down a flight of stairs for examination. Later, the

patient must be helped as he struggles to navigate back up the stairs.

Wittenberg is in the heart of town, not far from main roads to Toledo and Troy, but it is well landscaped and well shielded from traffic noises. A million-dollar student center, and a new men's dormitory, are nearing completion. There are no immediate prospects for replacing Leamer Hall with a modern infirmary because of the extensive renovation just invested in the building.

But if a new facility should ever be budgeted, Dr. Rinehart says he would insist on three things: "If at all possible make it on one floor; if not, an elevator is a must. Heating and ventilation must supply year-round patient comfort. Acoustics must be an essential part of the design."

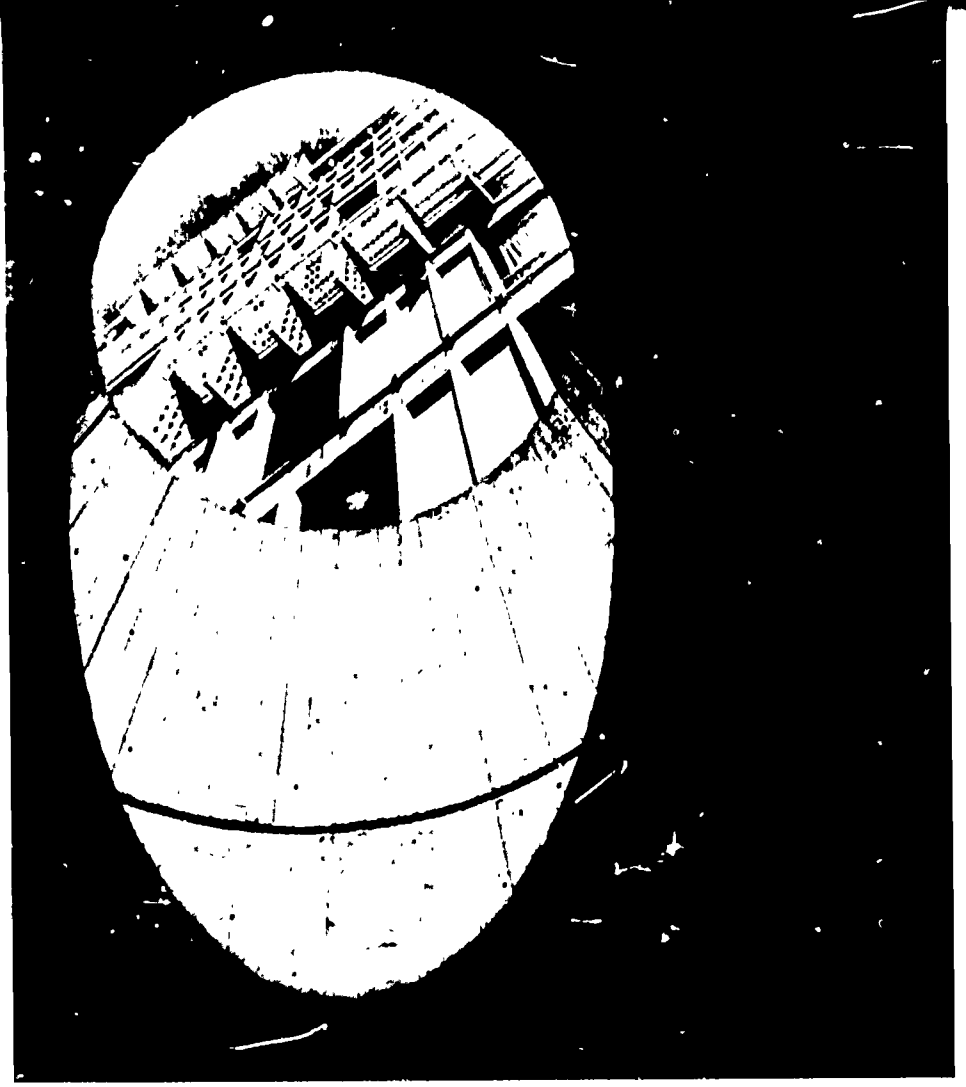
In pursuit of their investigation into the ideal college health center, officials of the three colleges involved found much that was not ideal.

"The typical health service in the privately supported liberal arts colleges in the areas surveyed was found to be housed in a converted residence located on the outer perimeter of the campus," they said in a report to EFL. "Many health services consisted merely of a modest clinic located in a dormitory or in the college gymnasium and staffed by a single nurse, with the more serious cases being referred to a local physician retained by the college on a fee basis. The image of the college health service, or for that matter any college auxiliary service, is affected by the facility that houses it, and the resultant public relations factor affects the use and effectiveness of the service."

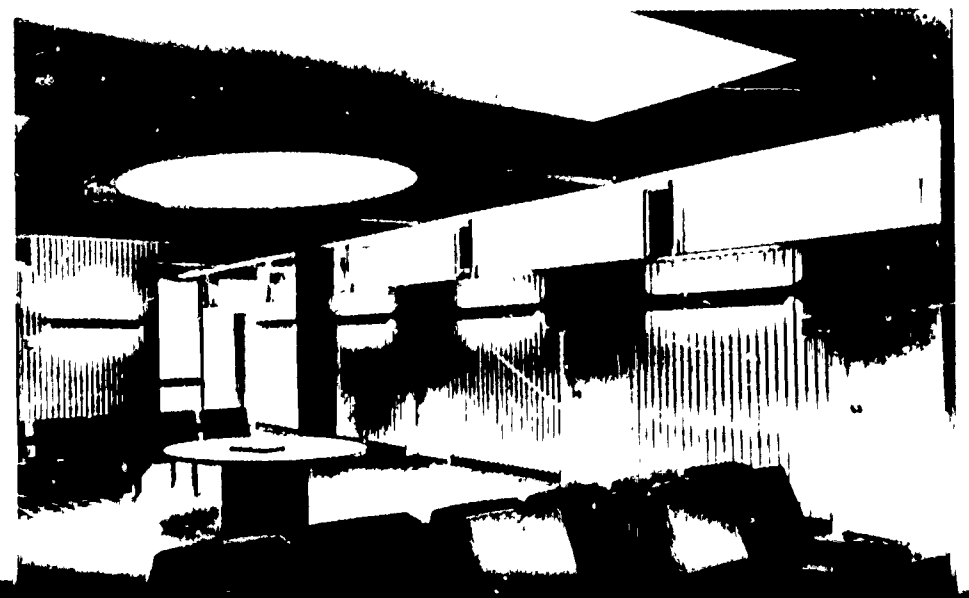
Dean Reid at Colorado queried the American College Health Association for examples of new college health centers, specifically designed for smaller, independent colleges. "They could give us only two examples, out of 500 colleges," he said. "The general rule was something makeshift, or improvised." (The two new health centers were at Wheaton College, Wheaton, Illinois; and Grinnell College, Grinnell, Iowa.)

At a college in western Illinois, they found "a part-time physician, and just one nurse with the infirmary open from eight to five. If a student is taken ill before eight or after five, he's on his own. If a kid gets really sick, he goes to the hospital, or home, or just goes back to the dorm to sweat it out." At

A modern health center—one of the few designed for the purpose—at Grinnell College Grinnell, Iowa. Woodburn & O'Neil, Architects



Harvard's infirmary features an open skylight... and a patients' waiting room as comfortable as a theatre lounge. Sert, Jackson & Gourley, Architects



a college in Wisconsin, they found the infirmary was an "old house" with no bed facilities. The pattern was one of widespread neglect.

Random checks by Educational Facilities Laboratories uncovered very much the same story at college after college.

The nation's leading authorities on college health services have been dismayed over the general impoverishment of facilities at most smaller and medium-sized colleges, and have issued repeated warnings that lack of facilities and services poses a real danger to students. They have watched with interest the progress of the tri-college study underwritten by EFL, hopeful that it may signal a new awakening of responsibility for student health on campuses across the country. The need for reforms, they have told EFL, is years overdue.

Dr. Dana L. Farnsworth, Henry K. Oliver Professor of Hygiene and Director of the University Health Services at Harvard, is widely regarded as one of the most knowledgeable experts in the field. In his view:

"Not more than 750 out of the more than 2,000 colleges in the country can be said to have a health service recognizable as such. A goodly number are pretty weak, and probably not more than a couple of hundred really merit the name.

"They range all the way from the best, such as one finds at the University of Minnesota, the University of California at Berkeley, Yale, and our own here at Harvard, to the down-at-the-heel and inadequately financed medical service that is too often the rule on most college campuses."

On a recent inspection trip, Dr. Farnsworth stopped in at an infirmary at a medium-sized college. The doctor held sick call for an hour or two each morning. "He saw people, bang-bang-bang, just like that. There was no place for him to interview a student in private. He told me that sometimes when a student has something personal to discuss, they have to adjourn to the men's washroom to talk."

Statistically, says Dr. Farnsworth, 9 out of every 10 college students in the nation need some medical help. Thousands, he is certain, never get it.

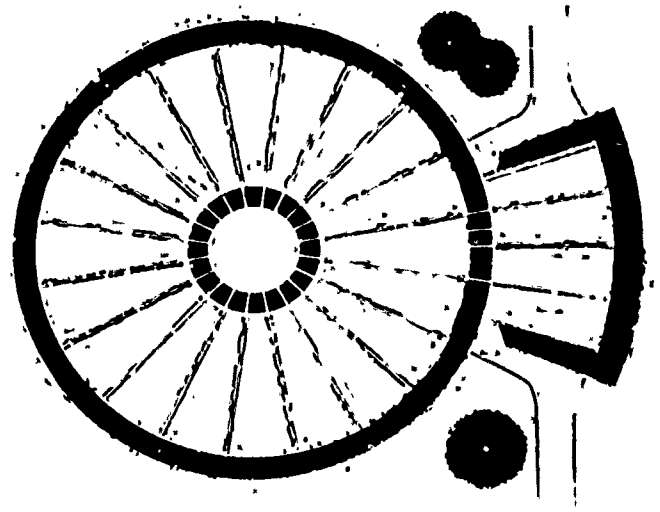
"When a college has a health service that costs $5.00 to $10.00 a year per student, it might just as well have nothing," says Dr. Farnsworth. "I have seen many cases where a student had a complaint that could have been handled relatively easily in the early stages, but he didn't get any medical attention, or his emotional problem went unheeded. All too often we find disturbed individuals treated with disciplinary rather than medical means. They are allowed to leave schools without proper counseling, casualties of an inadequate health-service budget."

Dr. Ruth Boynton is Secretary of the American College Health Association, which attempts to lay down minimum standards for college health programs. She said that the association has found that a makeshift infirmary often goes together with skimping on professional help—specifically placing a nurse in charge without the assistance of full- or part-time medical staff. The arrangement in such cases is that a local physician is "nominally listed as consultant" but he has no set schedule to visit the campus. He is called only when the nurse is baffled by a case. Sometimes she is reluctant to call him. The nurse takes the entire responsibility for deciding if a student is sick enough to see a doctor. The American College Health Association has been critical of the "consultant" arrangement in the past and is expected to call for its abolition in revised "standards and practices" recommendations this year.

"The association deplores the situation where a nurse does not have a physician just because the college administration doesn't think it's necessary," said Dr. Boynton. And it places on the nurses a responsibility that is far beyond their training and experience."

Additional reports of erroneous diagnoses resulting in improper treatment have come to the attention of a health director at a major western university, a physician who is a former top officer of the College Health Association. They range from fractures which are treated as ankle sprains to "colds" and "bronchitis" which are actually the first stages of tuberculosis.

"In all cases," the official said, "the incidents occurred where they had only a nurse on duty. The administration had the responsibility, but it was not assumed. The nurse had more responsibility than she could handle."

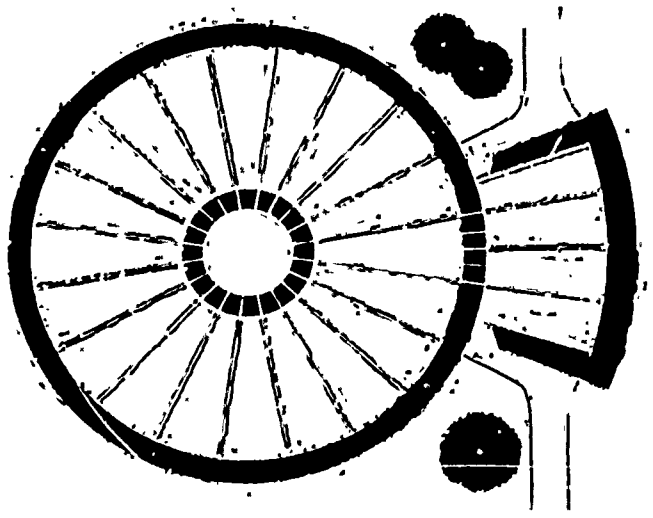


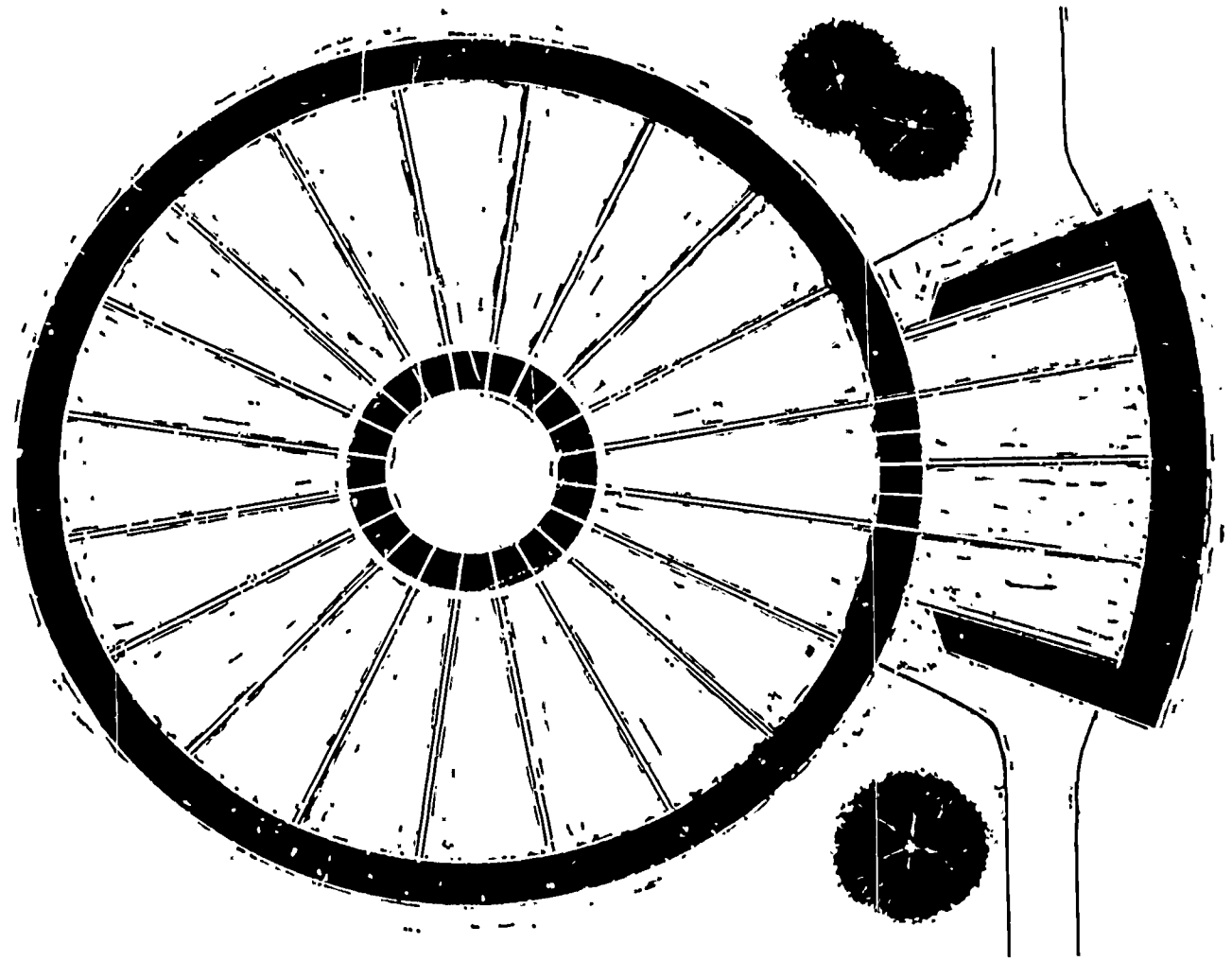
The 1953 study of college health services by the American College Health Association disclosed that two-thirds of the colleges reporting on budget information had an annual budget of less than $10,000. Services ranged from no clinical program whatever to full-scale hospital facilities for major medical and surgical cases. Roughly one in three colleges was found to have no clinical service. One in three had a clinic open for minor disorders only. Care for serious illness or injury was available at only 28 per cent of colleges with less than 500 students, 40 per cent of medium-sized colleges, and 64 per cent of colleges with enrollments in excess of 2,000.

Practices in preventive medicine were also found to differ widely. While some 400 colleges reporting required smallpox vaccinations for incoming freshmen, more than 700 did not. Only 1 college in 10 required immunization for tetanus and typhoid. Less than 1 college in 3 supervised standards of nutrition in dormitories and other campus eating places.

Of 1,157 colleges surveyed, exactly 200 (17 per cent) reported that the college assumes no formal responsibility whatsoever for the health of students.

The standards of college health services are marked by great disparities in buildings and services. Usually both go together. A "stepchild" facility is often financed by a niggardly budget. The tri-college study of a model health center for smaller, independent liberal arts colleges may mark a turning point. It offers an exciting and functional architectural approach to the idea of a college health center. It offers efficiency, economy, and beauty in place of disorder, false economy, and, often, ugliness. The question is; what will be done about it?





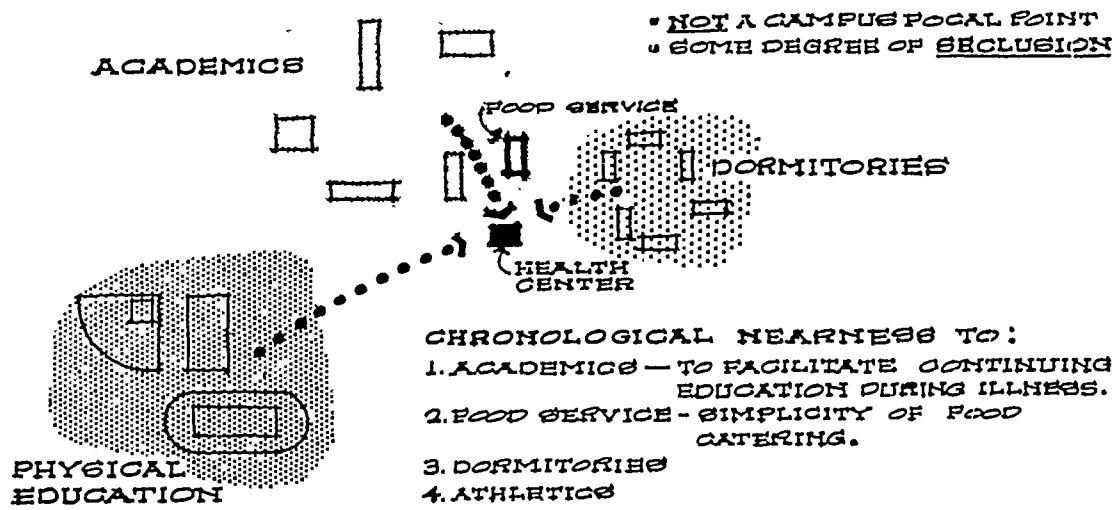
An Architectural Answer

Prepared by
Caudill, Rowlett & Scott

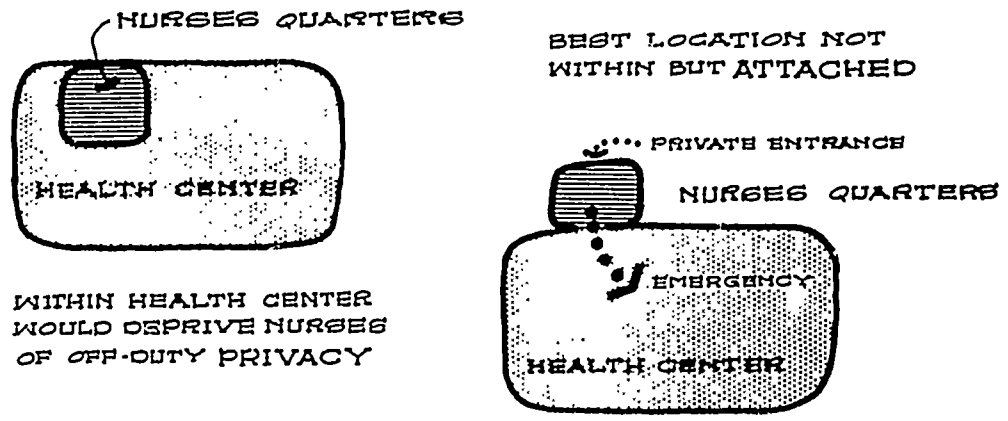
C. R. S. Project Team

Dan R. Stewart, Designer
Ralph C. Carroll, Analyst
C. Herbert Paseur, Architect
William W. Caudill, Consultant

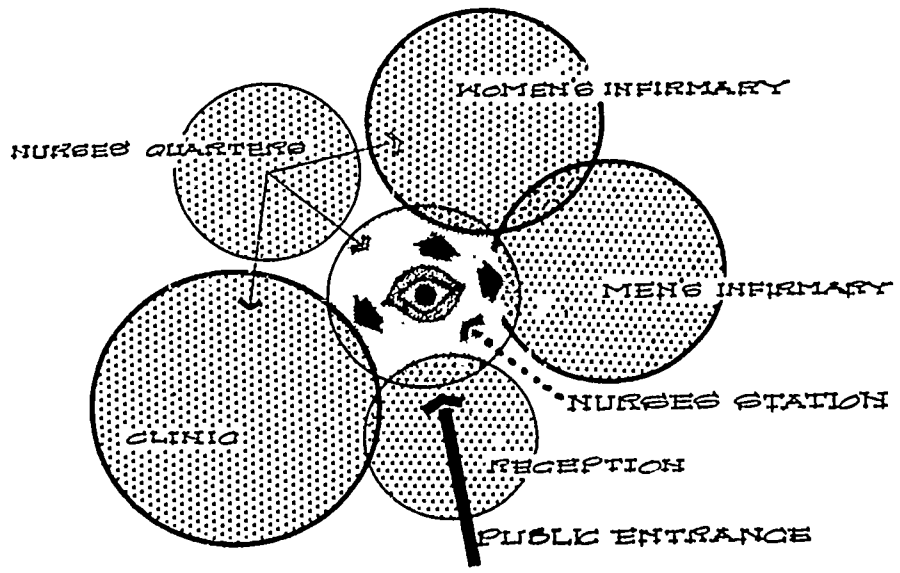
1. Campus Relationship



2. Nurses' Quarters



3. Control



ALTHOUGH THERE ARE many architectural solutions possible for solving the needs of a college health center, the architects chose a circular scheme as offering more advantages than a rectilineal solution.

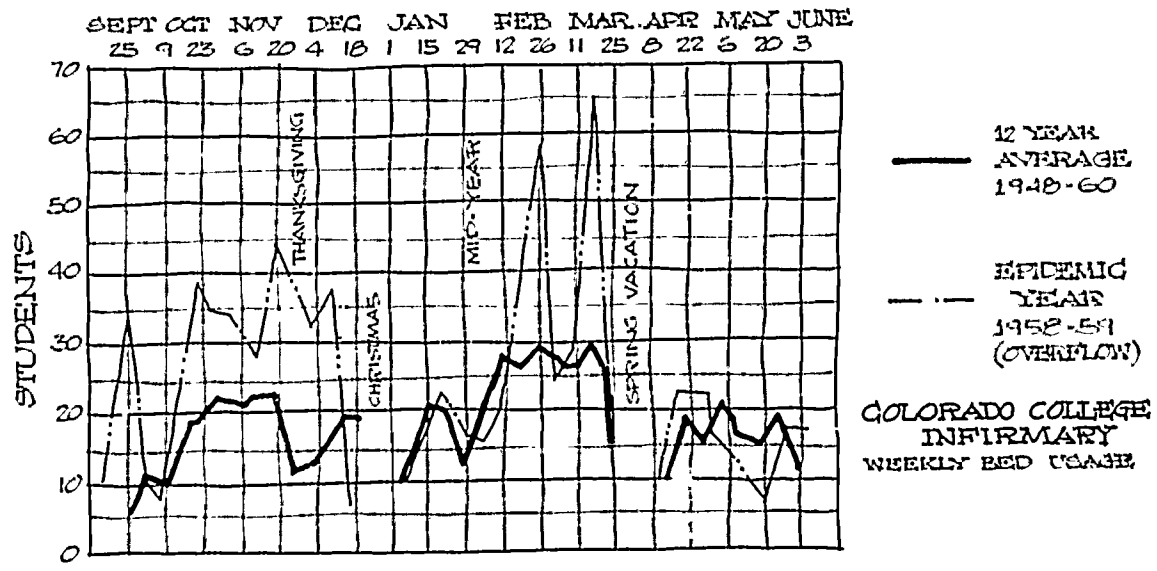
An investigation into the basic health needs of a typical small college resulted in a graphic analysis *(see Illustrations 1 thru 14)* of the forces that shaped a program, which in turn led to this particular solution. There are three basic design concepts: Internal Expansion, Keep-the-Student-in-School Hospital, and Central Control.

Internal Expansion

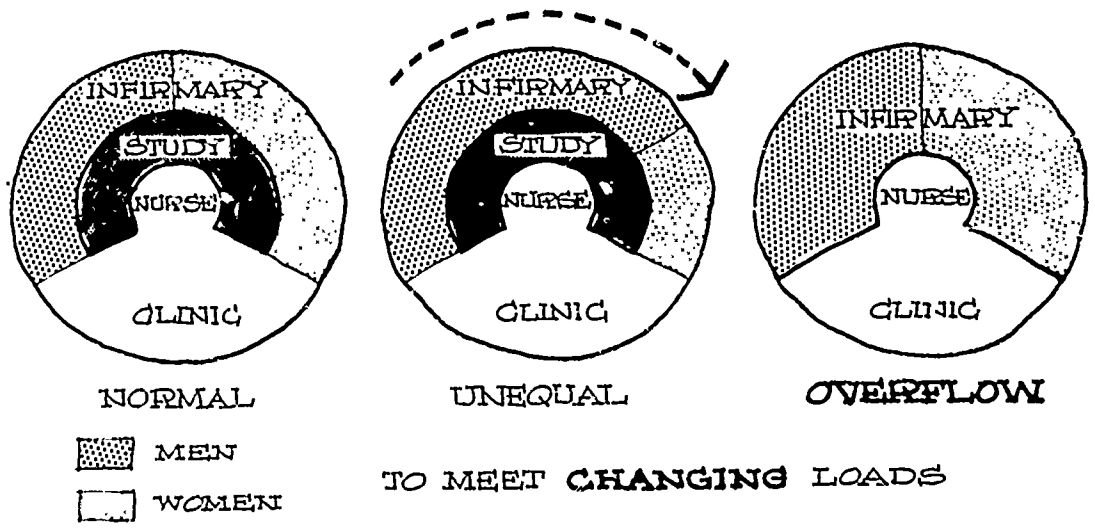
One of the first problems was to cope with sickness epidemics on campus. This was a reality illustrated by a Colorado College Infirmary Report *(Illustration 4)* in which student overflow could be anticipated by both short- and long-term periods. Usually this situation is met by overburdening existing facilities or by finding off-campus space, i.e., a local hospital.

The need for internal expansion *(Illustration 5)* was apparent so that the new health center could be self-sufficient under normal overflow periods. It was also obvious that there would be times when an unequal number of men and women would be convalescing at the same time, and the plan had to be able to adapt.

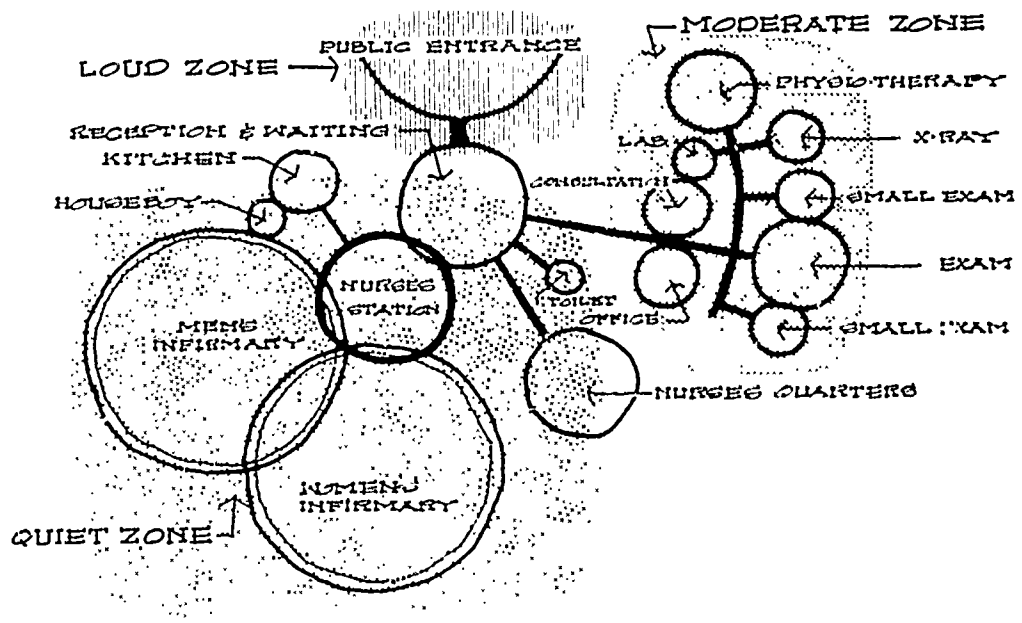
4. Changing Loads



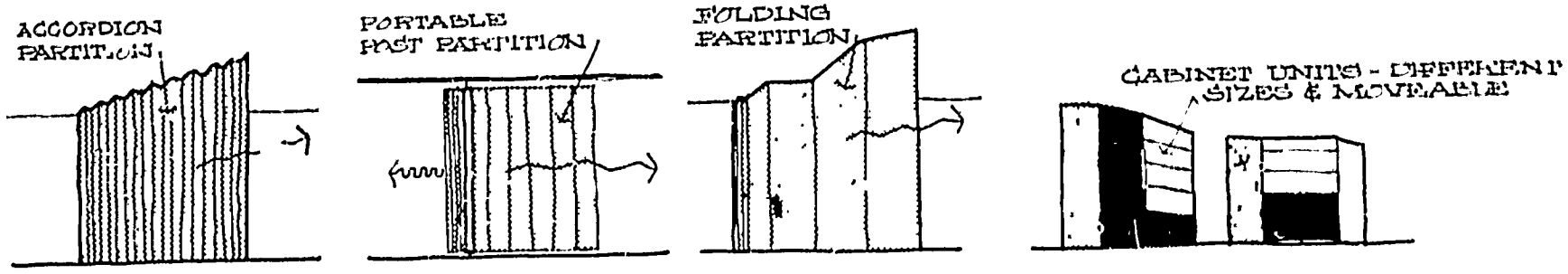
5. Internal Flexibility



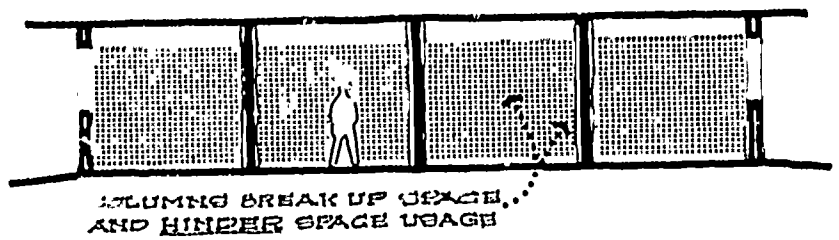
6. Space Relations

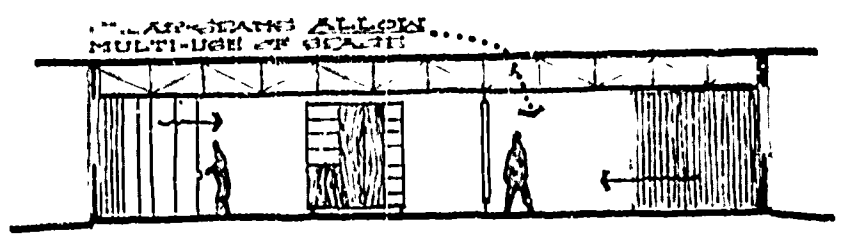


7. Space Convertibility



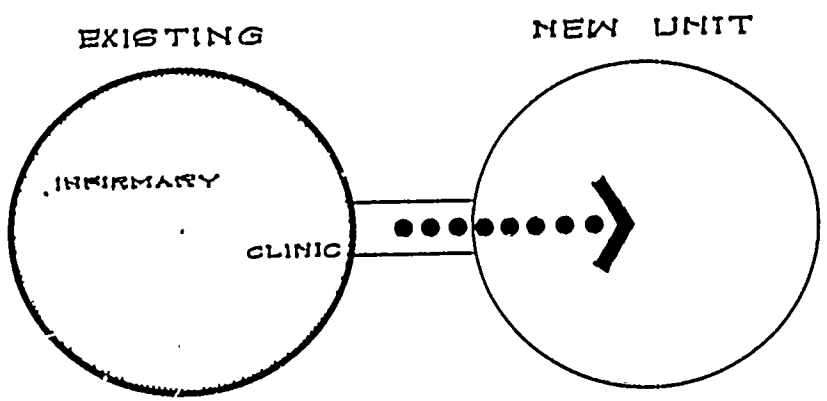
8. Structural System





INTERNAL FLEXIBILITY PERMITTED

9. Future Expansion



TWO WAYS TO EXPAND:

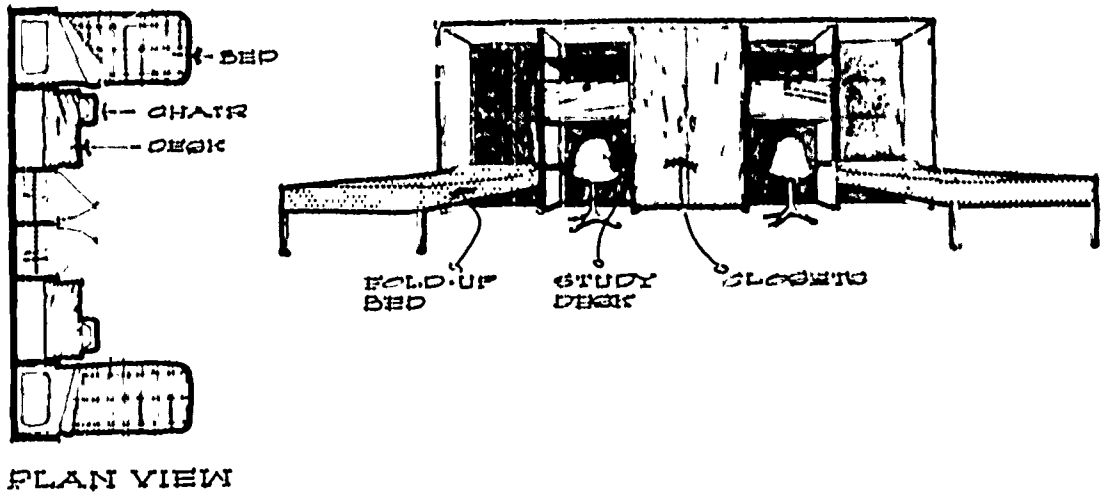
1. The circular solution in this report meets the latter requirement by having a movable partition separating the men's infirmary from the women's infirmary. *(Illustration 16)*
2. The study area between the nurses' station and the infirmary area will act as the expansion bellows of the floor plan. The study carrels and lounge furniture can be replaced by added patient beds during overflow periods.

External expansion may become a necessity on some campuses where enrollment exceeds anticipation. This can be accomplished by adding directly to the existing facility, by attaching smaller satellites, or by constructing another unit *(Illustration 9)* attached to the health center.

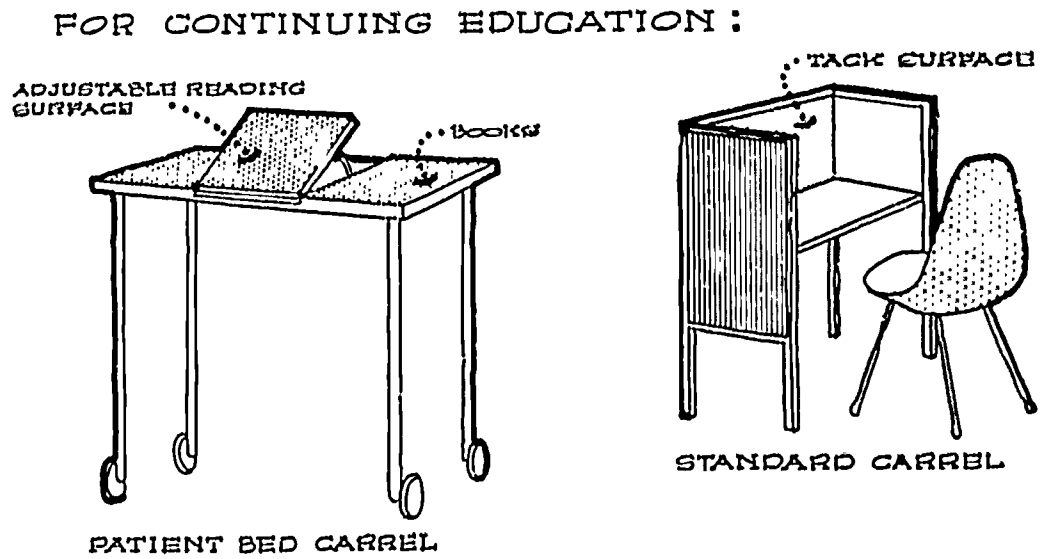
Keep-The-Student-In-School Hospital

Another problem was keeping the student in school during convalescence and encouraging continued student study during that time. In order to keep the student "in class," even though actual class attendance may be difficult, provision for study carrels *(Illustration 11)*, which can be either the individual, portable type or the bed-straddle type, spaces conducive to study, and locating the health center

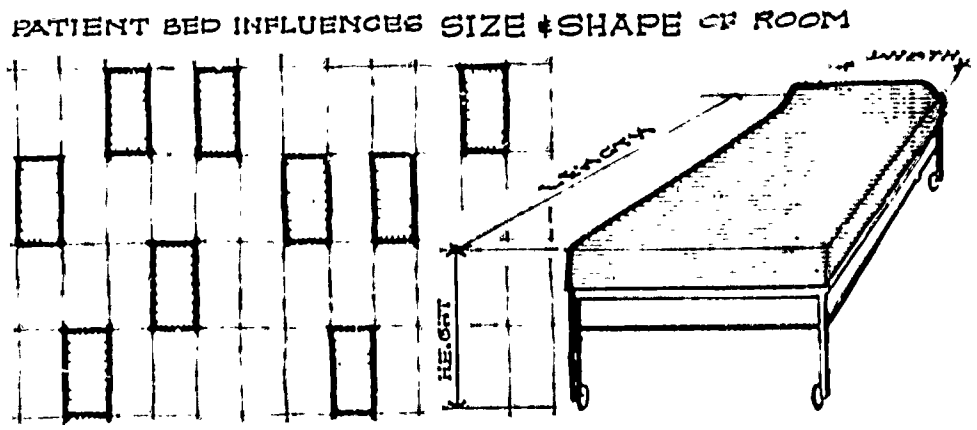
10. Storage, Study & Sleep Units



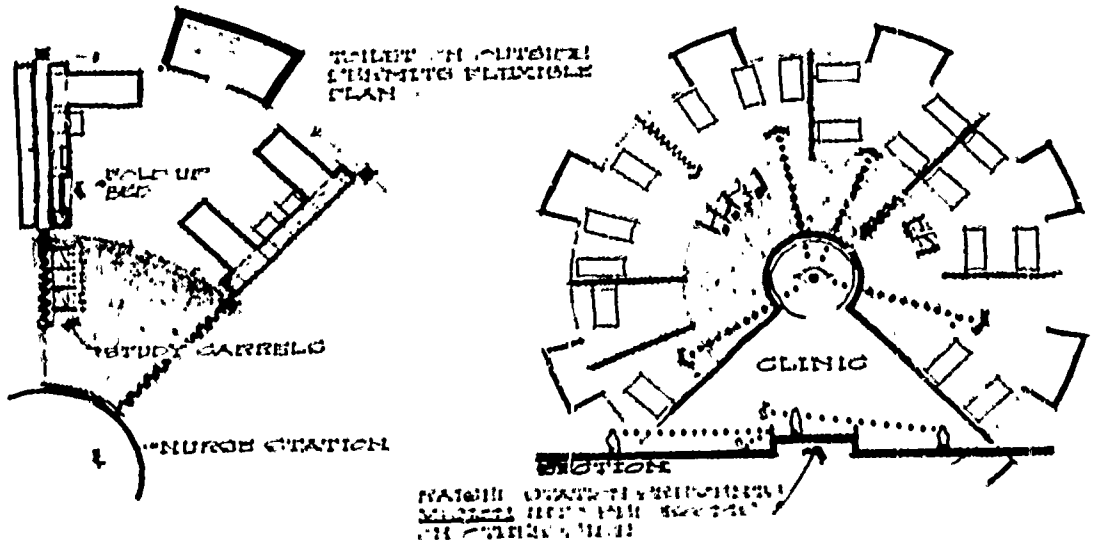
11. Portable Study Carrels



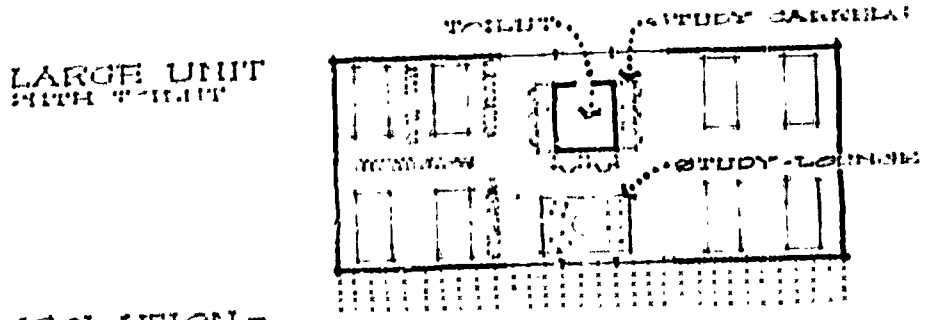
12. Design Module



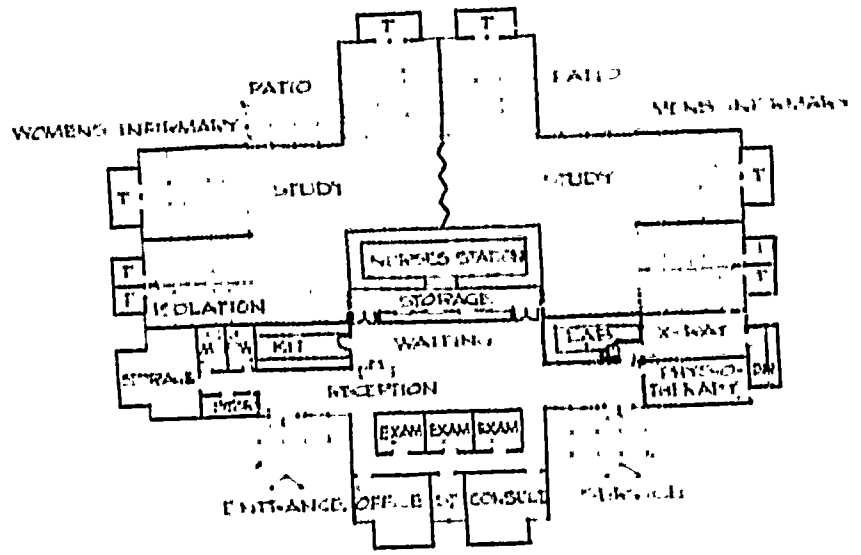
13. Schematic
Health Center



14. Bed-Study Units



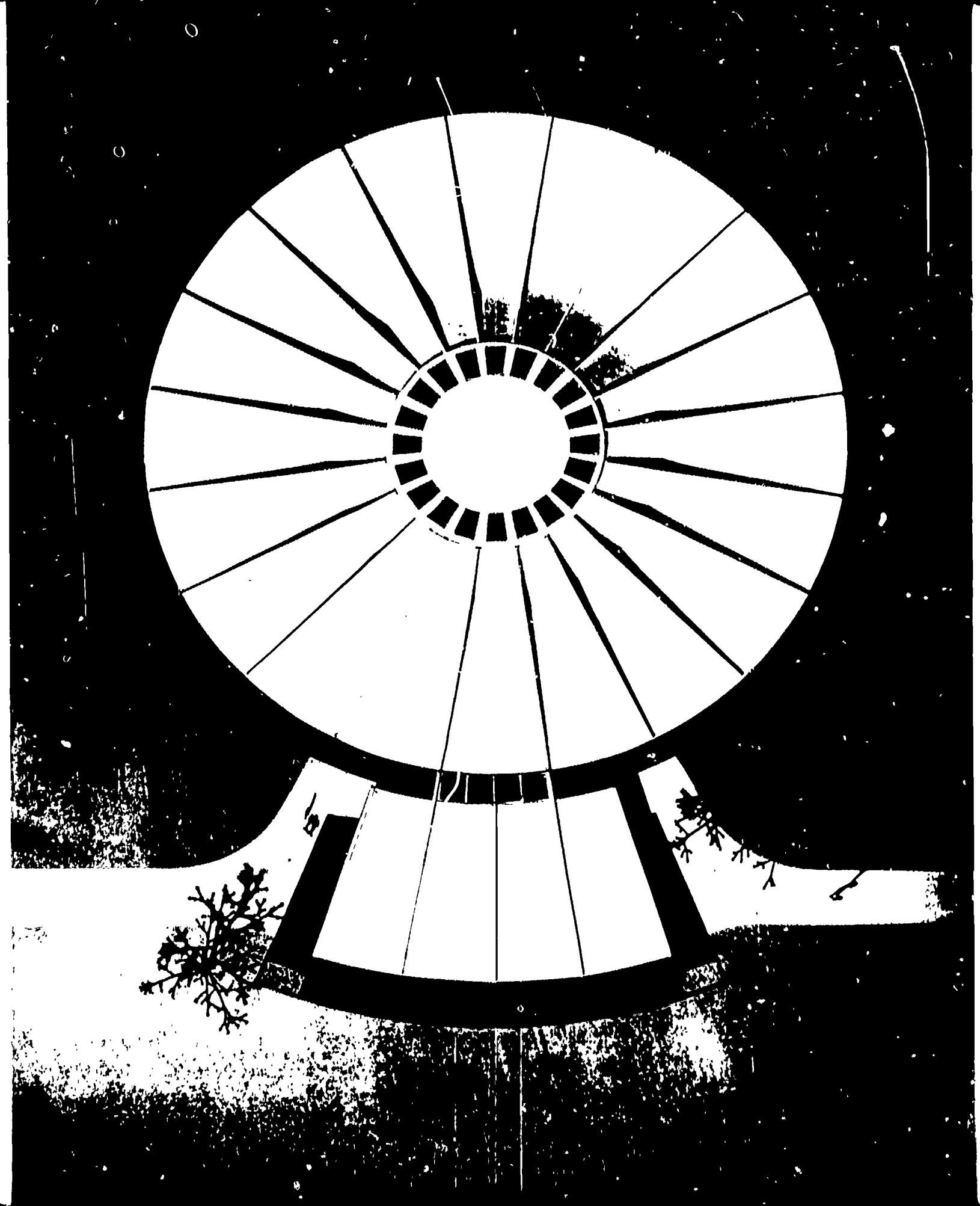
15. Rectilineal Scheme

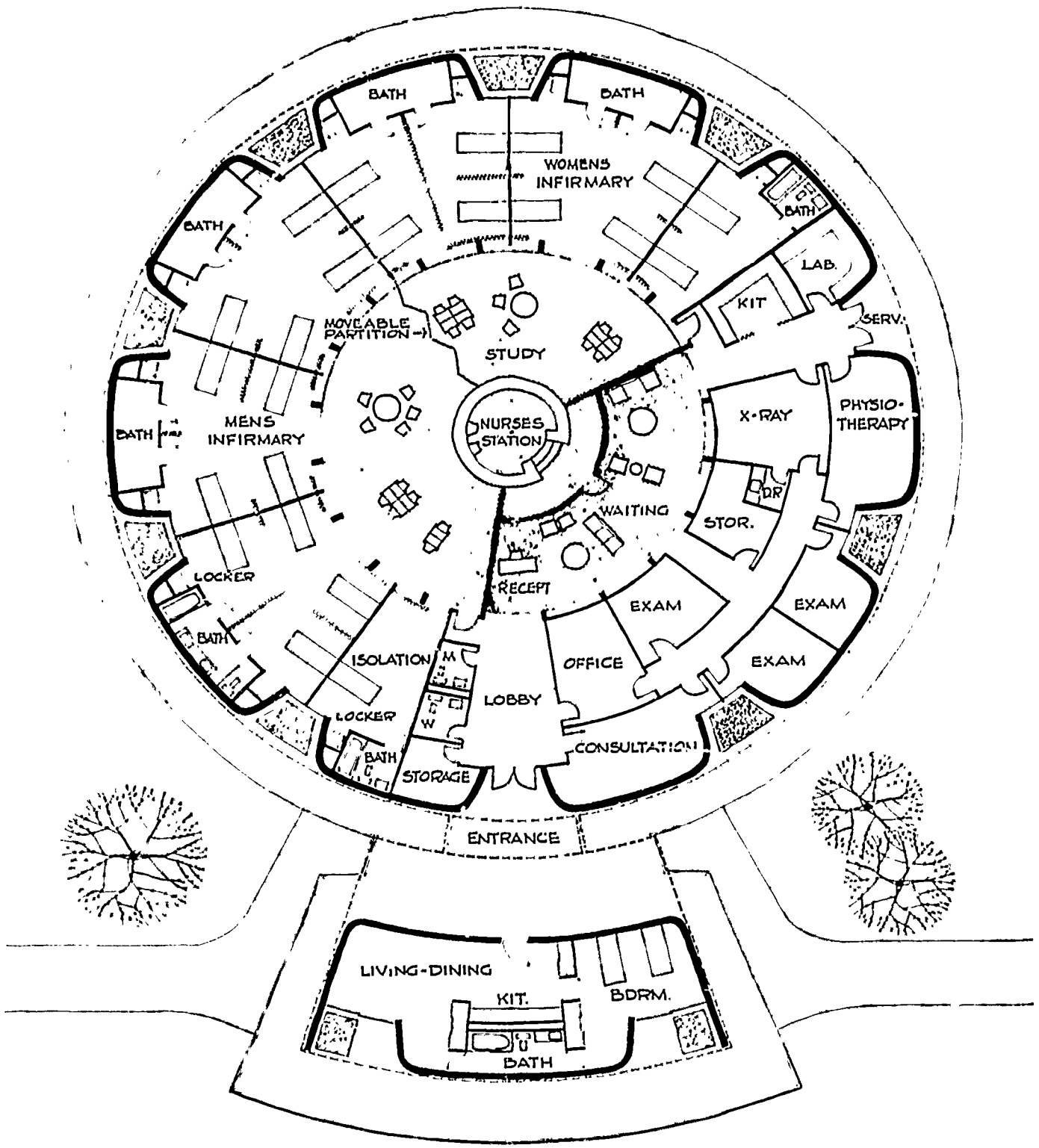


on campus in an area convenient to academic areas and food service *(Illustration 1)* are inducements that were utilized. Atmosphere plays a particularly important role in the development of a health center. Spatial freshness and an amply lighted interior will stimulate continued scholastic participation. Accessibility to the academic area of a campus is very important to facilitate class attendance, when permissible, by the convalescing student, thus reducing scholastic time loss.

Central Control

Supervisory control was a priority factor in the development of the health center. Avoiding the necessity of a large staff with its inherent problems of financing and housing was desirable. Schematically locating the nurses' station in the middle of the health center *(Illustration 3)* eased this problem. This can be done in both rectilineal and circular plans *(Illustrations 13 and 15)*. Segregation of the sexes can be accomplished by slightly raising the nurses' station *(Illustration 13)* which blocks the view across the center section and by pulling a partition to the nurses' station. A centrally located control station (nurses' station) shortens distances to beds and adds to the general supervision of many other areas of the infirmary and clinic. Ad-





16. Floor Plan *of Infirmary-Clinic and Nurses' quarters.*

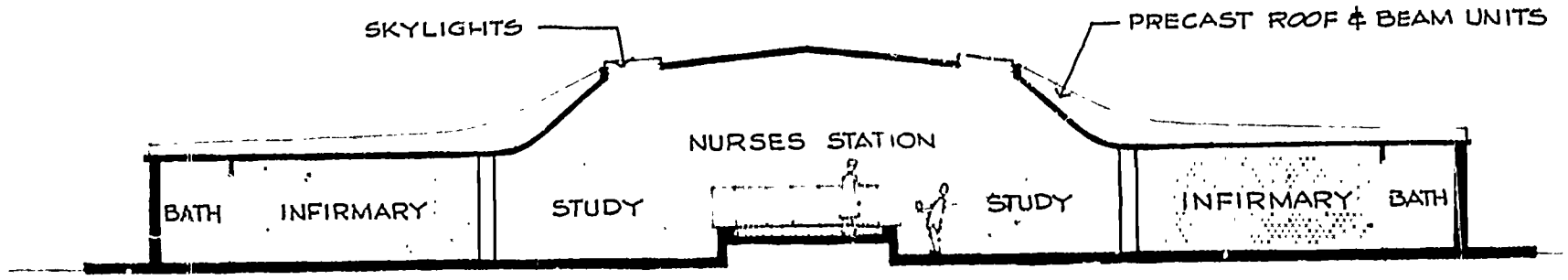
ditional supervision security is gained when the nurses' quarters *(Illustration 2)* are located near or adjacent to the health center. Close proximity permits emergency duty without sacrificing privacy to the resident nurses.

Other architectural considerations may play a part in an ultimate design. Various kinds of space dividers *(Illustrations 7 and 10)* can lend economical opportunities for plan changes dictated by local conditions. Structural systems *(Illustration 8)* which liberate the floor plan from the necessity of tight planning can also permit economies of structure and space usage. Multi-use spaces *(Illustrations 13, 14, 15)* can be used for study, lounges, eating, or bed overflow.

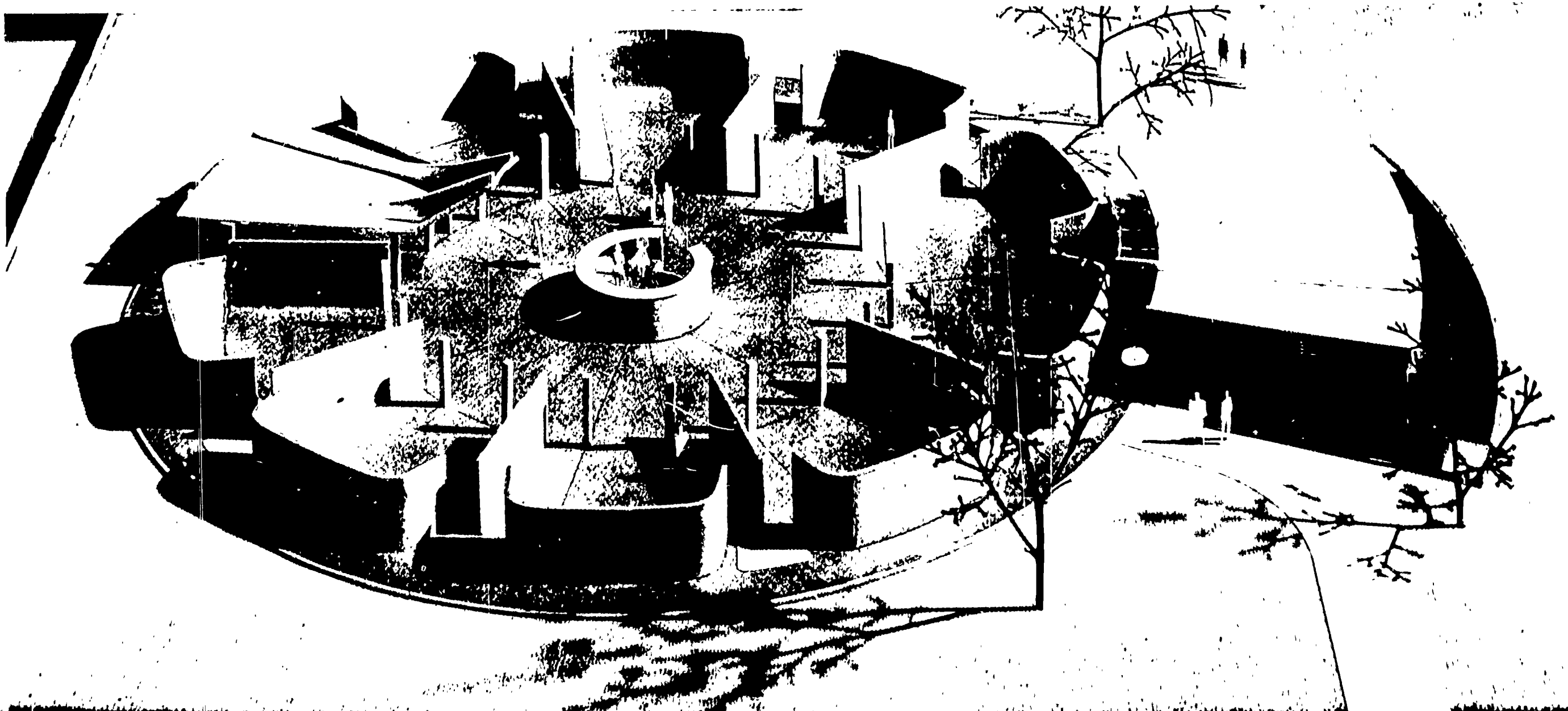
As the office with its desk and files becomes the design module for an office building, so too the health center has a design module: the patient bed *(Illustration 12)*. Rooms, bed alcoves, or wards are direct reflections of this module and are sized accordingly.

The basic components for a typical small campus infirmary-clinic are graphically illustrated in Illustration No. 6, and are broken down into their relative affinities. This space diagram forms the architectural program from which this health center is developed.

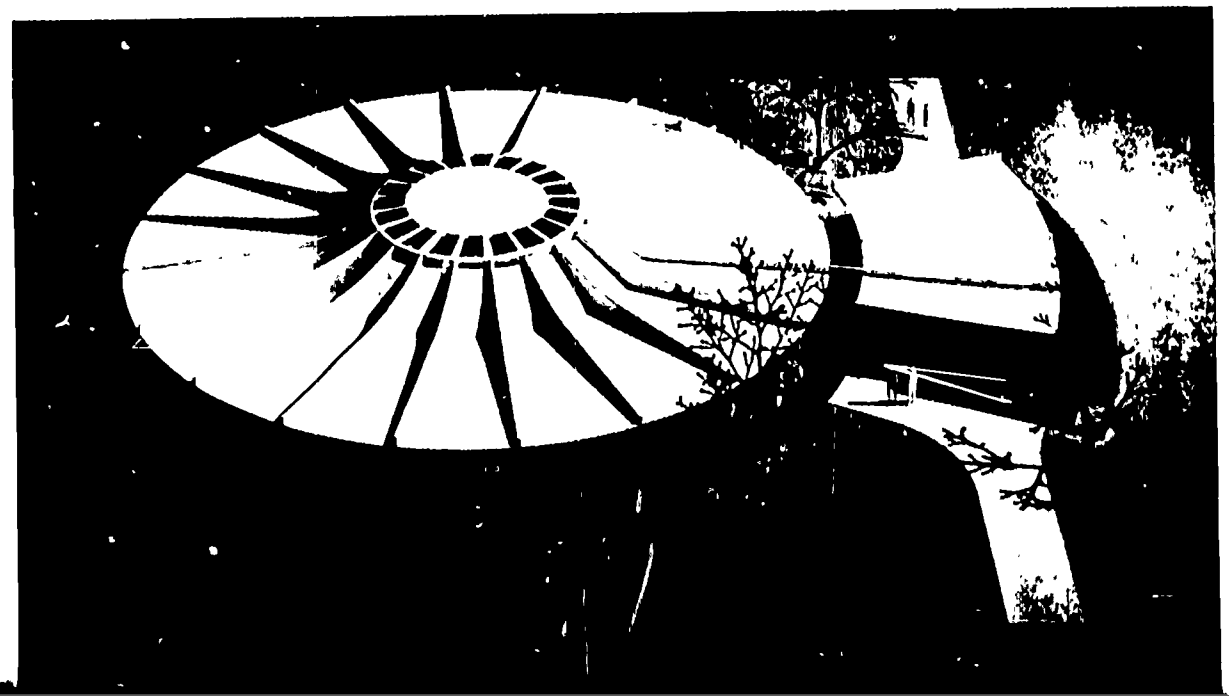
The circular plan *(Illustration 16)*



17. Section *through infirmary showing structural form and raised nurses' station for segregation. Roof system is precast concrete roof and beam "T" sections with precast interior columns and on exteric poured-in-place concrete curved wall units. Mechanical and electrical units are located beneath the health center. The study area and nurses' station are illuminated with skylights.*



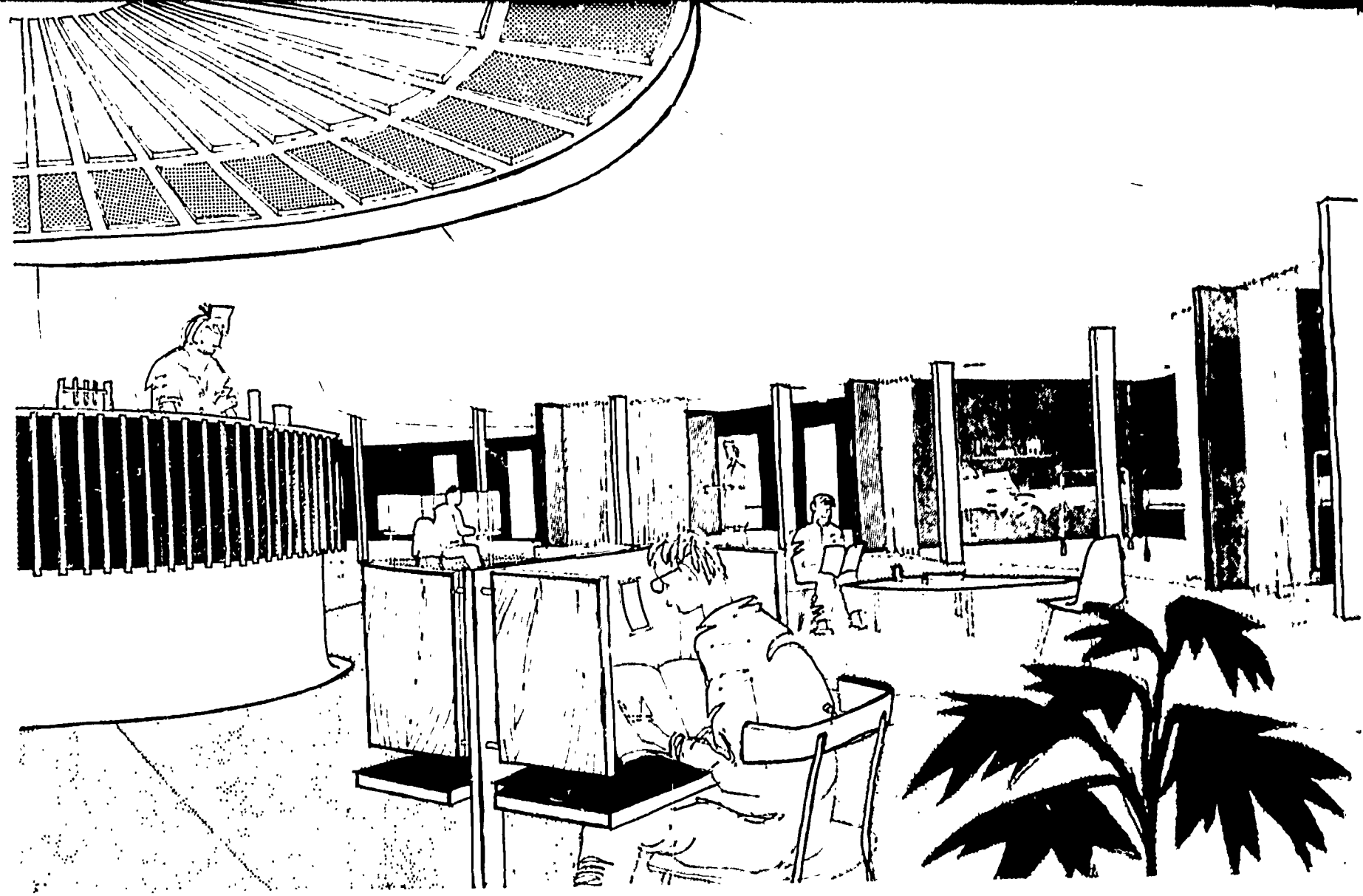
Perspective view of waiting area toward reception.



was developed because it presented many ideal solutions peculiar to the requirements of the program:

1. Central nurses' station for total infirmary control.
2. Short distances to patient beds.
3. Control over study areas, waiting area, and the clinic.
4. Simplicity of construction with repetitive precast concrete parts.
5. An architecturally pleasing form.

The architectural form performs its function well in that it creates high, pleasing, well-illuminated spaces over the raised nurses' stations, study area, and waiting area, and low, intimate spaces in the bed alcoves and clinic office spaces *(Illustrations 17, 18)*. The nurses' living quarters are a continuation of the structure system. Each bed alcove contains four patient beds and each has its own bathroom. The alcove can be screened off for privacy for each bed and from the overflow study area. A partition divides the



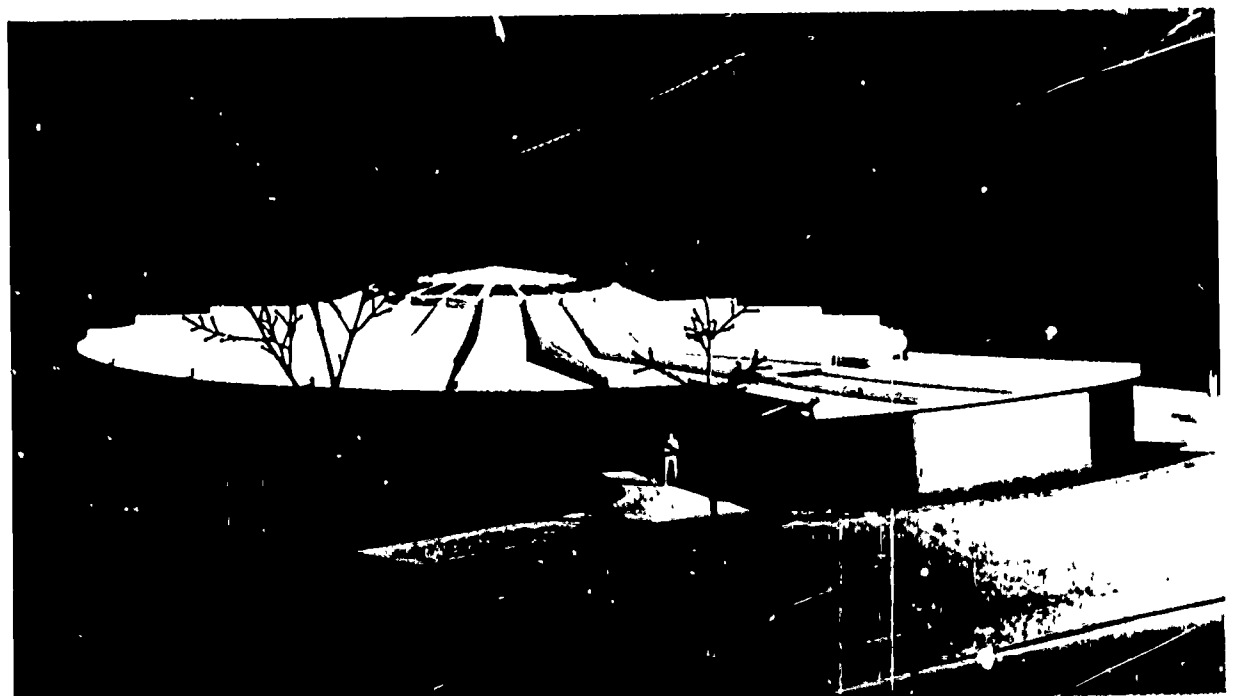
Perspective view of study area showing study carrels, raised nurses' station, and skylights.

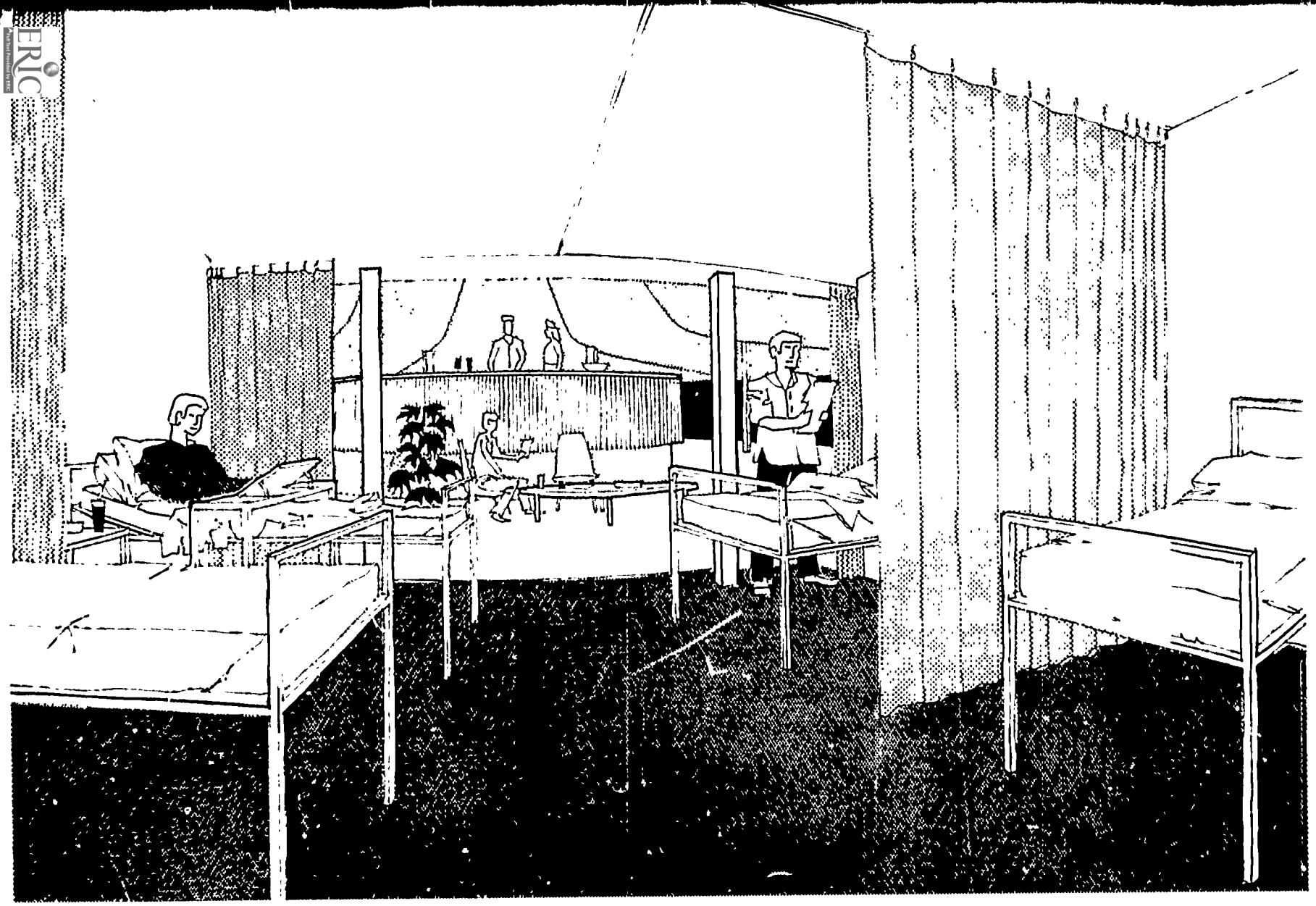
men's infirmary from the women's infirmary and can be relocated to adjust to unequal men-women space requirements.

The circular form of the raised roof is visible from any part of the health center as seen in the three perspectives. Where sound partitioning is required glass is used. The entire center is illuminated with skylights. The clinic area is not obscure—partitioned to the ceiling—but shares in the view of the soft curving roof by having glass above the 7′ level.

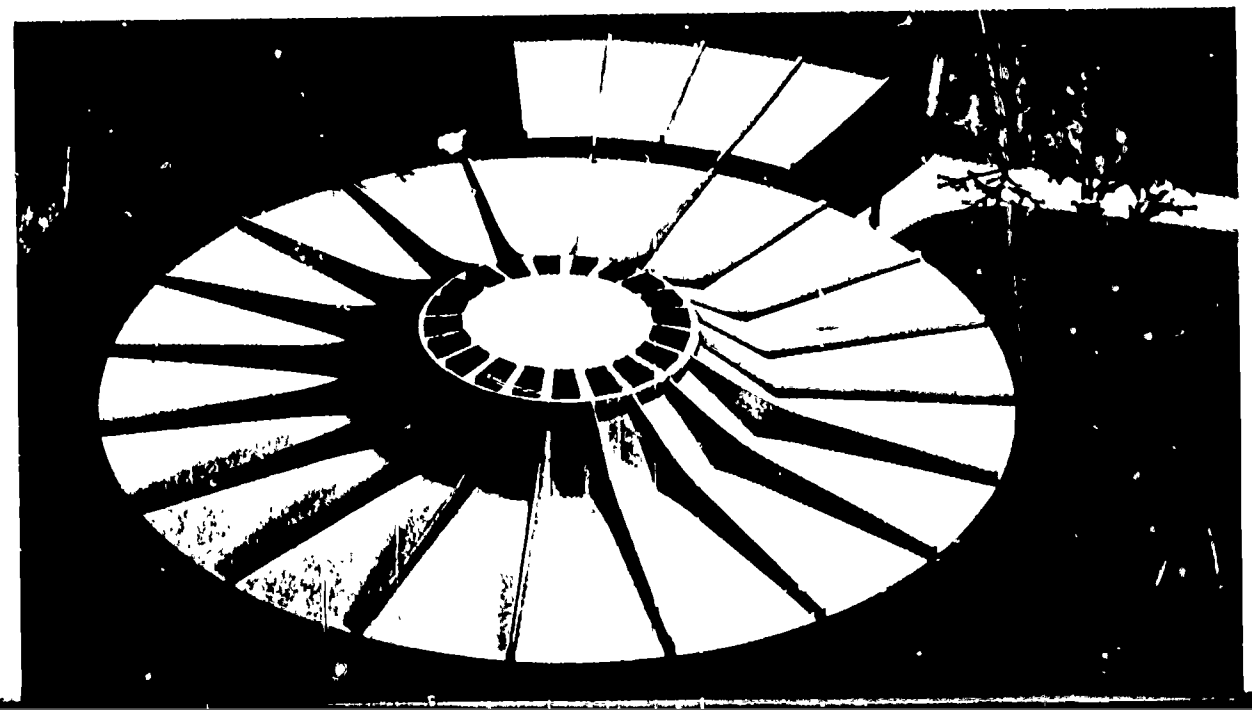
The raised nurses' station has visual control of the waiting area. A glass and wood slat-partition prevents clear vision from the waiting area to the infirmary without hindering visual control from the raised nurses' station beyond.

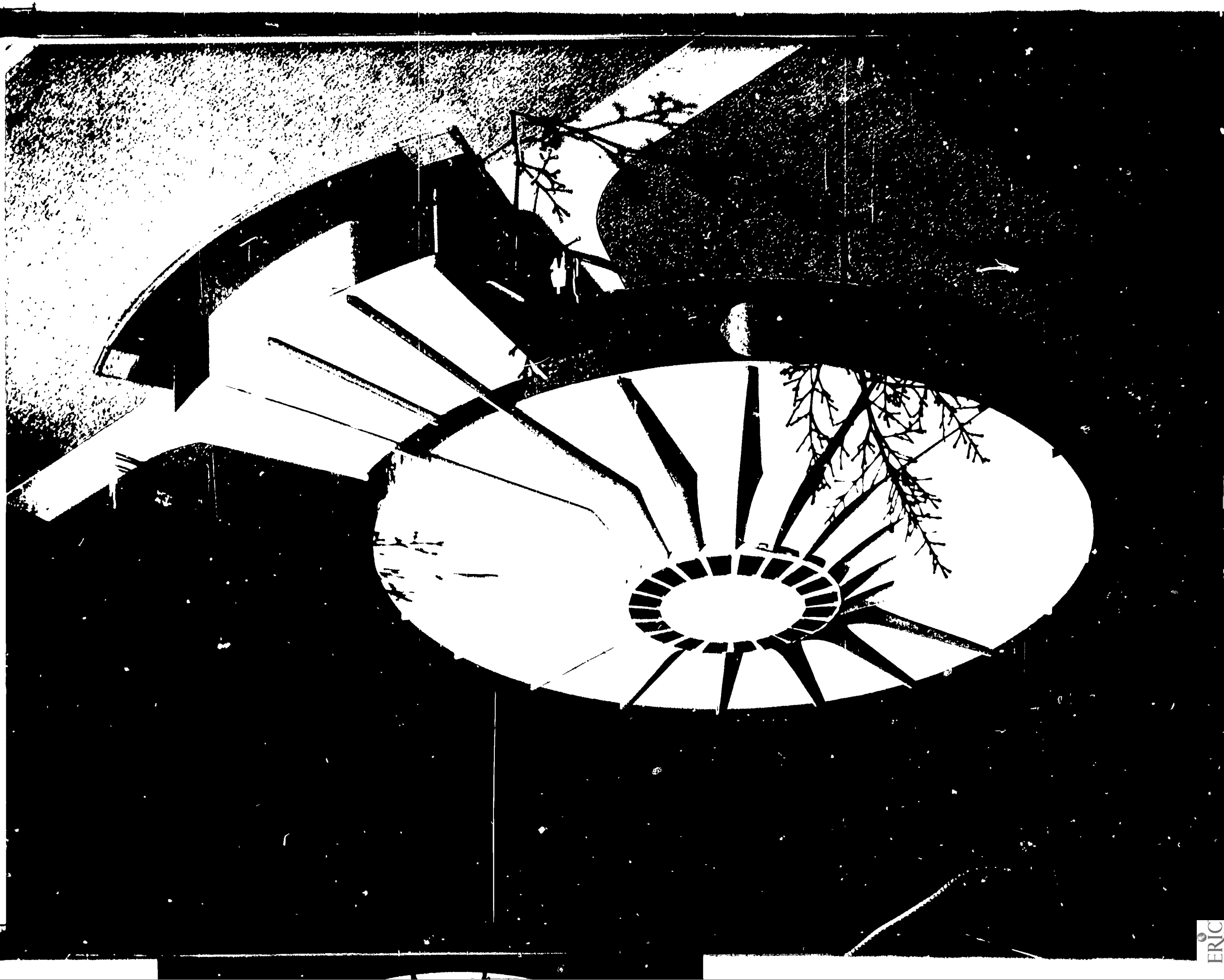
Dan R. Stewart
Designer
Caudill, Rowlett & Scott





Perspective view from a bed alcove toward study-overflow area and raised nurses' station.





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College Students Live Here. A study of College Housing. A review of the factors involved in planning and building dormitories and other types of college housing.

To Build Or Not To Build. A report on the utilization and planning of instructional facilities in small colleges.

Case Studies Of Educational Facilities. A series of reports which provide information on specific solutions to problems in school planning, design, and construction.

CONVENTIONAL GYMNASIUM VS. GEODESIC FIELD HOUSE. West Bethesda High School, Montgomery County, Maryland.

SPACE AND DOLLARS: An Urban University Expands. A report on the economic physical expansion of urban universities based on a case study of the Drexel Institute of Technology.

A DIVISIBLE AUDITORIUM. Boulder City High School, Boulder City, Nevada.

NEW CAMPUSES FOR OLD: A case study of four colleges that moved.

EFL College Newsletter. For college administrators, to keep them up to date on the studies of physical facilities for higher education being pursued by EFL.

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