

DOCUMENT RESUME

ED 031 881

EF 002 357

By-D'Amico, Louis A.; Brooks, William D.

The Spatial Campus: A Planning Scheme with Selected and Annotated Bibliography.

Indiana Univ., Bloomington. School of Education.

Pub Date Sep 68

Note-117p.; Bulletin of the School of Education; v44 n5 Sep 68

Available from-Indiana University Bookstore, Indiana University, Bloomington, Indiana 47401 (\$1.25)

EDRS Price MF-\$0.50 HC-\$5.95

Descriptors-*Annotated Bibliographies, *Architectural Programing, *Campus Planning, *Facility Expansion, Facility Inventory, *Periodicals, Physical Design Needs, School Community Relationship, Spatial Relationship, Traffic Circulation, Urban Universities

The directions of development and relationship of the urban college campus with its community are examined in detail. Annotated bibliographies of articles from periodicals and scholarly journals are grouped by subject classifications. The subjects listed are--(1) administration, (2) planning, (3) educational-architectural relations, (4) finance, (5) state legislation, (6) construction, (7) expansion, (8) utilization, (9) parking, and (10) college-community relations. These subjects include 289 annotated abstracts of articles. A separate section of 482 referenced articles on building description follows. These references are separated into those without floor plans and those with floor plans, and list only periodical articles. (RLP)

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louis a. d'amico and william d. brooks

BULLETIN of the
SCHOOL OF EDUCATION
INDIANA UNIVERSITY

vol. 44, no. 5 september, 1968

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\$5.00 per year, for six issues
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Second class postage paid at Bloomington, Indiana. Published in January, March, May, July, September, and November of each year, by the School of Education, Indiana University, Bloomington, Indiana

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VITAE

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Louis A. D'Amico received the B.A. degree from Wabash College and the M.A. and Ph.D. degrees from Indiana University. He has held positions with various governmental agencies, including the Department of the Army, the Department of the Navy, Public Health Service, and the U.S. Office of Education. His college and university experiences started at Indiana University as research associate and instructor in the Institute for Educational Research. He has held positions at Xavier University of New Orleans as associate professor and director of the Bureau of Educational Placement and at Flint Junior College as Assistant Director of Student Affairs. For the past three years he has held the position of associate director of Institutional Research and associate professor of higher education at Indiana University. He has held summer or part-time teaching positions at New Paltz State College, Indiana University, American University, and the University of Delaware. He has published extensively in the area of higher education. He is currently Director of Research and Development at Northeastern Illinois State College in Chicago.

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William D. Brooks was graduated in August, 1964, from State University College, Cortland, New York, in education (secondary social studies). He began graduate studies at Indiana University in 1964, completing the requirements for the M.A.T. in geography in June, 1967. At present he is completing his dissertation for the Ed.D. degree at Indiana University. During the summer session in 1965, he taught physical geography at the Fort Wayne Regional Campus and since the fall of 1965 he has taught geography at the Indianapolis Downtown Campus of Indiana University. He also served as a graduate assistant in the department of geography at Indiana University from 1964-1967 at which time he was awarded an Indiana University Fellowship.

INTRODUCTION

Why Prepare for Growth?

THE image in the public's mind of a college and university campus is generally one of ivy covered buildings, stylistic architecture, and landscapes in harmony with terrain contour and geographic climate. Since the physical environment is the most obvious aspect of an institution--whether the institution be an industrial enterprise, a governmental agency, or a college or university--it is of paramount importance for those charged with the planning of institutional facilities to consider the functional and esthetic qualities of the buildings and grounds of college and university campuses. An attractive and functional physical environment is not only conducive to favorable work conditions but also predisposes visitors and the general public to a favorable impression of the institution.

The increase in the numbers of students in colleges and universities has required colleges and universities to emphasize the importance of development and long-range planning of their campuses. It is a rare institution that does not include within its organizational framework a unit that is responsible for planning and coordinating the needs of the physical facilities--instructional, research, auxiliary, and general--of the institution. The responsibility of such units within colleges and universities, to be most effective, should take into account all aspects of the physical environment, including building sites, architectural styles, roads and sidewalks, student and automobile traffic, landscaping, and the immediate environs of the institution. The objective, of course, is to provide the institution with the facilities needed to accommodate its students, faculty, and staff. The campus environment should harmonize the wise use of land and building space without hindering the institution's daily operation. Also, the esthetic qualities of a campus environment should not be sacrificed even though efficiency and effectiveness may be impaired to some degree.

Beset with the task of planning for additional physical facilities--constructing new and rehabilitating old buildings, acquiring and developing land, and constantly reappraising the environment in the immediate vicinity of the institution--college and university planners have not always been successful in developing the type of campus environment which is operationally effective and esthetically attractive. This has posed a challenge and an opportunity to those responsible for campus planning and development.

The need for additional classrooms, laboratories, faculty offices, dormitories, dining halls, administrative and research offices, and other types of facilities to accommodate more and more students and faculty points to the increasing importance of the role of physical plant planners and administrators on college and university campuses. This need also points to the importance.

of synthesizing the existing body of knowledge on physical facilities. Such a synthesis would be useful to planners and administrators as well as to instructional personnel charged with imparting knowledge to students of higher education. It is with the purpose of providing a synthesis of available knowledge on physical facilities that the authors undertook the task of identifying and annotating the pertinent literature that has been published in the physical facilities area between 1950 and 1967. A by-product of the larger project is an analysis of trends in physical facilities, literature involving subject areas, authors' positions, publication media, and frequency of publication.¹

Characteristics of the Study

There were 2.6 million students enrolled in institutions of higher education in 1950. By 1960 the figure had increased to 3.2 million, today it is approximately 7.0 million and by 1980 it is estimated that the enrollment may reach 10-11 million students. With these figures in mind it is not difficult to perceive that higher education administrators are faced with problems that will continue to plague them in the future.

Administrators are well aware of the need for academic and non-academic facilities that are required to accommodate students. A functional physical environment is essential for the educational process to achieve an optimum level of efficiency. In view of this, three questions might be asked: (1) to what extent has this problem been dealt with in published articles? (2) what are the positions of the authors and the areas to which they address themselves? (3) what inferences can be drawn from an examination of the first two questions?

Problems Inherent in the Physical Pattern Facing the University

The location of new buildings on a campus poses numerous problems to those responsible for campus planning. Without proper long-range planning the physical structure of the campus can, in time, become a hodgepodge of buildings and result in a considerable decrease in over-all efficiency of the total plant. It is important for planners to meet pressing immediate needs for space while anticipating the influence a new structure will have on the future development of the campus.

On many campuses growth of the physical plant has proceeded by simple accretion. Too often this type of unplanned growth pattern places a new building wherever space is available and

¹D'Amico, Louis A., and Brooks, William D., "Who's Writing What--Where--About Physical Facilities," College and University Business, April, 1968, pp. 88-91.

without regard to functional relationships. The result can be disastrous: barriers appear which impede the flow of students; circulation networks become bottlenecks restricting movements of vehicles; parking becomes a problem of vast proportions. Such temporary measures create more problems for the future.

Each campus has functional units which can be easily identified and should be located together geographically in order to achieve maximum efficiency. For simplicity this identification can include administration, academic, and non-academic functions. Each, insofar as possible, must be located so that maximum interaction can take place with allowance for future growth patterns and increased interaction.

Present day campus layouts are the result of decisions made in the past. Although these campus layouts may have been adequate to meet the needs of the times, and although persons in higher education who were responsible had little or no means of foreseeing their future needs, the solutions to problems created in the past cannot be postponed.

Prior to World War II college and university campuses were relatively stable. But the influx of returning veterans, the increasing percentage of high school graduates seeking more schooling, increasing construction and material costs, inflationary pressures, the Korean War, and changes in methods of financial support sometimes induced a pattern of haphazard accretional growth for the physical campus. Too often administrative decisions called for quick temporary buildings to be constructed to serve until time and finances would allow more permanent and efficient solutions. Far too many institutions, either through lack of proper financial support or lack of proper overall planning perspective, have lagged behind in developing long-range master plans.

There are a few notable examples of what can be accomplished with proper long-range planning for institutions. Perhaps the most widely publicized has been the plan adopted by the state legislature of California. Other plans of major importance include the 20-year development scheme adopted by the Cleveland Circle Development Committee and implemented by the University Circle Development Foundation; the West Philadelphia Corporation, whose efforts were formalized in 1960 after a number of years of preliminary cooperation among the University of Pennsylvania, the city of Philadelphia, and the state of Pennsylvania; and the South East Chicago Commission that has contributed much to campus and neighborhood rehabilitation.

Each of these plans have a number of elements in common. Even though the ultimate success of these operations remains to be documented, three factors stand out. First, there is a realization that maximum operational efficiency can be achieved through the cooperation and the subsequent utilization of specialized

knowledge exhibited by various facets of society; second, various methods and avenues of financing are available when proper cost-benefit studies are presented; and third, the realization that planning of the physical plant structure is not strictly an internal institutional problem but has implications for the community as well.

The problems facing institutions today regarding physical environmental needs can be alleviated in great part by planning. This involves focusing on the various components or elements of the physical structure and the collection of hard-core objective data through studies designed to isolate problem areas. From these data a long-range master plan can be designed within the framework of the goals and purposes of each individual institution.

Planning and the Campus Spatial Structure

Organization on each campus grows out of a number of internal and external factors operating singly or together. Over time a spatial structure is created which has some degree of operational efficiency. This organization is not rigid at all times nor is it considered rigid in terms of the perceptions and the attitudes of the people working within its context. Indeed, each individual, whether faculty member, administrator, student, or staff worker, perceives the value of this organization from his own vantage point and places a specific meaning on its operational procedures.

The campus organization is by its very nature exceedingly complex. It has elements of both a physical and a functional organization juxtaposed as in a spatial structure or system. The physical organization consists of the buildings, circulation networks, open spaces, and the like which are the supporting elements for the functional organization. These elements are the manifestation of the ideas and attitudes emanating from the functional organization so that entities, such as educational institutions, are produced by the evolution of the administrative decision-making process. Administrative decisions affect all spatial relationships--it is no accident that space content is directly related to this organizational force.

The campus itself has a physical delineation. Legal boundaries of the university enclose space and present a certain pattern or distribution of physical facilities. Within the confines of these basic dimensions there are other elements also with a distinct location. These physical facilities house the various components of the functional organization and result in a differentiation yet an integration of elements.

The elemental association, a pattern that evolves from decisions perceived as rational, is designed to effect the highest

degree of efficiency. The greatest efficiency would occur if all campus operations could take place at one spot, but since this is an impossibility, a distribution or pattern must evolve which does the most to overcome the debilitating factors of distance and time. Those operations that are most important to all concerned must be placed in the most optimum location. On the other hand those of less importance are moved to the periphery of the campus. Thus a spatial pattern does evolve that approaches the desired efficiency reducing the possible disutility of space.

The internal campus organization can be summarized as a French ensemble, or a German Gestalt, a whole presenting a cohesion through the interaction of its elements. Based on this premise, studies of the campus can be approached through a hierarchy of problem areas: (a) the spatial structure, (b) the functional system, and (c) the dynamics of the spatial structure and functional system.

The first of the problems, the spatial structure, can be approached with different methodologies. But regardless of the method of attack, an understanding of the spatial structure should include the attributes of relative location, extent, degree of density, and geometric pattern. All campuses, indeed all spatial structures, possess these attributes to a degree that can be readily discerned revealing a spatial pattern of some importance. The collection of precise data about the attributes of the spatial structure must be considered as the first step in the development of a conceptual framework of the university.

The second in the hierarchy results in the assessment of the linkages between the elements of a spatial interacting, interdependent system. To be effective a university requires a system of internal communication and dissemination of information. The relationship of function, size, and spacing of buildings relative to the operational efficiency of the whole campus becomes apparent through studies that identify specific problems: for example, bottlenecks in communication and traffic flow. It is at this level that the effectiveness of the administrative decision-making process can be evaluated objectively.

The third problem in the hierarchy demands the most scientific approach classified as nomothetic research. Essentially this level of inquiry presents premises from which a conceptual model of the university can be postulated. This effort reflects the necessity of reducing to manageable proportions the intricate interactions of the elements that comprise the university. One may postulate that the university is a system in equilibrium in order to find what effect one or more variables will have on the rest of the system. Using model-building techniques, alternatives to the locations of the elements of the physical environment can be presented in the long-range planning of the university. Furthermore, the development of conceptual models would allow

analysis of the dynamics inherent in the spatial structure and the functional system to become manipulable and usable.

This third approach takes into effect the important variable of time which is not found to any great extent in the first two approaches. Time is the variable that brings change and evolution into a dynamic system. Since the facilities of the campus are to a great degree relics of the past, contemporary spatial arrangements can hardly be used as the sole basis for the planning of the campus layout of the future. By utilizing models, processes that are operating within the university community over a span of time can be identified. Once these processes are identified, the models with their predictive qualities can be used to present alternatives for future campus efficiency.

As stated above, the attributes of the physical campus evolve from the attitudes and perceptions of people who control the present and future operations of the university. Thus, the spatial structure results from the manifestation of policy decisions that affect the future spatial distribution and interactions of the campus. The mere location of a building, sidewalk, roadway, or tree is of little importance, but the location of these elements relative to others is of prime importance as one begins to assess the occurrence of spatial interaction. The relationship of one building to another implies this interaction and requires the consideration of interaction and accessibility as factors that need to be identified in order to overcome disutility of space.

Some buildings, depending on their function, require a more central location than do others. A good way to illustrate this would be to visualize a solid ball, representing a building, suspended inside a hollow sphere and attached by a series of rubber bands as radii. The rubber bands in this case represent the flow of people, communication, and ideas. If all of these forces are operating at the same level of intensity, the result would show the ball (the building) to be suspended exactly in the center of the sphere. If a number of the interacting forces are more intense and if they occur in one quadrant, they would cause the ball to be moved toward that area of the sphere. The position of the ball in either case represents the concept of centrality which becomes an attribute of prime importance. The degree of interaction that takes place determines the optimum location of function. Centrality, then, embodies two important considerations: interaction and accessibility.

Interaction refers to the flow of ideas and people or the creation of such movements while accessibility is the extent to which a point in space becomes available from other points within the confines of a circulation network. By returning to the concept of a solid ball suspended inside of a sphere one can begin to appreciate the concept of centrality. The construction of a new building must first begin with a complete,

objective study of the interaction and accessibility factors. Primarily the function for which the building is to be constructed will indicate what degree of interaction should be manifested; this, in turn, will determine the degree of accessibility that will be required.

For example, if a new library is to be constructed it would seem at first that a location in the center of the campus is called for. But proper study may prove this not to be the case. Investigation into who is presently using the library and at what time this use occurs could indicate that a location midway between the academic complex and the housing complex is more advantageous. Again, the construction of a new classroom building must be preceded by studies of interaction designed to determine most advantageous location of the structure in terms of the users.

In summary, the internal spatial structure of a campus is the result of the cumulative planning and decision-making of officials of an institution. Achievement of efficiency requires an objective spatial data analysis at two basic levels. One is a precise collection of data about the location, physical size, density, and pattern of the present physical campus and the second is an analysis of the functional organization or the linkages of interaction and accessibility. Finally from these data a conceptual model of the university can be postulated that would allow alternatives to be selected relative to the future arrangements of space content. This conceptual model would allow formulation of a master plan designed to effect the optimum space allocation and utilization.

The Campus as an Integral Element of the Urban Community

Urban areas are in a constant state of flux induced by opposing but concurrently operating forces. Parallel forces of functional growth and functional deterioration operating in time and place are both constructive and destructive forces that maintain the disutility of spatial patterns. Functional growth indicates a viable dynamic relationship among associated functions, an interdependence and interaction that enhances strength and stability. But functional deterioration represents a weakening of areal cohesion, a change in the overall patterns of urban areas that promotes problems of congested traffic, slums, apathetic people, and overall socio-economic weaknesses.

We are all aware of the stratification and diversification that has occurred in our urbanized areas. It has been well documented that certain areas are economically and socially strong while, at the same time, other areas are in trouble. Some institutions of higher education have been "caught" in areas of functional deterioration detrimental to their overall operation.

Slowly, these institutions are becoming aware that they are not separate, distinct entities but are a vital, integral element of the urban scene. The dependence of the institution on the urban area is no less than the dependence of the urban area on the institution. This reciprocal relationship requires an interaction carried out at a highly proficient level to assure the continued viability of both. Surely, then, the institution must explore, recognize, and delimit the linkages of the academic-urban communities.

What are these linkages? A number of areas that require the scrutiny of both communities and that represent the highest degree of interaction include: (a) the shape and location of the institution relative to other elements of the urban scene, (b) the supporting tributary areas that the institution depends on, (c) the "labor pool," and (d) circulation networks. All of the above are of utmost importance from the point of view of the institution.

The shape of the campus may be compact, attenuated, prorupted, or segmented. Taken in conjunction with its location, these attributes may exhibit advantages or disadvantages. The shape of a campus may have evolved to its present configuration as a result of decisions which promoted expansion in the direction that offered the least restriction.

The acquisition of land has become a major problem for most institutions. The desire to expand legal holdings creates problems between the institutions and individuals or between the institutions and organizations, public or private. The competition that results usually forces land prices upward at a rapid rate and forces the institution to withdraw from further consideration. Recent federal legislation amending the Federal Housing law allows the institution to pursue condemnation proceedings. In certain controversial cases it may be to the institution's advantage to withdraw from competitive bidding on certain properties. This in the long run may prove a less desirable action in terms of physical development but more desirable in terms of community good-will.

Barriers of a physical nature may force the campus into an unusual shape. A railroad, a major highway, or a river in close proximity, may preclude expansion in a desired direction. Yet, if expansion does take place across such a barrier it may restrict interaction and accessibility between elements of the total campus at bottlenecks over which the institution has little or no control. It may be better in the long run to expand to an unusual shape rather than to risk isolating part of the campus.

The urban scene has definite functional zones--commercial, residential, industrial, etc.--undergoing constant adjustments and flux owing to peculiar social and economic factors. In many

urban areas there are zones that show a high degree of functional deterioration. Unfortunately, many institutions have found themselves located in those zones partially surrounded by neighborhoods in various stages of decay. Crime is rampant, undesirable functions are present, police protection is needed, in general the institution finds itself surrounded, or nearly so, with neighbors that are relatively incompatible with the overall welfare of the institution.

The urban unit does not have the ability to support itself; it is dependent on the support of tributary areas beyond the highly populated cities. Raw materials of all kinds are transported into the urban area to be transformed into more useable products and redistributed for consumption. At the same time the tributary area depends on the urban center for its support. The result shows a complex spatially distributed socio-economic hierarchy. On a smaller scale, the institution has the same type of relationship in that it exhibits an interdependence with the urban areas. Obviously the foremost dependence is for all types of commodities needed for continued operation: paper products, cleaning materials, tools of all descriptions, food-stuffs, and thousands more--items that are mundane in nature but that are essential to the operation of any institution.

Whenever construction on the campus is initiated the influx of materials reaches astounding proportions. Although ordering materials for construction is the responsibility of the construction company, the institution is the ultimate purchaser. As such, it provides a sizable market for different goods and associated services. Regardless of the size of operation, the institution cannot divorce itself from consumption of items available only beyond the campus.

Another important linkage is with the "labor pool." This area becomes more important as the institution increases in size, both in terms of enrollment and spatial extent. Clearly the "labor pool" must affect to a great degree the location of the institution. First of all, the type of curriculums an institution sponsors determines to a large extent the composition of the student body. A specialized curriculum such as engineering undoubtedly requires a much larger supporting tributary area from which to draw students. Regardless of the size of the urban area in which it is located, the institution may find it necessary to go even beyond state boundaries in order to attract a sizable student body. Even an institution with both liberal arts and non-liberal arts oriented studies may require a greater source of students than the immediate geographic area provides.

Recruitment of faculty and/or administrative personnel can hardly be confined to the immediate area. It must extend nationwide, especially if it is to meet the need of an institution that has a large graduate school enrollment.

Local areas also must have a sufficient supply of semi-skilled and skilled labor to fill the numerous positions necessary to the operations of a university. It is in this area that the linkages of the academic-urban communities can most readily be identified. The institution provides highly satisfactory job opportunities at all levels of skills. In turn, university personnel contribute to a community both socially and economically.

Finally the quality and quantity of circulation networks are important supports of all institutions. None can escape the web of utility supply and transport lines. Utilities that supply electricity, water, sewage, heat, and telephone service are in most cases external operations. Very few institutions show a complete self-sufficiency in this area where the question of adequacy is as important as availability.

The efficiency and availability of utilities and transport services are positively related to the producer-consumer gap, and to the sources of supply and demand of a commodity or service. Circulation networks become the base for spatial interaction. Once an efficient network has been achieved, the movement of goods, services, and people tends to break down discontinuities which otherwise may occur among peoples areally distributed in diverse regions. A productive circulation network enables the sharing of ideas, products, and services so each geographic segment is able to specialize in those activities for which it is best suited relative to its resources.

In summary, institutions of higher education represent a specialized segment within the total urban scene. The nature of the city; the identification, delineation, and density of functions; changes of morphology; and tributary areas have been studied intensively by urban geographers, sociologists, architects, city planners, and spatial economists. The resultant concepts can be adapted to institutions of higher education relative to their roles and positions within the urban area.

Studies made of numerous settlement patterns indicate that distinct arrangements occur among economic, social, and political institutions. Insight into specific reciprocal relationships between the elements of the urban areas reveal how function influences spatial interaction and accessibility.

Four major areas representing the linkages between the institutions and the urban area can be readily recognized. Studies adopting specific techniques can investigate these areas in order to more sharply delineate the interdependence and land-use of institutions of higher education.

Education represents a specialized function that has a strategic position in the social, economic, and cultural organization of our society. Mutual benefits can accrue if persons in

institutions of higher education think more of planning communities instead of just planning buildings. Construction of buildings creates a certain environment peculiar to the internal campus, but the campus as a whole has a far greater impact on that environment than is generally recognized or at least generally documented. Only by recognition and study of the subtle interaction of the academic-urban communities can higher education retain its orientation and identification in a rapidly changing urban environment. The bibliography which is the climax of this study presents an annotated review of the articles written on physical facilities for higher education.

The Bibliography

A primary purpose of this study was to find what subject areas were focused on by the authors. The delineation into 11 subject areas, although by necessity somewhat arbitrary, does represent quite well those ideas and concepts which must be taken into consideration in the planning, financing, and construction of the physical environment.

The following is a short description of the main ideas to be found in the entries under each area. Entries 1 through 289 are identified as substantive articles, and entries 290 through 763 are identified as non-substantive.

Administration (1-38). Before any long-range planning can take place the relationship of educational needs, administrative procedures, and institutional purposes must be thoroughly analyzed, formulated, and stated. Such statements are considered primary by many persons involved in higher education. Ability of administrators to state concisely and clearly what their institution is attempting promotes a framework within which the actual planning can take place. This area deals primarily with the relationship between the educational processes and the physical environment needed to help promote them.

Planning (39-80). The actual planning of physical facilities involves organization, procedural schemes, and participation. This section deals with these ideas either in relation to a single building, as a complex of buildings, and/or as a conceptual scheme. Both procedure and organization depend to a great extent on the type of participation in planning that is manifested. Thoughts about participation range from the one extreme at which the lone architect handles the total package, to the other extreme in which the architect enjoys the fullest participation in planning by students, faculty, and administrators. Various entries deal with this idea pro and con but it is generally agreed that planning which incorporates fullest participation is the best. Organization and procedure relating to planning appears

to correspond to the degree of participation involved. Overall, references in this area are concerned with various approaches to the planning process.

Education-Architectural Relations (81-106). The importance of a clear understanding between the architectural firm and the institution is dealt with in this section. A great deal of preliminary work leading to a set of architectural drawings is necessary for a finished product to be functional and conform to institutional needs. The architect must know precisely what the institution requires so that goals, budgetary considerations, and construction plans can be integrated into a meaningful whole. The relationship of this area with administration and planning is obvious. The importance of sophisticated planning and the manner by which it is conceived and carried out cannot be overemphasized. Even though institutional goals differ widely it is important that they are understood by the architect so that he can translate educational needs into functional facilities.

On the other hand it is also necessary that the institution understand the abilities and shortcomings of architecture. The administrator must be able to communicate to the architect educational theory regarding philosophy and practice. Thus the methods, practices, and techniques of both architecture and education need to be understood by both the education specialist and the architect.

Entries in this section are written by both educators and architects about the relationships of construction and curriculum so a cooperative endeavor toward planning can result.

Finance (107-145). Obviously, financing the construction of physical facilities is an area of utmost importance, as budgetary consideration is a major factor of the overall planning process. Analysis of where the monies come from and how much is available for capital improvements requires knowledge of the methods and avenues of sources of support.

There has been a tremendous amount of money expended for all types of physical facilities by institutions since 1950. Most of the physical expansion is a direct result of increased enrollments and the ability of institutions to meet this challenge has been met partially through federal sources. Not only construction of college housing but building for academic use also has benefited from federal monies.

The entries in this section are illustrative of how federal monies, either grants or loans, and other avenues of finance have enabled institutions to maintain a semblance of keeping the construction of physical facilities at a pace equal to enrollments. The Higher Education Facilities Act, the college housing program, and urban renewal laws receive attention with

interpretation and application of these laws that are sources of monies for construction. This section also deals with an indication of how much each geographic area is investing and which types of facilities are constructed.

State Legislation (146-158). A trend that has received much attention in recent years has been the increasing proportion of students attending state colleges and universities. In many cases educators found their institutions within state systems to be in need of more facilities as the result of crowded classrooms and inadequate residential space. Many states initiated studies to find a compromise that would meet these conditions and to develop a system to handle the large future enrollments that had been projected.

The entries in this section concentrate on the inception and development of various state plans. Organization, legislation, method of financing, and present status of these plans are examined. A number of articles present discussions of legal cases relating to institutional control and land-use.

Construction (159-205). An unprecedented amount of construction has taken place since 1950. In this subject area entries of an interpretive and statistical nature outline the extent and thrust of this construction. Especially interesting are statistical lists and graphs highlighting the geographic areas most involved in terms of construction types, costs and financing produced by the U.S. Office of Education and the editors of American School and University.

Expansion (206-224). The trend of increased construction on campuses in recent years and the planning of complete new campuses has resulted in divergent architectural types and styles that incorporate new educational theory and practice into functional facilities. This section illustrates planning schemes applicable to entire campuses or complexes of buildings. Most entries are concerned with describing and interpreting the total plan relative to overall land-use, techniques of construction, costs, and space allocation. Many of the articles are written by architects thus giving the reader an insight into the concern the architect has regarding the harmonious blending of buildings and landscape.

Utilization (225-255). Space allocation and utilization is an important part of the operational planning of the campus. Increasing enrollments emphasize the need for a more effective use of space already present. Many persons have suggested that better use of existing structures is the first step before facilities construction. Entries in this section discuss the methods and techniques of space utilization and allocation which include administration procedure, statistical space analysis, and planning practices. Space analysis has received a great deal of attention for many years but what the criteria should be for

projecting allotments of space for various functions is not agreed upon. Student-station, shape, size in terms of square feet of space--any one, all, or any combination of these factors may be used as criteria. Many entries indicate a great deal of study and present sophisticated data and ideas concerning planning and space use.

Parking (256-266). A growing awareness since 1950 of the importance of proper land-use has brought into focus the problem of parking. Although the number of entries in this section are few, the ramifications of increased traffic movement can no longer be disregarded. The literally hundreds of cars that move about the campus every day demand parking facilities; on larger campuses this involves the construction of multiple-level parking garages, a major undertaking. The entries in this section dwell on methods undertaken to finance and construct facilities for parking and, in many cases, point out the method of traffic control incorporated.

College-Community Relations (267-289). The impact that an institution of higher education may have on an urban community cannot be stressed enough. The area of interaction between the urban and academic communities is not as divorced from consideration of physical facilities as one may first surmise. Many administrators realize their institutions are surrounded or land-locked only when increasing enrollments require immediate expansion. This poses a problem that has economic and social ramifications for city government, the neighborhood involved, and the institution seeking the land. Moreover, most institutions are dependent on utility services--i.e., water, electricity, sewage, and other types of public services. Misunderstandings concerning these areas may develop if proper planning is not first considered. The authors in this section are stressing the urban and academic community interdependence and are calling for an overall planning scheme that will prove a compromise to meet the needs of both communities.

Building Description (290-763). The end result of the planning process is the variety of esthetically attractive and functional buildings which together gives a campus its character. Each building, whether it is for classrooms, administrative function, auxiliary services, or living quarters, conforms to the needs of the expected occupants. It explains the great amounts of time and energy required to determine function and location of a building in regard to its relationship to the rest of the campus elements.

Generally the articles in this section are descriptive in nature. The entries deal with dimensions, number of rooms, costs, and other salient features of an individual building. The articles described by each entry have pictures of the construction and/or finished product while entries 380-761 also have floor plans in various degrees of sophistication indicating

spatial arrangements of offices, classrooms, rest rooms, halls, etc. Although these entries are primarily descriptive, or non-substantive, many do include brief analyses of planning procedure, organization, and participation in the total planning process which preceded actual construction.

BIBLIOGRAPHY

A. ADMINISTRATION

1. Binning, Dennis W., "Survey Reveals Design Attitudes on Campus," College and University Business 42:62-63, February, 1967.

Two hundred and thirty-nine (95%) of 252 college and university administrators responded to a survey by College and University Business which inquired about interior design of college and university facilities. The article discusses three areas: responsibility for design, who assumes the responsibility and the percent of costs allotted to interior design for different types of buildings.

2. Bowen, Howard R., "How to Plan Around Things that Can't be Planned," College and University Business 35:31-33, July, 1963.

Bowen discusses the trends of certain factors that are difficult to incorporate objectively into the long-range planning of an institution. Planning in this article is not restricted to physical facilities but includes the total environment of the campus, intellectual and physical. A good overview is presented by Bowen relating to student fees, gifts, salaries, construction costs, and the planning process itself.

3. Browne, L. L., "Pattern of Organization of Physical Plant," College and University Business 17:23-26, August, 1954.

This article reports the findings of a questionnaire study concerning physical plant organization as requested by the Association of Physical Plant Administrators in 1952. The author discusses and analyzes the returns.

4. Brubaker, Charles W., "Relation of Learning to Space and Vice Versa," The Bulletin of the National Association of Secondary School Principals, Vol. 46, no. 274, May, 1962. Proceedings of 46th Annual Convention, St. Louis, 1962.

There is a reciprocal relationship between learning and space. Each influences the other to the extent that educators must be as aware of the nature of space as they are of the nature of learning. Brubaker focuses primarily on secondary schools but his remarks concerning the learning-space relationship are applicable to higher education. The author's remarks show a concern about how the design of spaces can permit maximum learning effectiveness.

5. Brumbaugh, A. J., and Sugg, Redding S., Jr., "Recent Developments in State and Regional Planning of Higher Education," Annals of the American Academy of Political and Social Science 301:32-40, September, 1955.

Educational cooperative planning at both the state and regional levels has increased in tempo chiefly since World War II. The authors identify or categorize four basic ideas: 1. a central board delegating functions to an executive, 2. a central board with an executive office with less power than no. 1, 3. a central board and executive but local

governing boards retained, and 4. a board and executive officer where both are restricted to certain areas such as finance. Selected states are used as examples to illustrate the scope, function, and structure of each example. Beyond state boundaries exists regional action with compacts like SREB (1949), WICHE (1953), and the New England Compact (1955). The regional compacts assure an inventory of resources and needs in a larger geographical area. The extent of state and regional planning has been fostered by increased enrollments and diversification of programs which make it difficult to maintain "quality and sensitivity of program."

6. Burns, R. E., "University of the Pacific: Cluster Colleges and Rising Expectations," CIA Journal 62:6-9, March, 1966.

An article about the concept of a number of independent colleges within the larger university. Burns concentrates on the educational aspect of a new curriculum innovation, its development and apparent success. Physical facilities needed to "house" these colleges are barely mentioned but the article remains as an example of how curriculum development would require special physical plant planning.

7. Butler, John H., "The Life and Work of a College Building Consultant," College and University Business 23:46-50, November, 1957.

Butler served as building coordinator at San Francisco State College beginning in 1948. He identifies the characteristics he feels are necessary for this type of job. The author also lists and discusses a number of items inherent in the positions of the deans who handle planning at the 10 state colleges in California. Finally, he lists fundamentals that are a must for successful planning.

8. Cameron, William B. and Wheeler, Raymond H., "Physical Setting and Intellectual Climate," School and Society 89:75-78, February 25, 1961.

Physical facilities ought to be functional so that intellectual activity is enhanced. The authors, from the point of view of sociologists, indicate how the use of space can and does complement the intellectual activity of a campus. Through theories about human behavior, both as individuals and in groups, it is not difficult to perceive how physical facilities properly planned can promote the interaction of people into meaningful contacts.

9. Caudill, William W., "Case of the Hipbone," Junior College Journal 36:20-23, September, 1965.

The author, as educator and planner, appraises the thrust of two-year institutions. Caudill urges administrators to redefine their conceptions of educational goals. Indirectly he relates new educational ideas to new architectural considerations.

10. _____, "What Makes a Campus More than its Buildings," College and University Business 37:55-63, October, 1964.

According to Caudill's philosophy on campus planning, there is more to educational environment than buildings. In order of importance Caudill places buildings fourth after students, professors, and educational programs.

In terms of his planning concepts, function, form, and costs are equal in a trilateral approach whether it is a single building or an entire campus. Function involves the educational needs, objectives, and programs, Form involves all considerations of site, space, and building types. Cost allows a balance of the first two elements. Caudill lists 14 points which emphasize planning flexibility, relationship of learning and planning, the impact of the physical environment on learning.

11. Close, Winston A., "Plan for Planning," College and University Business 40:41, June, 1966.

Close questions the planning organization of colleges and universities and their adequacy to project for the needs of the '80's. He makes a number of suggestions which are designed to strengthen planning organization and improve efficiency in physical plant planning.

12. Cole, E. E., "What Goes into the Making of a Physical Plant Administrator," College and University Business 20:43-45, May, 1956.

Cole reports the results of a survey sent to 160 directors of physical plants asking about duties, responsibilities, background, and experience.

13. Davis, H. H., "Building Needs and Priorities of a State University," in The American School and University, 1951-1952, pp. 133-138, edited by Walter D. Cocking, American School Publishing Company, New York, 1951.

A university has two characteristics, namely long life and constant change which indicate a real need for a long-term planning program. Davis feels that long-term planning can best be carried out by a council, appointed by the president, which can utilize all institutional information and thus define needs and formulate priorities to meet the needs. A council close to the president can provide both leadership and authority which it derives from the president's position. Furthermore, the president is in the best position to assess the needs and temperament in a state-wide appraisal. Davis also focuses on the tools and techniques available to this type of council.

14. Doi, James I., "Organization and Administration, Finance and Facilities," Review of Educational Research 35:347-360, October, 1965.

The purpose of this article is to review and to stress the salient points of research identified with college organization and administration. Three major parts are included in this article in which a selected group of works are presented for their ideas and trend development, e.g., organization, administration, and finance and facilities. An important part of this article is its extensive bibliography which includes a number of works closely related to the physical plant planning, structure, and finance.

15. Enarson, Harold L., "Cooperative Planning to Meet the Needs of Increased Enrollments," in 1956 Current Issues in Higher Education, pp. 316-321, edited by G. Kerry Smith, The Proceedings of the Eleventh Annual National Conference on Higher Education, Washington, 1956.

Based upon his premise that "higher education is aggressively, continuously, persistently competitive" the author makes a plea for interinstitutional cooperation in order to achieve mutual goals. Six areas are cited (research facilities, research programs, general expansion, professional programs, professional training, library programs) in which some cooperation has already been achieved by certain interstate compacts. The author stresses that the major block to effective cooperation is that each institution feels "it is their bounden duty to teach whatever is taught." Enarson concludes by stating that cooperation would be enhanced by a change in the climate of opinion and the availability of interstate compacts to act as a vehicle of cooperation. Moreover, interinstitutional cooperation at this time (1956), though a radical idea, is necessary for effectiveness in higher education. Cooperation between institutions cannot only promote a reduction of duplication of facilities and programs but also can increase the effectiveness of scarce faculty. Cooperation of this nature is contrary to past traditions and only vigorous leadership can change these traditional attitudes.

16. Friedmann, Arnold, "Well-Designed Environment Can Pay for Itself," College and University Business 42:56-58, February, 1967.

The importance of the environment to the learning process from the viewpoint of interior design is the focus of this article. Friedmann states that human performance is related to the environment and that aesthetic design should not be considered secondary to costs. There is a dual responsibility in planning to provide the learning environment and to make it as efficient as possible. A proper selection of interior materials can help accomplish both aims within the framework of economy.

17. Hickman, Warren L., "Campus Construction for Academic Survival; the Importance of the Curriculum in the College Building Program," Journal of Higher Education 36:322-330, June, 1965.

Hickman's thesis is simple but extremely pertinent, relevant, and to the point. He says that any new construction should be geared to the curriculum as foreseen for the 1970's. With new and dynamic changes in educational theories and practice any construction built around today's (1965) curriculum is pointless. Tax-supported institutions are not as threatened as are private schools whose construction must last at least 25 years. Thus, buildings constructed with today's methods, practices, and techniques are out-of-style before they are off the architect's board. Hickman strongly recommends long-range planning with advice from the faculty but intimately related to curriculum change. He concludes by stating that the small private institution has its survival at stake if the proper long-range planning relating construction and curriculum is not undertaken.

18. _____, "Population Pressures and Academic Integrity," Journal of Higher Education 38:269-277, May, 1967.

Hickman assesses the impact of the population explosion on institutions of higher education. Assuming that 10,000,000 students will be enrolled by 1975, a figure which would represent 70% of the 18-22 age group, the author lists a number of points that the increased enrollment will not do. He suggests that the "boom" will not fill buildings, or pay bills, nor will it insure new construction on the marginal campuses.

Effects that the enrollment will have on institutions are also listed. The thesis of the author lends a different perspective to information that is usually of an optimistic nature. Its inclusion here represents an attempt to indicate that the factor of construction to facilitate increased enrollments is not always the proper response to increased finance difficulties.

19. Horn, Francis H., "Meeting Higher Education's Physical Plant Needs," American School and University 39:40-41, February, 1967.

Horn states that by 1980 there will be 12,000,000 full and part-time students attending institutions of higher education. Furthermore since increased space needs can be only partially overcome by better utilization of present facilities a critical problem of construction is already upon us. The author focuses on a number of changes which need to be reflected in new plant facilities. These changes include the rapid development in higher education, changes from faculty availability and attitudes, and educational flexibility.

20. Johnson, B. L., "Obstacles to Planning in Higher Education," Higher Education 12:134-135, April, 1956.

The author, after assessing 50 institutions in 20 states, highlights some obstacles to planning in higher education. The article rests on the assumption (1956) that not only would enrollment double and an increasing percentage of high school graduates seek some higher education, but it also states that many institutions at that time did not recognize the trend or refused to plan ahead. Thus, the first obstacle was simply a refusal to perceive the necessity of planning. Another major obstacle (1956) was the failure to recognize that planning requires much thought, facts, and money, any many people interviewed felt that planning is quite easy to accomplish. Others, even though recognizing that planning is difficult, felt too occupied with present elementary and secondary competition or rivalry when cooperation was needed, and presented a major obstacle to planning.

21. Kettler, Raymond, "How Valuable are Management Consultants in Helping Improve Our Methods?" College and University Business 17:19-22, August, 1954.

This article is directed toward the overall management of an institution and the necessity of consultants. Based on the premise that management is now exceedingly complex, and will become more so, the author explores three approaches to effective management: self-surveys, self-studies with outside help, and a study conducted entirely by outside help. Although not directly concerned with facility planning and construction, it presents alternatives that may have a direct impact on facility planning.

22. Kretschmer, Vernon, "Family Housing Facilities," College and University Business 22:36-38, May, 1957.

In response to a questionnaire sent to 12 midwestern universities certain opinions were derived revealing the attitude of administrators toward providing housing for married faculty, staff, undergraduate and graduate students. The responses provide information on administrators' views on institutional policy, extent, type, and financing of housing facilities for college and university personnel with families.

23. Kuhlman, Richard N., "The Philosophy Behind Campus Planning," College and University Business 12:30-31, February, 1952.

The author indicates the importance of the relationship between the teaching process and the physical environment within which this process takes place. Kuhlman focuses on the necessity of setting up a campus development committee in order to foster continuous planning of the physical plant. Increasing enrollments, monetary problems, and new scientific developments are cited as major factors that have created a need for continuous planning.

24. McHenry, Dean E., "Environmental Implication of the Concern for Community," Liberal Education 53:41-47, March, 1967.

The concept of "community" generally implies a sense of belonging and a sharing of values by a number of individuals. On the basis of this definition McHenry discusses the importance of spatial arrangement of the physical environment as it relates to the process of learning so that a sense of belonging may be achieved. The author focuses on the areas of building heights, student unions, libraries, departmental facilities, and landscaping and how their spatial arrangement and internal allocation of space will or will not develop a sense of community or individuals bound together in meaningful intellectual contacts.

25. _____, "Small College Program for a Large University," College and University Business 37:31-33, July, 1964.

The relationship of educational thought and physical environment is reflected in this article as McHenry reviews his approach to planning a new campus. The author indicates how ideas in literature and visits to other campuses influenced his thinking as the new campus at Santa Cruz was being developed.

26. Neutra, Richard J., "Shapes on a Campus are not Extracurricular," in 1957 Current Issues in Higher Education, pp. 24-30, edited by G. Kerry Smith, The Proceedings of the Twelfth Annual National Conference on Higher Education, Washington, 1957.

"Shapes of a campus, shapes on a campus, are not extracurricular." This statement is the basic theme of the author as he illustrates that the campus environment is more than the interchange and interaction of scholarly ideas and wisdom. The buildings on a campus should not be evaluated just in terms of dollars and cents but as part of the total environment that will and does have an effect on all concerned. The clients of an architect (student, faculty) are, in a sense, inhabitants of a particular environment which must be tolerable in order that subtle irritations do not pile up over time. The author senses that society's increasing preoccupation with cumulative quantification must not undermine the esthetic realism of the campus environment. The underlying philosophical approach of this architect seems accurate. The total environment of a campus in terms of buildings cannot and should not be dictated by dollars and cents and space requirement alone. Regardless of the extent to which there is overt perception of an environment by an individual, there is always the covert which if irritable to the individual can be insufferable. Surely circumstances do not permit colleges and universities to apply this approach wholeheartedly but nevertheless the esthetics of facility planning cannot be overlooked.

27. Neville, H. R., "How to Live With Bigness," Phi Delta Kappan 47:430-432, April, 1966.

The increase in student enrollment at institutions of higher education since World War II also prompts an increased questioning about "bigness." Neville focuses on the controlled decentralization of graduate and undergraduate programs at Michigan State University into "living-learning units." In a short article, the author discusses briefly the rationale of this plan and the physical setting of buildings and the educational programs they house.

28. Pereira, William L., "College Planning Today," College and University Business 19:38-39, August, 1955.

Pereira maintains that the college graduate is our most important national product. This requires the campus to be more than mere buildings; it needs to complement the learning process. The purpose of this article is to analyze the function of the campus environment and what should be done in a campus plan in order to ensure a proper environment for educational processes.

29. Prueter, Kenneth F., "Thoughts on Educational Needs Related to the Physical Environment," Canadian Education and Research Digest 3:289-303, December, 1963.

Although the article pertains to the secondary school, the concepts and issues presented can stimulate thinking at the college and university level about the environment of the physical plant and educational needs. Prueter discusses the type of facility needed in terms of changing educational specifications, from the viewpoint of the teacher, and in terms of learning theory. Principles of space relationships are cited from Educational Facilities Laboratories studies (EFL is a non-profit corporation established by the Ford Foundation).

30. Shaffer, Robert H., and Ferber, D. A., "Residential College Concept: Campus Organizational Patterns for Quality with Quantity," Bulletin of the School of Education, vol. 41, no. 3, Indiana University, Bloomington, Indiana, May, 1965, 34 pp.

The authors feel quite strongly that college residences should be considerably more than just places to eat and sleep. Student housing should be viewed as an integral part of the educational process. The study represents an effort to assess certain institutions that are presently changing their residential housing programs and to probe theory and practice in the integration of housing and academics. Different aspects of residential housing including history, theory, and the residential college concept are discussed in terms of the programs of various institutions. Although the authors do not discuss physical facilities, they do delimit the relationships between physical facilities, educational needs, and educational objectives.

31. Spiro, Robert H., "Toward a True Master Plan," College and University Business 42:47, February, 1967.

Spiro's purpose is to specify five suggestions that would provide a better working relationship between the campus and the public. These suggestions include a strong plea for each state to have a comprehensive

master plan, a strong undergraduate scholarship program, a graduate scholarship program for perspective teachers, state aid on a contractual basis, and public funds for physical plant construction.

32. Strozier, Robert M., "Educational Planning of Student Housing," in The American School and University, 1951-1952, pp. 135-138, edited by Walter D. Cocking, American School Publishing Company, New York, 1951.

This article illustrates the relationship between the intellectual environment and physical environment. The author stresses that residence halls need to be planned on an educational basis rather than on material need. This article promotes an understanding of the type of environment necessary in residence halls which will be conducive to satisfying daily experiences for students in residence.

33. Tonigan, Richard F., "The Meaning of Plant Management," American School and University 37:45, November, 1964.

In past years the increasing growth in monetary value of college facilities and the increasing awareness of the relationship between facilities geared to educational needs has fostered the role of the plant manager. Tonigan begins a series of articles designed to bring information and guidance to administrators charged with managing the complex campus. Tonigan divides the components of plant management into five areas of control, one of which is "planning, financing, and constructing ... facilities." This area is one of the most important and should not be left to architects and constructors alone to make design decisions and judgments.

34. "Tri-Partite Conference on Facilities for Higher Education," American School and University 38:47, October, 1965.

A short article that discusses the high points of speeches given at the first National Conference on Higher Education Facilities (Summer, 1965).

35. Wagner, William G., "The Campus Plan: Projected Development of a 'Pretty Picture'," College and University Business 26:31-34, February, 1959.

Wagner, using Ivy College as an example, shows how external factors may drastically affect a long-range plan and what professional help may be needed in an effort to overcome the ensuing problems. Suggestions about professional consultants and formulation of educational policy are examined as solutions to time-eroded plans beset with problems.

36. "What To Probe Before You Build," College and University Business 40:43-47, January, 1966.

This article reports the highlights of a seminar on planning for college and university facilities held in Chicago. Areas of discussion and main points indicated were educational philosophy, analysis of staff and student needs, physical master plan, facilities needed, construction, and financing

37. Wise, W. Max, "Residence Halls and Higher Learning." The Personnel and Guidance Journal 36:398-401, February, 1958.

The main purpose of student residences is, of course, to provide shelter for non-commuting students, plus the added attributes of residences such as study rooms, dining facilities, social lounges, libraries, etc. According to Wise there are three emphases which can be detected, e.g., the managerial attitude, the psychological attitude, and the social education attitude. Although not directly concerned with construction or planning of residences the author does frame a philosophy about what residences are striving to accomplish.

38. Williamson, E. G., "Students Residences: Shelter or Education?" The Personnel and Guidance Journal 36:392-398, February, 1958.

If one considers that student residences must help students achieve educational objectives then it follows that these student residences must be functional. Williamson concentrates briefly on the history of how student residences have been used and then discusses his viewpoints on today's "student life center." Although Williamson does not discuss the construction of facilities directly, his article does represent the type of dialogue needed before formal planning of facilities can begin. The author presents an abstract framework of an intellectual environment which a properly planned facility could help achieve.

B. PLANNING

39. Alexander, Robert E., "A Tip on a Sure Winner at 100 to 1 Odds," College and University Business 28:72-74, May, 1960.

Alexander feels that master planning involves three phases: educational, time-spatial, and physical. He maintains that proper allocation and use of space must occur before the third phase takes place. He contends that before a physical plant planner can be justified, a higher utilization rate of existing space is needed.

40. Auburn, Norman P., "Modus Operandi for Campus Planning," College and University Business 10:42, January, 1951.

Auburn discusses the organization procedure followed by the University of Cincinnati for facility construction. The board of trustees appointed a standing committee charged with long-range planning responsibility. This committee works closely with academic departments, architects, and construction firms during planning and construction of facilities.

41. Ayers, Iram, "Planning College Home Economics Facilities," in The American School and University, 1957-1958, pp. 125-130, edited by Walter D. Cocking, American School Publishing Company, New York, 1957.

The author's purpose is to focus on the procedures involved in planning facilities and the importance of faculty, student and administration participation. It is again firmly stated that educational needs and clearly outlined policies are preliminary to all planning. Dr. Ayers considers the development of plans, working relationships, and evaluation. Finally, recommendations applicable to anyone involved in planning are offered. They include educational program objectives, enrollment trends, participation, timing, understanding of architects techniques, and legalities.

42. Bartram, John W., "Long-Range Planning at Utopia U.," College and University Business 24:25, June, 1958.

By using a technique known as Utopia U., the author indicates the optimum conditions in planning and the financing of facilities. Bartram outlines the questions that must be answered before planning begins and how planning procedures can be carried out.

43. Bennett, Wells, and Blocker, Clyde E., "Site Planning for Community College and Cultural Center," College and University Business 27:38-42, December, 1959.

The authors set forth the procedural steps taken to formulate and develop a plan for a cultural center at Flint Junior College.

44. Brewster, Sam F., "How To Prepare a Written Program for Architects," College and University Business 31:27-30, November, 1961.

Brewster concentrates on three steps administrators will find useful in preparing data for architects. Brewster also presents a sample report for married housing developed at B.Y.U. as an example of his thesis.

45. _____, "Many Obstacles Overcome with a Campus Master Plan," College and University Business 10:41, March, 1951.

The desirability of a long-range, flexible plan is discussed in this article. The author points out the disadvantages of a master plan but concentrates on the advantages which he feels outweigh the disadvantages.

46. Brotherton, F. Philip, and Brubaker, Charles W., "Analyzing Master Plan Influences," Junior College Journal 37:22-27, April, 1967.

The master plan of any campus is unique because of distinctive educational needs and distinctive site of that campus. Planning must begin with a complete analysis of conditions, resources, and needs but there are influences of various dimensions that affect the plan. The authors focus on these influences (educational program, scheduling, growth, finance, technology, geography, neighborhood, etc.) and offer suggestions on how design can either overcome problem influences or incorporate these factors when it is desirable to do so.

47. Bruning, Walter F., "How To Design Campus for Lower Maintenance Costs," College and University Business 38:79-81, April, 1965.

Bruning maintains that the "whole" campus must be planned, not just buildings. All space arrangement must evolve from a master plan. The author also discusses briefly the type of materials to use in the space between buildings for both esthetic value and lower maintenance costs.

48. Bullock, Thomas A., and Paseur, Herbert, "Zoned Approach for College Master Plans," in The American School and University, 1958-1959, pp. 391-398, edited by Walter D. Cocking, American School Publishing Company, New York, 1958.

The development of a new campus must proceed in an orderly manner so that functions do not overlap or become antagonistic because of bad relative locations. The authors present a "zoned approach" to campus development by discussing their concept as used for Central Christian College at Oklahoma City, Oklahoma. Basically they propose zoning for academic, recreation, and housing functions in a manner which would allow unhindered expansion in the future.

49. Bunker, James G., "Small Community College Building Requirements," in The American School and University, 1958-1959, pp. 79-86, edited by Walter D. Cocking, American School Publishing Company, New York, 1958.

Discussion in this article focuses on the educational needs of the Coalinga Junior College, Coalinga, California and the resultant master plan. Steps in consideration of the master plan included a determination of future enrollments, the programs to be offered, physical facilities needed, order of construction, timing, and financing. Each of these factors are discussed. The article also outlines costs and priorities, has a campus development map, and photos of existing buildings.

50. Butler, John H., "College Planning," College and University Business 28:23-25, January, 1960.

Butler insists that well-defined planning is perhaps too late for too many institutions. Assessing college planning as a triangle involving the master planner, the architect, and the educational planner, the author pinpoints what steps each must take to make effective planning operational.

51. Cocking, Walter D., "Educational Planning of College Plants," in The American School and University, 1957-1958, pp. 111-120, edited by Walter D. Cocking, American School Publishing Company, New York, 1957.

This article is an introduction to the purposes and policies of sound planning for physical facilities. For institutions of higher education to remain viable and dynamic, there is a need for careful consideration of the future in terms of enrollments, program diversification, and obsolescence. Cocking says that proper educational planning is a necessity for higher education. It enables an institution to retain its identity in accordance with its goals. Planning begins with the college administrator who provides leadership in identifying problems, gathering and interpreting information problems, and initiating effective action to reduce the problems. Cocking assesses these factors of planning leadership. He deals also with the importance of indicating the nature of the contributions of faculty and architects to the processes of planning. Finally, Cocking draws attention to various colleges and universities which already have effective cooperative planning underway. This article clearly shows that the actual construction of a building is the result of a long, tedious, objective planning process involving numerous people.

52. Cornell, Francis H., and Lyles, William G., "A Small College Plans Long-Range Expansion," in The American School and University, 1958-1959, pp. 91-96, edited by Walter D. Cocking, American School Publishing Company, New York, 1958.

The problems encountered in master planning for the future are treated in this article about Erskine College, Due West, South Carolina. It emphasized the factors that must be considered before buildings are constructed. The authors focus on the elements related to future needs and how they were compromised before the building program could actually be completed. This article reinforces the desirability of preliminary data from self-analysis about programs, enrollments, past and present policy, in order to focus on the future.

53. Crane, William J., "Practices and Problems in Residence Hall Planning," The Personnel and Guidance Journal 40:448-452, January, 1962.

The purpose of this article is to report the results of a questionnaire sent to 43 institutions of 2,000 to 8,000 students. The 39 respondents provided information on factors of population, land usage, and financing of residential facilities. Discussion involves location, parking, food service, recreation areas, types of rooms, and equipment. The author's summary contains 11 characteristics of a residential unit on a moderate-size campus.

54. Crenshaw, Mary C., and Crenshaw, Joseph W., "Notes to an Architect," College and University Business 14:34-35, March, 1953.

The authors indicate what features are desirable in a residence hall for 100 students. They indicate, from their own experience, that planning of a residence hall necessitates considerable time, effort, and thinking.

55. Davis, H. H., and Moeller, L. G., "Promising Practices in the Educational Planning of New College Buildings," in The American School and University, 1955-1956, pp. 319-326, edited by Walter D. Cocking, American School Publishing Company, New York, 1955.

The authors assert that faculty should participate in planning new physical facilities. According to the authors, the changes that occur in society influence programs of institutions and thus necessitate the modification of existing buildings or construction of new facilities. They show how a new Communications Center at the State University of Iowa involved faculty participation in planning. The first step involved a council of faculty representatives appointed by the president to develop a statement of philosophy relating to journalism, radio, and television and their relation to other university areas. Only after this was done could detailed plans for building become meaningful. The article discusses rigid and controllable factors in construction that the faculty participants had to relate with their needs. These factors are identified and explained by the authors to illustrate the scope of planning needed for a satisfactory building.

56. Freed, Melvyn H., "Why Your College Should Study Itself--And How To Go About It," College and University Business 36:39-40, June, 1964.

The rationale for organization of and techniques used by Institutional Research (I.R.) is the focus of this article. According to Freed, I.R.'s increased demand is based on the phenomenal growth by educational institutions and their need to maintain efficiency through constant introspection.

57. Gallistel, A. F., "Campus Planning by the Committee Method," College and University Business 17:35-36, July, 1954.

This article explains the planning organization at the University of Wisconsin. This type of campus planning is headed by a commission composed of administrators, faculty, alumni, and board of control members, plus a master plan and steering committee. Each building project has a special committee appointed by the president to handle detailed plans. The author also indicates the planning procedure within this organization.

58. _____, "Steps In Developing a Good Campus Plan," College and University Business 11:25-28, December, 1951.

Gallistel examines three major steps involved in providing a major campus scheme. Factors relating to a general plan, architectural design, and landscaping are evaluated in an effort to pinpoint the salient features of campus planning.

59. Hart, F. W., "Needed Research in College and University Plant Use and Plant Planning," in The American School and University, 1951-1952, edited by Walter D. Cocking, American School Publishing Company, New York, 1951.

This article discusses physical plant use and plant planning. The author maintains that there is practically none or very little in the way of criteria that administrators may use as guidelines for physical facility planning (1951). The author stresses the need to use facts and figures for planning--five years to gather, five years to plan, five years to construct--which if used right would provide sufficient facilities for projected enrollments. The author points up a number of obstacles to effective plant utilization. The first is lack of correlation in class size and classroom capacity--this creates wastage in capital outlay and expensive maintenance. Other obstacles include "the lost weekend, the dying day, the dog-in-the-manger department, and the possessive professor." Hart concludes by stating that the latter four points can be controlled easily by the administrator and optimum plant utilization can be achieved if facts and figures help in formulating effective criteria and guidelines.

60. Hatch, Don, "Student Unions: An Architect's Viewpoint," The American School and University 38:30-31, September, 1965.

Hatch stresses that students, faculty, the union director, and the architect must work together in designing a union. The author feels that a union building must have a "perspective in depth"; an integration of social, cultural, and recreational needs expressed by the physical facility. This article points out the necessity of good planning to organize space into a meaningful structure.

61. Hathaway, Dale E., "Include the Faculty," College and University Business 30:51-54, May, 1961.

This article presents a rationale for the inclusion of faculty in planning physical facilities. The author investigates how the faculty may help, the importance of personnel selection, and methods of selection of faculty in the planning process.

62. Higgins, D. P., "College and University Library Buildings," in The American School and University, 1950-1951, pp. 127-140, edited by Walter D. Cocking, American School Publishing Company, New York, 1950.

Higgins provides a brief background leading to new thoughts, which began to stir in 1950 in the interior design of space allocation. He focuses on numerous library study committees and their reports in outlining basic library objectives and purposes. Higgins then examines planning obstacles or variations that are frequently encountered. Finally, Higgins describes a number of new college libraries (floor plans accompany each description). The article is well-documented for further research. It is a comprehensive article of depth illustrating the concept that educational policies must be known before architectural plans can be formulated and a building constructed.

63. Jamrich, John X., "Use and Planning of Instructional Facilities in Small Colleges," North Central Association Quarterly 35:239-244, January, 1961.

This article represents a summary of a study conducted by the Center for the Study of Higher Education at Michigan State University among colleges of less than 3,000 enrollment in the North Central Association

Area. The importance of careful, systematic planning in order to provide for facility need is the main focus of the article. The first part condenses data from the main study about buildings, extent and utilization of facilities, and construction. The second part discusses factors of enrollment, instructional program, finances, and space in an approach to facility planning.

64. Masters, Warner K., "How One College Develops a Master Plan," College and University Business 34:66-67, February, 1963.

This article focuses on the organizational scheme and procedures used at San Fernando Valley State College to develop a master plan subject to adoption by the state. Masters indicates how both administrators and faculty participated and the degree of responsibility exerted by both.

65. Neutra, Richard J., and Alexander, Robert E., "Re: Planning a Campus," College and University Business 26:33-38, January, 1959.

The authors present a summary of considerations necessary in compiling plans for long-range construction. These considerations include educational goals, space analysis, site analysis, plan development, and the program of construction.

66. Page, J. K., "Academic Goals and University Buildings," Universities Quarterly 18:301-308, June, 1964.

This author divides the planning process into a process of design and a process of construction to isolate and solve the problems created by the obstacles involved. Page pinpoints those areas that tend to hinder planning and suggests ways to compromise these obstacles.

67. Partridge, Bruce J., "Campus Master Plans Must Consider Enrollment, Curriculum, and Facilities," College and University Business 30:48-50, May, 1961.

Partridge outlines in detail certain areas of educational thought and physical environment that must be analyzed before construction takes place. The author strongly suggests that enrollment projections be made for each department, a complete survey of space be completed, sites located, and decisions made before a master plan is accepted. Only then should the proper personnel be selected for formulation of a master plan.

68. Peterson, Carl M. F., "Putting First Things First in a Construction Program," College and University Business 18:23-25, April, 1955.

In a short but meaningful article the author analyzes the content of a written building program. Peterson outlines the essential points and poses in question form specific information which should be included in the written program.

69. Pieper, Frank, "You'll Be Wise to Consider a Planning Office," College and University Business 9:19-22, October, 1950.

Pieper is focusing on the need for a broad, inclusive institutional planning scheme. As a continuing administrative necessity planning for the future should begin with the president, include organizational

machinery, and a permanent council system. Each of these areas is examined by the author and coordinated in an effort to illustrate how effective use of a planning office can help solve organizational and operational problems.

70. Prator, Ralph, "The Faculty Planned This College," College and University Business 17:40-42, August, 1954.

This article outlines the procedure used in the construction of a new college campus and the role of the faculty in the planning project.

71. Pryce, Edward L., "Future Campus Planning," College and University Business 17:37-40, July, 1954.

Pryce maintains that chaos on college campuses results from higher enrollments, outmoded buildings, traffic congestion, and lack of space. He maintains careful future planning is a necessity to eliminate these conditions. Viewing the institution as a "dynamic organism", Pryce presents a number of principles on which a general plan could be based to control the above problems. Essentially the principles embrace the areas of the academic-urban relationship, land-use, circulation, flexibility, housing, and site development. Schematic drawings show the relationships among campus elements.

72. Reed, Bob H., "People, Processes, and Time = Facilities," Junior College Journal 37:20-25, November, 1966.

The planning of new facilities is a cooperative venture of college personnel, architects, and construction people. The focus of this article is to place these elements of the planning process in proper perspective regarding processes, time, and people. The author discusses an educational team made up of administrators and faculty, and a design team consisting of campus planners, architects, and engineers. He examines their role in the processes of site selection, campus planning, and architecture. A chart indicates how the responsibility is shared and is a guide for action. Selected references are included for further study.

73. Smay, Joe E., "Substantial Savings Can Be Made in Building Planning," College and University Business 13:42-43, August, 1952.

This article concentrates on expensive construction due to poor planning, poor specifications, poor construction supervision, and poor material selection. Solutions are examined in light of the need for good cooperation between all decision-making personnel; good long-range, flexible planning; and a genuine effort toward economy in facility planning and construction.

74. Snow, Samuel P., "An Approach to Campus Planning," College and University Business 17:27-29, September, 1954.

Snow outlines the nature of the planning process, its ramifications within the institution and the community, the people that should be involved, and organizational procedures. The article presents a general picture of the total planning scheme.

75. Thompson, E. Earl, "Designing Rooms for Study and Sleep," College and University Business 16:38-40, January, 1954.

At the time this article was published the author indicated that the financing of housing facilities was a costly venture. This was due to increasing enrollments which required instant construction, plus a market not lucrative enough to attract large sums of money from private investors. To overcome this problem the author suggests four basic plans to meet the needs of the institution and the student at a minimum cost. Thompson also presents three alternatives in space arrangement.

76. Tonigan, Richard F., "New Plant Programs ad infinitum," American School and University 39:67-68, September, 1966.

Tonigan is emphatic that need persists at all levels of education for more physical facilities. He cites statistics to back his statements about the shortage of classroom space, living space, and specialized space. At this time not only student enrollments but curriculum expansion and new classroom techniques require new facilities. Thus, educators and trustees must devote more time to the planning process. Information on planning research is listed.

77. _____, "Organizing a Plant Planning Program," American School and University 38:39-40, July, 1966.

The construction of a functional, efficient building demands careful planning. Tonigan conveys a number of steps preliminary to construction that are necessary to achieve a desirable building. Steps to good planning include: picking competent planning administrators, review of programs, program relation to physical plant, educational specifications, architects schematics, and finally the drafting of the final plans.

78. Trimble, C. J., "Maintenance Program Starts at Drawing Board," College and University Business 38:81-84, March, 1965.

The author maintains that by analyzing the architects' plans the maintenance supervisor can cut later costs. Trimble first discusses the main points of programmed maintenance indicating that 50 percent of a building's operating cost is maintenance and 90 percent of that is labor costs. Trimble then outlines the areas where recommendations may be made in the plans. Thirdly, he shows how architectural plans can be used to prepare maintenance budgets and to plan purchases.

79. Warnecke, John Carl, "Master Planning a Seminary Campus," in The American School and University, 1958-1959, pp. 319-326, edited by Walter D. Cocking, American School Publishing Company, New York, 1958.

A completely new college campus offers a welcome but difficult task to the planner. Warnecke discusses such a situation in describing the factors involved in planning a 125 acre campus for the Golden Gate Baptist Theological Seminary located on the north shore of San Francisco Bay. Factors involved are within the framework of a county master plan and include population growth, transportation, utilities, site development, architectural procedure, and general educational program requirements.

80. Williams, Philip C., "Communications in Campus Planning," American School and University 38:15-18, March, 1964.

Williams says that in order to develop a campus logically the four points of program, design, cost, and time must balance. Since campus planning integrates educational goals, physical plant, and fiscal planning it has to be an organized, cooperative venture of educators, students, architects, and faculty. Williams explores these four ideas in depth and also explores some concepts of campus design used in past plans by his firm.

C. EDUCATIONAL-ARCHITECTURAL RELATIONS

- 81. Aldrich, Nelson W., "The Architect's Role in Development," College and University Business 31:40-42, November, 1961.

Aldrich examines the role of the architect in the planning process and the development program. Three elements of long-range planning as conceived by the architect are expanded and examined.

- 82. Berry, Chester A., "Architect and Client are Long and Closely Associated," College and University Business 31:35-37, September, 1956.

During a long construction program it is reasonable to assume a long, close relationship between architect and client. The author examines this relationship by first exploring the American Institute of Architects' Agreement, stating the obligations of each party, and pointing out how proper communication can enhance the relationship.

- 83. Bennett, Richard M., "Style, Not Styles for College and University Buildings," College and University Business 8:29-32, May, 1950.

The point of view of an architect toward style as an expression of new materials, art, and design is the focus of this article. The construction of college buildings must be more than esthetic; it must also be functional and incorporate design that is prepared to complement the intellectual environment.

- 84. Boyd, Anson, "Prepare to Master-Plan," in 1960 Current Issues in Higher Education, pp. 200-206, edited by G. Kerry Smith, The Proceedings of the Fifteenth Annual National Conference on Higher Education, Association for Higher Education, Washington, 1960.

The architect can give a good plan, but he can give a much better one if certain concepts are first clarified. The author strongly suggests that if a master plan for a future campus is to be effective three things must be inherent in that plan. College policy clearly stated and understood is the first and main ingredient to be considered. Decisions at this point must be made relative to the financial plan and also the "blueprint plan." These elements are most important in providing a "concrete campus." Boyd says that the architect's plan, the realized end, must be derived from the desired product explicitly stated by college policy decisions relating to educational values. The administrative policy must solve all the questions relating to the balance of time, money, and quality which is vital for the architect in order to transform "program(s) of purposes...into facilities."

- 85. Brubaker, Charles Williams, "Cooperative Planning for New Campus Facilities by Educator Architect," in 1964 Current Issues in Higher Education, pp. 220-224, edited by G. Kerry Smith, The Proceedings of the Nineteenth Annual National Conference on Higher Education, Association for Higher Education, Washington, 1964.

Brubaker's approach to the integration of educational needs and architectural functionalism acknowledges that the student is influenced by both intellectual climate and physical environment. Architecture can not only influence the manifest character of an institution but "the created environment will shape every individual." The changing nature and function of higher education has a definite causal relationship to architecture. Increased college population, new thoughts about teaching and learning space, and physical expansion demand a flexibility in design which has replaced the older, more rigid environment. The author is generally concerned about the relationship between architecture of campus buildings and the intellectual climate. Brubaker identified a number of areas in which new and imaginative ideas can become functional. Increased enrollment, new educational techniques, and expansion of institutional ties with the community requires a break with old, formal, and rigid architectural types. The author indicates his awareness of the necessity to relate space arrangements and patterns to the purposes and objectives of education.

86. Bush-Brown, Albert, "Cram and Gropius: Traditionalism and Progressivism," New England Quarterly 25:3-22, March, 1952.

This well-documented article explores the philosophical and psychological relationship between education and architecture. Ralph A. Cram introduced the Tudor Gothic at Princeton in 1913 and Walter Gropius introduced the International style at Harvard in 1950. The author explores their philosophies and backgrounds in order to understand their approach to their culture and resultant decisions concerning the physical environment.

87. Coston, Truett, "How To Improve the Relationship Between Architect and Client," College and University Business 12:27-29, April, 1952.

The choice of an architectural firm by an institution should follow a well-developed procedure to reduce future misunderstandings after a contract is in force. To make the architect-client relationship more harmonious, Coston stresses the contract, preliminary architectural studies, and the institutional requirement program.

88. Davis, Gerald, "Building Programmers Act as Translators," College and University Business 41:84-86, October, 1966.

Davis contends that a lack of communication exists between the college administrator and the architect. To bridge this gap the author suggests a building programmer, a management consultant who translates educational objectives into architectural language. To understand how ideas can be transformed into action, the author analyzes the programmer's functions.

89. Day, H. Summerfield, "What a University Architect Does Before, While, and After You Build," College and University Business 34:73-74, March, 1963.

A college architect is both a professional architect and a college administrator. He becomes an important part of a continuing campus plan which includes both the pre-planning and post-maintenance stages. The author emphasizes the functions and responsibilities of the college architect and suggests the role the architect plays in immediate and long-range planning, construction, and maintenance.

90. "Effective Architect Probes Before He Pencils," College and University Business 41:44-46, November, 1966.

This article discusses the approach and techniques used by an architect. Charles E. Stade, an architect who has designed more than 70 college buildings, responds to questions posed by an interviewer. Stade emphasizes the importance of clearly stated institutional goals and of communication between administrators and architects.

91. Haro, John, "Flexibility: Can It Stave Off Building Obsolescence?" College and University Business 42:51-53, June, 1967.

"A flexible plan is one obvious way to avoid obsolescence." It is difficult to plan a building that would continue to be functionally useful during its anticipated life because of problems created by the recent attitudes of dynamic technological advances and steadily increasing enrollments. Changes in methods of instruction, especially those concerned with audio-visual equipment, have created a dilemma in design for architects. The author considers this problem of laboratory and libraries in terms of fulfilling both functional and educational objectives over a period of time. He advocates four ways to achieve needed flexibility: expandability, change in relative demand, provision of services, and convertibility.

92. Keene, Philip E., "Modern vs. Traditional in College Design," College and University Business 8:19-21, March, 1950.

The construction of buildings on a modern campus should reflect today's needs, rather than an older period. The author stresses the development of purposeful design in the new college building. Today the architect with new materials, which suggest new forms and exterior designs, can plan for functionality and purpose and yet achieve harmony with older Gothic type structures.

93. Klager, Benjamin, "How to Select an Architect," College and University Business 24:29-31, January, 1958.

Having associated with architects in secondary and higher educational planning for a number of years, the author outlines four steps in the procedure of selecting an architect. Through objective evaluation the procedure assesses the qualifications and abilities of a particular firm to satisfy the construction needs of an institution. Klager's idea that architects should be carefully chosen is based on data indicating the percentage of total cost absorbed by architectural fees and the magnitude of responsibility given to the firm during planning and construction.

94. Laurie, J. W., "How Will an Institution of Higher Education Master-Plan the Campus of the Future," in 1957 Current Issues of Higher Education, pp. 207-212, edited by G. Kerry Smith, The Proceedings of the Twelfth Annual National Conference on Higher Education, Washington, 1957.

In developing a new campus the author cites planning for intelligent land-use, architectural types, and internal pattern or use of space as the major areas needing careful judgment. The site of a campus has implications both for internal esthetic qualities and down-to-earth site relationships with its environs. The type of architecture and sequence of construction

is basically related to the institutional purposes and resources and also is intimately related to the site and its physical characteristics. The internal pattern or use of space is a consequence of thoughtful consideration of future educational programs, pedestrian and vehicle traffic flow. The criteria for location and arrangement of buildings, parking spaces, and landscaping is derived from a compromise between architect and educator. The author has focused on those areas that must be carefully studied and agreed upon by architect and educator before a plan can be wisely conceived and executed. The article focuses on the concrete aspects of planning which may be overlooked. If these aspects of planning are not taken into account the results will be unsatisfactory.

95. Leonard, J. Paul, "What the College Expects from the Architect," in 1957 Current Issues in Higher Education, pp. 212-216, edited by G. Kerry Smith, The Proceedings of the Twelfth Annual National Conference on Higher Education, Washington, 1957.

The architect by nature cannot be expected to know the needs of an educational institution, as it is vastly different from most other endeavors. Therefore the college or university must take the responsibility of acquainting the architect with the "climate" of a particular institution by defining the nature of the enterprise, by transferring an understanding of the objectives and purposes of education, and inducing the architect to become as interested with the "inside" as the "outside" of the campus. The author sets forth principles designed to establish standards for plant utilization. He is well aware that these standards will vary depending on individual programs but these standards are to be determined by educators and the functional result is to be determined by the architect. Thus, planning demands cooperation between architect, administrator, and board of control. This article outlines the areas of responsibility of both the educator and the architect. The educator is responsible for transferring to the architect the "feeling" and needs of the institution so the architect can be effective in relating space utilization and educational values. In order to do so the institution must formulate a long-range program of self-analysis for the architect. Inherent in this article is the premise that the administrator knows best what the institution should be.

96. McCunn, D. J., et al., "Planning Contra Costa Junior College," in The American School and University, 1952-1953, pp. 241-254, edited by Walter D. Cocking, American School Publishing Company, New York, 1952.

This article is an in-depth study of the processes and procedures used by the educator, the architect, and the city planner in developing a master plan for Contra Costa Junior College, East Campus. McCunn outlines the educational policy of tuition-free schooling through the 13th and 14th years. The architects and planners then explain the steps necessary to inculcate educational policy, architectural theory, and community needs into a master plan. Graphs and pictures are used to help indicate the areas under consideration in planning. The highlight of the article is an outline form which shows the working program formulated by the planners.

97. Noffke, Frank, "Developing Cooperation Among Building Operator, Contractor, Architect," College and University Business 12:23, March, 1952.

The author's purpose is to indicate how good communication between a building's occupant, contractor, and architect can increase the future effectiveness of a building. Situations that may be troublesome in the future can be anticipated and dealt with early in the planning through good communications.

98. Obata, Gyo, "All About Residence Halls and Things You Need to Know to Design Them," College and University Business 33:58-63, October, 1962.

From the point of view of the architect, Obata presents an overall picture on how to translate man's ideas into a better living environment. External and internal space arrangements are discussed from the principals of architectural design.

99. Pearce, David W., "What's a Sacred Cow Doing in the Field of Architecture?" College and University Business 36:56-58, April, 1964.

Pearce attacks four "sacred cows" within the field of architecture and warns against their inclusion in design plans. The four sacred cows include the compromising corner cutter, the hidebound formalizer, the ugly functionalist, and the exterior decorator.

100. Pickering, Robert L., "Architects Can't Build What Educators Can't Describe," College and University Business 33:54-55, November, 1962.

Pickering indicates why educators do not or cannot formulate the objectives of their institution to provide the architect with a framework from which a design can evolve.

101. Reid, John Lyon, "How Can We Make Substantial Savings in Planning?" College and University Business 14:30-33, January, 1953.

The author discusses ways to reduce costs involved in the planning and constructing of future facilities by examining the policies and attitudes made apparent in present facilities. Reid feels savings in costs can be realized in the areas of modern functional design, growth projections, standardization and selection of materials, and flexibility in plans.

102. Risetto, Henry J., "Communicating Educational Needs to Architects," National Elementary Principal 39:46-53, September, 1959.

The construction of new facilities requires a clear understanding between administrator and architect. Although the author refers to elementary-secondary construction, the article is pertinent to higher education. The interaction between educators and architects must include effective communication so that educational goals are perceived by the architect and architectural considerations are understood by the educator. Risetto explores the areas of communication that must exist between architects and principals so the result of planning is an effective building for education.

103. Scholer, Walter, "Good Manners for Architect and Client," College and University Business 19:37-38, September, 1955.

Scholer explores the relationship between architect and client. The author outlines three ways the architect's services are rendered and he also stresses the areas of responsibility of the educational institution in the formal meeting of architect and client.

104. Sharp, J. S., "Architectural Steps in Facilities Planning," AV-Instructor 10:103, February, 1965.

The basic steps in an architect's plan are briefly outlined in this article. The author emphasizes that the architect must first become acquainted with the needed project. This requires a complete self-analysis by the school as to philosophy, purpose, and general functioning of both the larger school system and the proposed individual project. At this point a cooperative venture begins as the architect and administrator exchange ideas and promote the project. The third step involves the architect's schematic presentation. The fourth step is the complicated development, review, revision and final acceptance of plans. Last is the actual construction. The article points to areas that need discussion and clarification in construction of facilities.

105. Sweitzer, John H., "Selecting the College Architect," College and University Business 29:36-37, September, 1960.

The purpose of this article is to illustrate the procedure taken at Earlham College to select an architect.

106. Young, Theodore J., "Dormitories," in The American School and University, 1950-1951, pp. 151-170, edited by Walter D. Cocking, American School Publishing Company, New York, 1950.

When this article was written great attention was focused on providing proper housing accommodations for students. Young presents basic planning considerations for dormitories with illustrations and descriptive statements concerning new facilities at the University of Virginia, Indiana University, Marymount College (Tarrytown, N.Y.), and the Cardinal Farley Military Academy (Rhinebeck, N.Y.). This article represents an examination of the needs of students and colleges regarding basic costs and comfort. Young ends with a number of considerations concerning housing including cooperative planning, furniture needs, relationship to other college areas, and other architectural considerations.

D. FINANCE

107. "An Administrator's Guide to the Higher Education Act of 1965," American School and University 38:35, March, 1965.

This article, in question-and-answer form, outlines the highlights of the Higher Education Act of 1965. It examines briefly each of the act's eight titles and points out how much money is available, who will administer the provisions, and what type of activities are allowed. A separate table listing all funds appropriated by the act to each state is included.

108. Baughman, George F., "The College Loan Program: What It's Done in 11 years," College and University Business 34:62-72, March, 1963.

Baughman presents a status report of the college housing loan program enacted by the Housing Act of 1950 and administered by the Community Facilities Administration through its College Housing Branch. A report of the amounts of money loaned, number of buildings constructed, and need is given. This is followed by reports on undergraduate, graduate, and married student housing trends. Finally, he reports on Student Union construction as determined by Title IV, an amendment to the act.

109. _____, "What the College Housing Program Can do for Your Institution," College and University Business 12:19-22, April, 1952.

College housing shortages became a major problem after World War II and created a need for self-liquidating programs which could maintain reasonable rental charges. A partial solution to the housing problem was Title IV of the Housing Act of 1950. The author focuses on this bill by discussing its inception, operation, and how it can facilitate institutional building programs.

110. Berger, Ronald, "How Rule 288 Can Save Colleges Money on Urban Renewal Land," College and University Business 39:53-54, November, 1965.

The acquisition of land for educational institutions was difficult with Urban Renewal regulations stipulating that the purchase price of land should be in line with alternate private use. Berger outlines and interprets the issuance of Local Public Agency Letter No. 288 by the Urban Renewal Administration which allows all non-profit institutions to compete for land.

111. Bokelman, W. Robert, and Robbins, Leslie F., New Construction and Rehabilitation on College Campuses, 1959-1960 and 1960-1961, Office of Education, circular no. 709 (OE-51002-61), U.S. Department of Health, Education, and Welfare, Washington, D.C., 1963, 54 pp.

This report is based on the responses of 1,374 institutions to a questionnaire on construction and rehabilitation by the Office of Education. Costs on a per-unit basis, expenditures, and source of funds were tabulated and presented on a regional and national basis.

112. Bokelman, W. Robert, and Rork, John B., College and University Facilities Survey, Part I: Cost and Financing of College and University Buildings, 1951-1955, Office of Education, circular no. 540, U.S. Department of Health, Education, and Welfare, Washington, D.C., 1959, 53 pp.

The purpose of this circular is to provide information about costs and financing of physical facilities. The data were obtained by questionnaire responses--72.5 percent responded from 1,905 institutions as of May, 1956. Information is analyzed by geographic regions and includes costs of buildings by type of institution, by institutional control, and by student enrollment categories. The report brings attention to salient points obtained by the questionnaire and provides a detailed picture of the costs and financing of physical plant facilities.

113. Brown, Ted, "Urban Renewal Expands Atlanta Campus," College and University Business 41:54-55, August, 1966.

The dilemma of a "downtown" institution is that it is completely surrounded by competitive functional types that may or may not be compatible to future expansion. Little is usually gained in expansion except a larger campus. It leaves a "bad-taste" in the mouths of the urban and academic communities. In this case the author indicates that through the vehicle of Sec. 112 of the Housing Act of 1949, as amended, this small college was able to expand to the benefit of both sectors. A \$2.6 million project cleared a slum area which not only allowed the institution to expand but also allowed a downtown cultural center.

114. Browne, L. L., "Physical Plant Budgets," College and University Business 21:30-31, September, 1956.

The author defined and examines the general accounts of the physical plant budget including administration, general operation, janitor service, building maintenance, grounds, and utilities. Figures are presented for each account analyzing data received from 50 institutions by questionnaire.

115. "Building Boom Goes to School," Engineering News--Record 157:21-22, September 27, 1956.

This article indicates the scope of loan applications to the Community Facilities Administration for college housing units. The article also discusses briefly the procedure in obtaining a loan, type of interest payment, and architectural freedom. It gives information about the status of the CFA loan applications in 1956.

116. Butler, John H., "How To Put the Squeeze on Teaching Lab Cost," College and University Business 31:39-40, August, 1961.

Butler indicates how economic and educational realities must be pinpointed or else the cost squeeze will postpone or even eliminate construction of laboratory classrooms. As an example, a chart presenting data on costs for laboratory and lecture classrooms is shown.

117. Davis, William P., "Methods of Financing New Construction," College and University Business 9:19-22, August, 1950.

The question of how to finance new construction forces an exploration of possible monetary sources. The author identifies pertinent sources of financing and discusses the advantages and disadvantages of each. Endowment funds, bonding, and borrowing are the three sources analyzed.

118. Decker, G. C., "College Housing Loan Program," Higher Education, 8:69-71, November 15, 1951.

Decker says that World War II increased the need for construction as institutions were unable to prepare adequately for the post-war deluge of students. But after the college housing program (PL 475) was in operation the Korean War took priority. Not until January of 1951 did the President release \$40 million of the original \$300 million authorized under Title IV of the Housing Act of 1950. The administration of the law is vested in the Housing and Home Finance agency but the Office of Education provides assistance in determination of loans. At that time (1951) any housing request had to have a defense relationship. The author concludes that it would be advisable for all institutions to submit a plan for housing (excluding legal, financial details) to regional offices for preliminary approval.

119. Diamond, Arnold H., "College Housing Program: Its History and Operations," Educational Record 38:204-219, July, 1957.

The combination of the depression, the war, and post-war enrollment increase found many institutions with college housing problems. Prior to the war financing of housing was a matter of philanthropic gifts to private colleges and direct appropriations to public colleges. Since World War II the federal government has provided massive loans to finance college housing. The author reviews this historical chain of events and indicates how and why the government became involved to such a degree (388 loans, \$430 million in 1956). The trend, nature, and structure of the housing bills introduced, amended and/or otherwise changed is followed in some detail, especially from 1949 to 1956. The author also deals with "program operations" by indicating the procedures necessary for the institution to follow. The article illuminates the basic facts of how and why the government entered the college housing finance market. The author has also documented the article so further study in depth can be undertaken.

120. _____, "An Economic and Financial Appraisal of the College Housing Program," College and University Business 24:38-41, March, 1958; 49-52, 54, April, 1958.

This two-part article focuses on the College Housing Program (P.L. 475, 81st Congress). Both parts concentrate on the intent of the law and its characteristics, both economic and financial. The articles probe the operation of the law up to 1956 and some of its results, plus the operations of the Community Facilities Administration (CFA) as related to loans.

121. Douglas, Paul M., "Where To Find the Funds for Auxiliary Facilities," College and University Business 42:59-63, March, 1967.

Douglas focuses on the possibilities of diversity in the approach to the financing of auxiliary facilities. The need for this type of facility is emphasized as the author shows that the U.S. College Housing Program can be supplemented by other methods that involve applications to non-profit, limited profit, and quasi-philanthropic organizations. Examples of these types of financing are presented, illustrating adherence to low-cost financing, non-competitive financing relative to academic facilities, and retention of control by the institution.

122. Drinan, Robert F., "Catholic Colleges and the Academic Facilities Bill of 1963," National Catholic Education Association Bulletin 61:155-162, August, 1964.

The College Facilities Act of 1963 posed special problems for church-related institutions of higher education. Drinan has directed his attention to the impact of this act on the Catholic college and university. Three questions concerning federal aid, strategy, and policies that should be discussed by Catholics are presented. The article is prefaced by a section outlining the law and federal aid to private institutions. The article is important because the author is a Catholic educator.

123. Eldenbogen, T., "Higher Education Facilities Act of 1963: A Section-by-Section Analysis," Higher Education 20:4, 7-16, January-February, 1964.

This article outlines the basic considerations in Title I, II, and III of the Higher Education Facilities Act of 1963. Title I is concerned with federal grants to assist in construction of undergraduate facilities. The bill authorized \$230 million for the first three years with appropriations for two more years after consideration of the bill by Congress. Twenty-two percent of the appropriations were for public community colleges and 78% for other public institutions. Title I also indicated that each state first had to have a state commission broadly representative of all institutions of higher education. Title II is concerned with grants for construction of graduate facilities authorizing \$25 million for the first year and \$60 million each for the next two years. This section is governed by an advisory board which approves grants, prepares regulations, and policy. Title III is concerned with loans for academic facility construction. Each institution must exhaust other potential borrowing sources before the government will authorize a loan.

124. "Federal Money for Education: Programs Administered by the U.S. Office of Education for Construction," American Education 3:13-17, February, 1967.

A concise descriptive analysis of monies available from the federal government. The analysis highlights the monies under the following headings: Group I, Construction; Group II, Programs, Instruction, and Administration; Group III, Teacher training and student assistance; Group IV, Research. Under Group I there are 10 types of assistance available from seven major legislative bills. The most important is the Higher Education Facilities Act--Title I, II, III--allowing approximately \$800 million for construction or improvement of academic facilities.

125. "Financing Residence Halls," American School and University 37: 36-38, March, 1965.

The financing of residence facilities remains a crucial part of any institution's budget. This article discusses five ways that have emerged as methods to finance residence halls--Federal Housing and Home Agency's College Loan Program operated by the College Facility Administration, revenue bonds, the Parsons Concept, leasing, and private ownership.

126. "FY 1966, An Exclusive Report on Federal Aid Programs," American School and University 39:27-53, December, 1966.

One thousand three hundred institutions received over \$1 billion through 2,036 grants and loans under the funding of the Higher Education Facilities Act of 1963 (PL88-204) in fiscal years 1965 and 1966. Under Title III (construction of academic facilities) Congress authorized \$55 million. This article focuses on the progress in each state on the use of federal funds through the Elementary and Secondary Act of 1965 (PL89-10). The article reviews the total picture of all levels of education in terms of federal assistance, how it is used, and for what it is being used.

127. Ganigan, Richard, "You Can Accurately Predict Land Acquisition Costs," College and University Business 43:35-36, August, 1967.

The preparation of a budget that incorporates costs for future acquisition of land was partially solved by University of Wisconsin by use of multiple regression, correlating specific criteria. These criteria included land assessment value, land improvement, assessed valuation, area, and a time factor. Ganigan examines this technique in terms of individual feasibility and also examines the advantages and disadvantages of this method.

128. Glanz, Edward C., "How Three Financing Methods Compare," College and University Business 42:68, March, 1967.

A short article comparing and contrasting federal, state, and private methods of financing facilities. Southampton engaged in a \$3 million building program that included facilities financed by the Housing and Home Finance Agency, New York State Dormitory Authority, and Educational Buildings, Inc. Glanz lists the advantages and disadvantages of each method.

129. Hare, Michael M., and Emerson, E. S., "Planning, Budgeting, and Financing Building Programs," College and University Business 21:19-25, July, 1956.

Planning, budgeting, and financing are interrelated items in a building program, rather than progressive steps. The authors describe this interrelationship in terms of the elements within each area and to illustrate how the correct use of comparative costs may be used to advantage in a building program.

130. Herman, H. W., "Private Investors Find Opportunity in Financing College Residence Halls," College and University Business 38:67-69, April, 1965.

During 1964 a number of organizations began building and then leasing residence halls to colleges and universities. The author surveyed five of these organizations to learn more about costs and procedures of this private investment. The inquiry (1965) showed 26 colleges or

universities in these programs involving \$60 million. Advantages and disadvantages of these investments are discussed.

131. Higgins, E. E., "How Much Does College Classroom Space Really Cost?" Higher Education 20:8-10, June, 1964.

Taking data from the "Inventory of College and University Physical Facilities," December 31, 1957, the author illustrates how cost per student-station-week can be computed. From this he illustrates how this action is related to calendar organization in terms of space ownership.

132. "Higher Education Act of 1965: Whom To See and Where To Go for Funds," College and University Business 40:61-68, March, 1966.

This article discusses the six titles of the Act of 1965 in interview style. The merits of each title are discussed separately with John R. Ludington (I), Paxton P. Price (II), Peter P. Muirhead (III), Edward Sanders (IV), S. William Herrell (V), and Jay Du Von (VI), all key officials in the U.S. Office of Education.

133. "Higher Education Facilities Act of 1963," School Life 46:13-22, May, 1964.

This article focuses on the need and rationale for the Higher Education Facilities Act of 1963 (PL88-204) followed by an in-depth analysis of Titles I, II, and III of the Act. The article provides a synthesis of the salient points of the Act. Also included is a section giving definitions of terms as used in the law.

134. "Higher Education Facilities Act Progress Report," Higher Education 20:12, July, 1964.

At this time, May 1, 1964, forty-two states had named Commissions representative of institutions of higher education. During April of 1964 several meetings between state commission members and Office of Education representatives had occurred which attempted to propose regulations and policies for the Act. The Office of Education appointed a task force to prepare application forms and forms for other supplementary data.

135. Klager, Benjamin, "New Dormitory for Michigan State Normal College," in The American School and University, 1955-1956, pp. 347-351, edited by Walter D. Cocking, American School Publishing Company, New York, 1955.

Klager's article relates to the financing of student living quarters and quality of those quarters. He states that it would be difficult to construct a dormitory of less than 225 student capacity which would be economical under self-liquidating concepts. Furthermore, he maintains that problems become serious if project costs exceed \$2,700 per student.

136. Moore, Raymond S., and Field, David F., "The Higher Education Facilities Act," Phi Delta Kappan 46:277-279, February, 1965.

Titles I, II, and III of the Higher Education Facilities Act of 1963 (Public Law 88-204) appropriated or authorized nearly \$5.8 million to help institutions of higher education provide undergraduate and graduate academic facilities. The authors focus on the needs that prompted the

legislation, the action taken by Congress, and the primary provisions of Titles I, II, and III.

137. "New Federal Aid for College Construction," American School and University 37:34-35, 63, 64, February, 1965.

This article examines the major provisions of the Higher Education Facilities Act of 1963 to find out how monies are available and to what they can be applied. Under Title I in 1965 allotments to the 50 states and D.C. totaled \$227.7 million. This is only part of the total \$1.2 billion that the act provides in grants and loans. The article focuses on Titles I, II, and III, outlining how much money is available, how the money is to be used, and how to become eligible for the funds.

138. Peterson, Carl M. F., "When You Decide to Build," College and University Business 17:28-31, October, 1954.

Increased construction costs require a careful analysis of certain factors before construction begins. The author indicates some of these factors to be: skepticism about cost comparison, awareness of different materials, total investigation of preliminary plans, understanding of type of bids, good communication, and sureness before acceptance of building.

139. Peterson, Craig, and Ruklick, Joe, "Where the College Building Dollar is Going," College and University Business 36:66-70, May, 1964.

The authors present detailed data in graphic form indicating number and types of buildings to be constructed and costs as revealed by a survey of 1,885 colleges and universities by College and University Business. The data received showed 1,681 projects slated at a projected expenditure of \$2.2 billion (1964).

140. Robbins, L. F., "Federal Loans for College Unions," Higher Education 19:16, July, 1963.

At the time of this article the College Housing Loan Program had had no defaults and had filled a need for facilities provided by college unions. Robbins reports that by December 1961, loans were authorized to construct 212 college union type facilities. Data from Enrollment and Facilities Survey 1961-1965 revealed that 80 percent of revenue bonds sold by colleges were expected to be purchased by the Housing and Home Finance Agency.

141. Rork, John B., "Cost Estimates for Planned College Residential Construction," College and University Business 24:22-23, February, 1958.

This article provides costs of residential facilities nationally and regionally, condensed from a facilities survey conducted by the Office of Education. Rork concentrates on how costs can and do affect students, provides regional breakdowns on costs and use of revenue bonds for financing facilities.

142. Russell, John Dale, and Doi, James I., "Analysis of Expenditures for Plant Operation and Maintenance," College and University Business 20:47-51, February, 1956.

The authors present a method that will allow administration officials to interpret the complexity of physical plant finances in order to economize. Items or situations that contribute to increased costs in plant operation are listed. It is in these areas that communication regarding costs and finance must be effective.

143. _____, "Analysis of Expenditures for Plant Operation and Maintenance," College and University Business 20:41-43, March, 1956.

This article is a continuation from the February issue of College and University Business. The authors continue in their analysis of costs and finances of physical plant operation. In this article they present interpretations from six New Mexico schools relating to different techniques of analysis.

144. Schaefer, Ben W., "When Can a Residence Hall be Self-Liquidating," College and University Business 20:41-42, May, 1956.

Schaefer focuses on seven factors that require careful consideration before the question of "self-liquidation" can be answered. These factors include isolation, food service, interest rate and term of loan, type of subsidy, rates to be charged, time of occupancy, and complexity of construction. Each one is examined in turn to determine the effects on costs and finances of residence halls.

145. Young, Harding B., "An Approach to Capital Budgeting," College and University Business 24:25-28, March, 1958.

Young discusses the perceptions and attitudes of administrators toward capital budgeting relative to physical plant facilities. The discussion includes these four areas of postponing construction, facilities and instruction, social responsibility, and present and future costs.

E. STATE LEGISLATION

146. Blackwell, Thomas E., "City Codes X College Construction = Court Control," College and University Business 31:52-53, October, 1961.

Blackwell indicates that state agencies do not come under municipal control in the case of public institutional building programs. Blackwell discusses a number of court cases upholding this contention.

147. _____, "Do Colleges Have the Right of Eminent Domain?" College and University Business 13:44-45, September, 1952.

Blackwell traces the legal judgments that, by 1952, conclude that privately endowed institutions do have the right of eminent domain. Blackwell reviews three major cases in the last 40 years that reverse and then substantiate this contention.

148. _____, "Neighborhood Protection Not Proper Use of Endowment Funds," College and University Business 36:78, March, 1964.

Blackwell suggests the use of caution before diverting endowments from other intended purposes. The question here was whether or not endowments could be diverted for the purpose of acquiring land. This was prompted in many cases by the deterioration of the surrounding neighborhood. The proper administration of funds demands a complete analysis of the terms and provisions of the contribution. Moreover, Blackwell asserts that some states may have laws prohibiting endowment fund use in acquiring land if this was not the intended desire.

149. _____, "University Guest Rooms Create Town and Gown Legal Controversy," College and University Business 35:75, November, 1963.

This short article has many implications for institutions. It describes an incident involving the building of an addition of 110 guest rooms, dining facilities, and meeting rooms to the State University of Iowa's Student Union. A suit was brought by the local hotel and motel operators charging invasion of free enterprise by a state agency. The courts found that the building was "constitutional and legal." But, construction of the addition was deferred because the case was in litigation. Blackwell also indicates, from responses of 276 member institutions of the Association of College Unions, that actually only three lawsuits were reported involving unfair practice.

150. _____, "University of Wisconsin Upheld in Sponsoring Shopping Center," College and University Business 33:73-74, November, 1962.

The indirect control of land is proper according to both the state of Wisconsin and the state of Washington. Quoting the Supreme Court of Wisconsin, Blackwell indicates the manner by which property with considerable value may be controlled by an institution. Even though public funds were used in the purchase and development of the shopping center, the proceeds were "earmarked" for the institution. Thus the process does not violate provisions of federal or state constitutions. Similar results were

obtained by the University of Washington concerning ten acres from which they moved but retained control.

151. Boozer, H. R., "North Carolina Is Counting on Community Colleges," Junior College Journal 34:8-11, December, 1963.

Projected enrollment figures for all institutions of higher education in North Carolina prompted the general assembly of that state to provide a framework for the expansion of community colleges. This article focuses on the history, studies to determine need, and the legislative process involved. Condensed from a larger report made by the author to the general assembly, the article illustrates the background work that must occur before construction of facilities can begin. Moreover, it indicates the prevailing trend of states to set up legal machinery for a mastery plan at the state level.

152. Brown, E. G., "College By Plan," American Education 1:9-11, March, 1965.

"California spends more on education than any one of 43 other states spend for all purposes." California must spend this much because it had (1965) almost 800,000 students in higher education; by 1970 it will need facilities for 230,000 more students. This tremendous surge of student population created a demand for a study of needs and problems. A committee created by the state from the University of California Board of Regents and the State Board of Education attempted to compromise the problem. Having failed, the state in 1959 ordered a restudy as a basis for a master plan for 1960-1975. A major recommendation of this committee was the "tripartite system" separating higher education institutions into three "spheres." The junior colleges still remained as part of the public school system, the University of California remained under the regents, and the State Colleges were to be governed by a board of trustees. Over all is a 15-member coordinating council for Higher Education.

In the first part Governor Brown discusses the overall problems the state encountered before World War II and immediately after. Secondly, he describes the "master-plan" of education for the state indicating structure and form. Finally, he indicates that since California enjoys 25% of space contracts and has 50% of all space engineers and scientists this is a consequence of the growth of higher education.

153. "Florida Masterplans for Record College Enrollment," American School and University 38:28-29, 42, December, 1965.

By 1970 the State of Florida will have a projected enrollment of 200,000 students in higher education, double that of 1963-1964. In order to handle this increase the Florida legislature authorized (1955) four new senior colleges and feasibility studies for two more. In 1963 the legislature also placed a 1.5 percent tax on all utilities to pay off construction bonds. This article highlights the master plan concept that coordinates and aids local college planning.

154. Gurll, F. D., "Development of a Master Plan for Higher Education in California," College and University Business 41:269-279, Spring, 1966.

The factor of new in-migration, and subsequent increase in enrollment coupled with previous non-cooperation among institutions prompted the legislature of California to ask for a master plan for education. The author examines the problems as formulated by the committee charged with conducting the study. The most basic problem was the distribution of enrollment and function of the institutions. The study concluded that 12½% of the top graduates could enter as freshmen at the Universities, 33½% of the top graduates could enroll at the state colleges. The structure of control was solved with a coordinating council of higher education representing the universities, state colleges, and junior colleges. The junior colleges were under local boards, the state colleges and universities have their own control boards. Space utilization was set at 60% or at least 30 hours per week on a program from 8 a.m. to 5 p.m. The author concludes that under the plan considerable progress has been made and that the plan will be useful until 1975.

155. McClain, Charles J., "Creating a New Junior College--The First 50 Steps are the Hardest," College and University Business 38:40-41, January, 1965.

The author focuses on the creation of a junior college district. The subject dealt with is primarily the action taken and procedures used to promote the financial backing by a bond issue.

156. Taylor, Walter M., "Bold Plans For the Bay Area," Junior College Journal 34:34-37, March, 1964.

Massachusetts, according to the New England Board of Higher Education, would be approximately 57,000 student-spaces short by 1972 if opportunities were not expanded. Taylor reports on the resultant legislative activity, the people involved, the needs for two-year institutions, and the overall state plan that has now evolved that foresees one complete new institution per year.

157. Wattenburger, James L., "Florida's Plan for Local Junior Colleges," College and University Business 28:50-53, April, 1960.

This article analyzes the program for junior colleges in the State of Florida. Commenting on the need for junior colleges in Florida, the author also discusses progress made and the type of organization of the Florida system.

158. Westby, Cleve O., "New Jersey Prepares to Meet the Demand for New Teachers," in The American School and University, 1954-1955, pp. 297-316, edited by Walter D. Cocking, American School Publishing Company, New York, 1954.

Working with \$15,000,000 approved by the people of New Jersey, Westby's concern was to coordinate the construction program at the state's six colleges. The article highlights the factors responsible for the need and, the procedures used in planning, and outlines the construction on each campus. Floor plans and photos are included.

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F. CONSTRUCTION

159. Bokelman, W. Robert, "College Construction Rate Doubles in Five Years," Higher Education 14:29-31, October, 1957.

Taking data collected for a comprehensive report on college facilities Bokelman indicates that colleges and universities will double construction in the period 1956-1960 over that of the period 1951-1955. The author projects the total at about \$3.6 billion, double the \$1.79 billion of the previous period. Each geographic section (N.E., N.C., S.W.) will spend about equal amounts but when comparing geographic section by control the situation shows opposite extremes. Other data indicates the type of building to be constructed. Grouped as instructional, 1,889 buildings; research, 173; residential, 1,873; and general, 959 buildings.

160. Bokelman, W. Robert, and Robbins, Leslie F., Progress in the Construction of Higher Education Facilities, 1951-1959, Office of Education, circular no. 665 (OE-51002), U.S. Department of Health, Education, and Welfare, Washington, D.C., 1962, 57 pp.

The authors focus on two broad areas: new construction and rehabilitation during 1958-1959 and construction trends from 1951 to 1959. Data from 1,476 institutions were analyzed and presented in tables. The report presents information on gross expenditures for construction and rehabilitation.

161. Bokelman, W. Robert, and Rork, John B., College and University Facilities Survey, Part 2: Planning For College and University Physical Plant Expansion, 1956-1970, Office of Education, circular no. 603, (OE-51000), U.S. Department of Health, Education, and Welfare, Washington, D.C., 1960, 112 pp.

This issue presents information on planned physical plant construction, the costs of this construction, and the methods of financing to be used from 1956 until 1970. The article is devoted to enrollments and related factors of capacity and space, facility requirements until 1970, campus planning, costs by types of building function, unit costs, and origin of finances for construction.

162. Cocking, Walter D., "Educational Building in 1949," in The American School and University, 1950-1951, pp. 41-56, edited by Walter D. Cocking, American School Publishing Company, New York, 1950.

Cocking has summarized characteristics of construction type, costs, and financing of elementary, secondary, and higher education facilities. He indicates that in 1949 sixty-one percent of school districts had some construction with the total amount of costs reaching \$1.1 billion. Also during 1949 contracts were let for 879 college buildings costing \$352 million (does not include enrollments less than 1,000). Dormitories accounted for 30 percent of college buildings housing up to 1,000 students, a departure from the usual 200-300 student size. Liberal arts and education buildings accounted for 11 percent of volume and 10 percent of cost.

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Graphs indicated the south constructed about 45 percent of all college buildings while the central section constructed about 25 percent of all buildings.

163. _____, "Educational Building in 1950," in The American School and University, 1951-1952, pp. 53-64, edited by Walter D. Cocking, American School Publishing Company, New York, 1951.

This article points out that more construction occurred in 1950 than any prior year, but that more cooperative planning was noticed. Moreover, it states that the future will see more construction and expenditures than ever and people are more concerned with meeting educational needs than constructing monuments to the past. There is now a distinct effort to become functional in building design. The author points out the increased concern of the federal government toward meeting the educational needs of the country, the increase in published literature about educational problems, and the increase in community planning of physical plants.

164. _____, "Educational Building in 1951," in The American School and University, 1952-1953, pp. 65-67, edited by Walter D. Cocking, American School Publishing Company, New York, 1952.

In 1951 over 6,400 buildings or new additions were constructed at all educational levels at expenditures of almost \$2.33 billion for an estimated capacity of 2-1/3 million students, surpassing the previous highs set in 1950. The author reports that 134 junior colleges constructed 199 buildings while 572 senior colleges and universities constructed 1,198 buildings. Although a noticeable trend continues in design changes for elementary and secondary schools this trend was not detected in college building. Cocking states that at this time proper attention is not focused on educational functional planning and remains as a problem. The Korean War placed a restriction on certain materials forcing the use of available substitutes and also forcing a delay in starting construction. The article includes statistical data on a regional basis for costs and types of buildings.

165. _____, "Educational Building in 1952," in The American School and University, 1953-1954, pp. 69-76, edited by Walter D. Cocking, American School Publishing Company, New York, 1953.

From a 60 percent response of 10,000 mailings Cocking indicates a decrease from 1951 in all educational construction. Over 5,800 buildings or major additions were completed at a cost of over \$2.1 billion. Junior colleges (140) constructed 224 new buildings costing \$52 million while senior colleges (441) constructed 885 new buildings at a cost of \$480 million. Again in 1952 shortages occurred in materials. Shortages were especially noticed in steel, copper, and aluminum forcing an increase in use of other substitutes. Additions were greater than new buildings. Education and liberal arts, and dormitories were the types of buildings most frequently constructed. Nearly one third (294) of all senior college buildings and one sixth (46) of all junior college buildings were of these types. Again in 1952 there was an apparent lack of functional planning for interior space and exterior design remained as the focus. Cocking states that planning potential must appear and look "10, 20 or even 30 years" ahead for proper design. The article contains much graphic data about costs, types of buildings constructed, federal attention, and future outlook.

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166. _____, "Educational Building in 1953," in The American School and University, 1954-1955, pp. 65-74, edited by Walter D. Cocking, American School Publishing Company, New York, 1954.

Data for 1953 was computed from 13,000 mailings but the author fails to mention the number of responses. These mailings record 7,560 new buildings or additions at \$2.25 billion for all educational levels. While junior college and senior college construction continued to decline public school construction reached all-time highs. Yet overall post-World War II trends continued high.

A distinct decline occurred in junior college and senior college building. Only 158 buildings were constructed on 107 junior college campuses at a cost of about \$28 million while 559 senior colleges built 789 buildings at approximately \$361 million. As in 1952 about 36 percent (432) of senior college construction was dormitories or education and liberal arts buildings.

Indications of the crisis in elementary school of increased enrollments is now (1954) reaching into secondary schools. The author predicts a greater need for increased construction at both the secondary and higher education level.

167. _____, "Educational Building in 1954," in The American School and University, 1955-1956, pp. 65-72, edited by Walter D. Cocking, American School Publishing Company, New York, 1955.

Reporting on the total expenditures for all school building construction in 1954, the editor indicates that \$2.85 billion was spent. There was a total of 9,147 buildings constructed on all levels of education. Junior colleges (103 reporting) built 165 new buildings at a cost of \$35,068,055. Fifty-two percent of this figure was spent by the western states while all other regions showed a decrease in number and cost. Colleges and universities in 1954 built 728 new buildings at a reported cost of \$446,331,381. Along with the increased volume of building, costs also continued to rise with increased labor costs as the major factor. Although this article tends to concentrate on elementary and secondary construction there are valuable college and university statistics.

168. _____, "Educational Building in 1955," in The American School and University, 1956-1957, pp. 17-24, edited by Walter D. Cocking, American School Publishing Company, New York, 1956.

In 1955 there were more school buildings constructed than ever before. This report is based on findings from 13,475 inquiries and 7,767 returns. There were 9,246 buildings constructed (all education) at a total cost of \$3.028 billion, an increase of \$175 million from that of 1954. Public school building accounted for \$2.44 billion or 80 percent of total expenditures.

Expenditures in junior college construction showed 63 percent were for education, liberal arts, science, and physical education buildings in 145 systems reporting. College and university construction increased for the third year even though expenditures were below the levels of 1950. Building costs reached an all-time high with both labor and material costs increasing. Dormitory and residence type accounted for 36% (290) of the buildings in colleges and universities. This is well above the second

place 12 percent (98) for education and liberal arts buildings. A major problem is financing construction to alleviate classroom shortages despite record physical construction. Emphasis is on public schools but these articles have important information pertaining to higher education.

169. "College and University Residence Facilities 1950-1958," in The American School and University, 1959-1960, pp. 165-194, edited by Walter D. Cocking, Bittenheim Publishing Corporation, New York, 1959.

This article presents the results of a questionnaire intended to determine the amount and quality of certain types of residence facilities constructed from 1950-1958. A total of 1,264 institutions were approached and 366 responded. The survey found that 2,396 residence facilities had been constructed--50% married student, 40% single student, and 10% sorority-fraternity. Graphs and charts illustrate the building programs by regions and states and colleges and their new facilities are listed.

170. "Construction Material, Personnel Trends and Projections in American Educational Institutions," American School Board Journal 154: 17-32, January, 1967.

This is a series of statistical tables and graphs highlighting elementary and secondary school characteristics compiled by the U.S. Office of Education and the Department of Labor. The relevance of these statistics is in the implications of the competition for human and monetary resources among all phases of the total educational structure in the United States. There were 49 million elementary and secondary students and 5.9 million students in higher education enrolled in 1966 in the U.S., indicating that in the future the "press" on higher education will continue. Greater percentages of high school graduates are continuing their education and this should not erupt into chaos at the higher education level. Fifteen pages of statistics lists the needs, construction rates, and monetary outlays in American elementary and secondary education.

171. D'Amico, Louis A., and Higgins, E. Eugene, "The Extent of Rehabilitation in Institutional Construction," College and University Business 30:66, April, 1961.

A very brief article that discusses the salient portions of a report on conditions in college and university buildings undergoing rehabilitation. The report analyzes data from a representative sample of institutions (152 public, 59 private) about 2,280 buildings and lists a number of inferences shown by the data.

172. Demarest, William, Jr., "Economy by Modular Coordination," in The American School and University, 1952-1953, pp. 170-176, edited by Walter D. Cocking, American School Publishing Company, New York, 1952.

The purpose of this article is to explain the type of design known as modular coordination which allows a standardization of products, reduces waste, and combines efficiency and economy.

173. "Education Building in 1956," in The American School and University, 1957-1958, pp. 8-20, edited by Walter D. Cocking, American School Publishing Company, New York, 1957.

The trend in educational construction continued upwards but increasingly inflationary pressures were forecast for the future. American School and University's latest survey revealed over 10,000 buildings or additions constructed at an outlay of \$3+ billion. As in the past 80% (8,211) of buildings constructed were for public and private elementary and secondary schools.

A record \$60.6 million for 306 buildings in the junior colleges shows a "steepening upward trend." Senior college construction figures show 1,012 new buildings at a cost of \$502 million--up slightly in the past few years. Dormitories and educational and liberal arts construction continued as the most frequently built facilities.

The article reports the major factors affecting construction were enrollments, shifting population, costs, bonding limitations, and federal attitudes toward aid. College construction at this time (1956) showed a trend toward all-campus planning recognizing a need long overlooked.

174. "Educational Building in 1957," in The American School and University, 1958-1959, pp. 8-20, edited by Walter D. Cocking, American School Publishing Company, New York, 1958.

Over \$3.4 billion was spent in 1957 to construct 9,689 new buildings or major additions at all levels of education. Although volume decreased, costs increased as the need for construction of facilities continued. Junior college construction and costs were down from 1956, with only 208 buildings costing \$49.9 million in 1957 as compared to 306 buildings and \$60.6 million in 1956. No reason for this decrease was given. Senior college construction also showed a decrease--919 buildings at \$555.7 million in 1957 as compared to 1,012 buildings and \$501.7 million in 1956. Again dormitories, academic classrooms, and science buildings were the most frequently constructed. Influencing factors continued to be enrollments while inflation and labor costs increased construction expenditures. The trends toward overall campus planning and influence of community leaders and educational consultants continued. The recession (1957-1958) will effect future construction.

175. "Educational Building in 1958," in The American School and University, 1959-1960, pp. 101-120, edited by Walter D. Cocking, Bittenheim Publishing Corporation, New York, 1959.

Emphasis is placed on the need for new facilities at all levels despite 11,299 new buildings at a cost of \$3.95 billion in 1958. Dormitories were the most frequently constructed facility on senior college campuses. Whereas senior colleges spent a total of \$718 million, junior colleges expended \$57 million for 247 new buildings. This article has numerous graphs plus a 10-year (1949-1958) summary showing number of buildings in each section of the country and the total costs.

176. "Educational Construction in 1960," in The American School and University, 1961-1962, pp. 5-14, edited by Archibold B. Shaw, Bittenheim Publishing Corporation, New York, 1961.

The total educational system in 1960 spent \$3.6 billion for 8,930 new buildings or major additions. Figures for junior colleges indicate an outlay of \$71.7 million for 225 buildings--both totals down for 1959. College and university figures for 1960 indicate a drop in number of

buildings constructed since 1959, but an increase in expenditures. Once again residence facilities amounted to more than 33 percent of the total number of buildings constructed at senior colleges (424/1,179). Science buildings rank second in number constructed (152/1,179). A 10-year survey of costs and number of buildings constructed by region and level of education is again presented.

177. Geddes, Robert L., "Residence Halls, Their Planning, Financing, and Operation," The American School and University 37:31, March, 1965.

The changes that have occurred in the building of residence facilities are treated in this article, but the main theme is to illustrate the necessity of relating social life, the intellectual development, and the physical environment of the student. There is a three-way relationship of cost, quality, and quantity in planning facilities to meet the goals of the colleges.

178. Gores, Harold B., "Buildings Will Be Shaped to Educational Concepts," College and University Business 40:52-54, June, 1966.

Due to the increasing dynamism of educational institutions, Gores feels there will be a corresponding change in physical facilities. He briefly describes future trends in libraries, laboratories, gymnasiums, and the overall campus environment.

179. "Growth of Junior Colleges," in The American School and University, 1959-1960, pp. 143-164, edited by Archibald B. Shaw, Bittenheim Publishing Corporation, New York, 1959.

The growth of the number of junior colleges since 1910 is remarkable. This article presents a listing of 306 junior colleges that includes present number of buildings and future building plans. It also includes in the listing date opened, first year enrollment, 1958 enrollment, and 1968 projections.

180. Harrison, E. C., "Group Thinking on a Building Program," College and University Business 20:46-47, March, 1956.

The author focuses on the efforts of administrators and faculty in long-range planning at Southern University and A. and M. College. Because of increased enrollments a building committee was appointed. The committee found that a formulation of institutional goals and the development of a master plan were needed. The author states the committee members' interaction and also indicates the principles followed by the committee in planning each building.

181. Hayward, S. C., "New Approaches to Collegiate Liberal Arts," Association of American Colleges Bulletin 44:571-585, December, 1958.

The costs of new construction on any campus prompts a careful inquiry into types and methods of construction in order that the costs be kept to a minimum. Many feel that traditional methods are as expensive as newer, less traditional ways. The author feels that all techniques of construction should be investigated. One such technique is R. Buckminster Fuller's concept of the geodesic dome. Hayward describes "National College" which has each and every building as a geodesic dome.

He indicates the advantage of this technique by showing how easily and cheaply they may be constructed and suggests complete coverage of a campus with geodesic domes.

182. Higgins, E. Eugene, and Fuller, Mary B., College and University Facilities Survey, Part 3: Inventory of College and University Physical Facilities, Office of Education, OE-51007, U.S. Department of Health, Education, and Welfare, Washington, D.C., 1965, 573 pp.

Data collected by questionnaire from 1,937 institutions of higher education were classified to reveal functions of buildings, estimated value of facilities, construction type, condition of building, initial occupancy, space as assigned and gross area, and investment in facilities. The report represents an intensive inventory of U.S. institutions of higher education, building-by-building, as of December 31, 1957.

183. Hodgson, James G., "Library Planning for Colleges and Universities," in The American School and University, 1957-1958, edited by Walter D. Cocking, American School Publishing Company, New York, 1957.

The author identifies the problems which need to be solved before architect plans are finalized. He identifies flexibility as a desirable feature of libraries and indicates that modular engineering may be the way to achieve it. The article includes cross-sections and floor plans and provides insight into the type of preliminary planning needed for any building.

184. Hutchinson, George A., "Evolution of a Learning Center," College and University Business 42:81-84, May, 1967.

This article illustrates the type of planning that is involved in classroom design. Hutchinson indicates the relationship between the learning process and arrangement of classrooms within a building. Schematic drawings are presented indicating the differences between "traditional" arrangements and the learning center concept that is replacing the traditional.

185. Kerr, William S., "Northwestern's New Campus Stands on Lake-Fill Project," College and University Business 37:53-56, November, 1964.

The expansion of Northwestern University by filling part of Lake Michigan was dictated by the conditions surrounding the campus on the north, west, and south sides. The filling of 74 acres was cheaper than buying land to the west and would have a more esthetic effect than intensifying the land-use of the original campus. Kerr's article describes briefly the background of the project and focuses on the steps that had to be taken before construction. These steps included public presentation of the plan, and approval by numerous government agencies.

186. Kottner, Loren V., "Planning for a Union Building," College and University Business 24:40-41, February, 1958.

This article outlines three phases of planning a student union. The author indicates the type of questions that need to be answered as the first phase of planning. The second phase involves the collecting of data, and the third phase is the advent of the building itself. Also

included in the article are problems that the union director will face during planning and comments about justification of this type of building.

187. Krenitsky, Michael, "Approach to a University Library Design." in The American School and University, 1957-1958, pp. 377-388, edited by Walter D. Cocking, American School Publishing Company, New York, 1957.

Libraries occupy a central position on any university campus. thus proper location and internal arrangement must result from detailed knowledge about the university itself. This article discusses in some detail the philosophy behind library design bringing together the purposes of education and the uses and functions of libraries. The author focuses on the premises for planning design, library characteristics, and the creation of a plan. A lengthy bibliography is included.

188. Kypress, Frank, "New Buildings for New Generations," American School and University 37:25-28, February, 1965.

From a survey of 4,470 institutions, 2,972 responded to indicate a \$4.4 billion expenditure for 9,355 new buildings or major additions at all educational levels. Junior colleges spent \$114.4 million for 366 new buildings while colleges and universities invested \$1.36 billion in 1,819 new buildings. American School and University continues its general comments about educational construction and trends with graphs and charts.

189. Marble, Norman W., "Planning for Maintenance in New Construction," College and University Business 8:32-33, January, 1950.

A too-often overlooked aspect of new construction or new additions is the increased and continuing problem of maintenance. Marble identifies problem areas of maintenance that can be reduced with proper planning at the design stage. Items that become an economical maintenance factor after occupancy can be included in earlier planning stages so that future maintenance costs are held to a minimum.

190. Metcalf, Keyes D., "How to Avoid Common Mistakes in Planning Libraries," College and University Business 36:54-57, March, 1964.

Metcalf's purpose is to pinpoint the main problem areas of library planning and to offer suggestions on how to overcome certain problems. He also offers insight into the relationships of construction, costs, and planning of libraries that are of importance to the business administrator.

191. O'Connor, R. B., "Trends In College Architecture," College and University Business 22:40-44, May, 1957.

O'Connor examines different types of buildings commonly found on the modern campus and reviews the trend in the architectural design. He relates the educational, architectural, and the physical environments, and illustrates how modern design can help create an environment conducive to intellectual pursuits.

192. Passeur, Herbert, "Campus Planning for 1970," College and University Business 25:25-28, November, 1958.

The author outlines a philosophy consisting of "architectural spirit, the total man, and technology of structure" relative to the planning of Central Christian College at a new location. Pasure discusses analysis and planning of site, analysis of plan, and the premises derived from the above.

193. Pearce, David W., "The Architect Translates Program Into Plans," College and University Business 38:41-42, February, 1965.

The author discusses the architectural planning problems involved in a new junior college. Commenting on the program, Pearce shows how planning developed and gives a brief account of anticipated building. Four problems of planning included campus expandability, campus unification, unpredictability of growth, and educational focus of the county.

194. Rauh, Morton A., "Lift-Slab Process Ideal for Antioch," College and University Business 18:42-44, June, 1955.

Rauh discusses the lift-slab method in the building of a new residence hall and the advantages of this type of construction.

195. Rork, J. B., "Trends in Residential Construction in Institutions of Higher Education," Higher Education 14:59-62, December, 1957.

Rork draws attention to a number of noticeable trends in comparing the expenditures of 1951-1955 with projected expenditures 1956-1970. The period 1951-1955 saw \$485,863,000 spent for residential buildings. Of this amount 3.7% was for faculty housing, 4.6% for married students, 38.5% for single women, and 50.3% for single men. The projections for 1965-1970 indicate the following trends. The percentage spent for married student housing will increase from 4.6% to 9.7% of total. Rork indicates enrollment figures are important in denoting these trends. When these data are further subdivided, construction emphasis is heightened.

196. Sculley, M. F., and Cornell, F. G., "Obsolescence and Modernity in College Plant Facilities," in The American School and University, 1959-1960, pp. 47-50, edited by Walter D. Cocking, Bittenheim Publishing Corporation, New York, 1959.

Age does not necessarily make a building obsolete. After careful planning, a building of many years may be refurbished so that the building reflects current educational needs. There must be emphasis on educational functions so that architectural considerations are a result of educational needs and concepts. The authors first focus on what constitutes modernity and then describe three new buildings at Southeast Missouri State College.

197. Talley, Robert W., "In Design, Let's Be Consistent," College and University Business 16:30-32, February, 1954.

Talley points out a number of architectural trends in campus construction that appear to be consistent with contemporary construction, culture, and education. He indicates a return to "reason" from historical architectural styles which were inefficient and uneconomical. This article relates design to functionalism and today's educational ideas, and goes into the advantages and disadvantages of design.

198. Taylor, L. M., "Trinity University Stampedes High Cost of Building," in The American School and University, 1952-1953, pp. 177-184, edited by Walter D. Cocking, American School Publishing Company, 1952.

Even in 1952 high construction costs prompted many college administrators to seek the best relationship of costs, function, and quality. Taylor is sure that Trinity College has capitalized on a new construction technique that does reduce cost without undue sacrifice of quality and function. Trinity University has moved three times in its 83 year history. Before the last move the college built three buildings for less than \$1 million (unfortunately the author does not indicate square footage). The author examines method and includes comments about it from architects and construction officials. Pictures of the process are included.

199. Taylor, Ruel J., and Gibbs, Hugh, "Master-Planned to House 5,000 Students," College and University Business 16:38-40, April, 1954.

This article discusses the planning of Long Beach State College. The authors state briefly the planning development of the college regarding spatial relationships, site, and orientation. An architect's model of the school is shown and pertinent space figures are given.

200. Tonigan, Richard F., "Directions in Dormitory Design and Finance," American School and University 38:88, May, 1966.

Tonigan feels a great change in the design of residence facilities and thinks architects have met a long-time problem of design with some success. On the other hand, Tonigan states that most colleges will need business managers and plant managers professionally trained to handle the millions of dollars worth of residence structures instead of guidance oriented personnel. Tonigan examines costs, furnishings, sites, and the future of residence facilities in this article.

201. "1965 Tops All Records--\$6.1 Billion for Educational Construction," American School and University 39:25-32, September, 1966.

From 9,200 inquiries, American School and University was able to count 11,232 new buildings and additions costing \$6.1 billion at all levels of education for 1965. Fifty-seven percent of construction costs were for public, private, and church-related elementary and secondary schools. Colleges and universities accounted for 39 percent and junior colleges 3.5 percent of the total expenditures. All figures are the highest ever recorded by American School and University.

This article makes use of graphs to portray number, type, and cost of buildings at all levels and in all regions. Moreover, it gives brief mention to type and direction of federal aid and also the type of person involved in planning at the different types of institutions.

202. Van Dyke, George E., "Campus Construction for the Next 18 Months," College and University Business 10:22-23, May, 1951.

In response to a survey on building plans by the Office of Education, Van Dyke reports that two thirds of the responses show \$1½ billion of construction scheduled to begin in 1951. Van Dyke indicates also the type of building to be constructed, by public or private institution.

203. _____, "Building Plans of Colleges and Universities,"
Higher Education 7:227-228, June 1, 1951.

With data supplied from a questionnaire distributed in December, 1950, the future construction of 66% of institutions enrolling 80% of students was tabulated. Thirty-five percent of the institutions answering shows that construction in the next 18 months (1950-1951) will total approximately \$1.5 billion. Public institutions indicated they would construct 2/3 of the building. By type of building breakdown it was shown that libraries lead the list. Instructional type was next. Most construction was planned to expand existing facilities, little was done to rehabilitate or for additions. Public institutions indicated 69% of their construction was to be new while private indicated 75% of their construction to be new.

204. Whittlesey, J. H., "Planning a Modern University," in The American School and University, 1951-1952, pp. 307-312, edited by Walter D. Cocking, American School Publishing Company, New York, 1951.

Whittlesey describes and analyzes the master plan for Gujarat University in Ahmedabad, India. Large-scale planning is desirable so that the university does not hem itself in as it tries to grow, and to overcome the disturbing lack of relationships resulting from haphazard growth. Whittlesey considers five major objectives which, if applied, would lend themselves to the formulation of a unified plan. The increased specialization of disciplines can increase a tendency to grow apart-- physical planning can help reduce this tendency toward isolation by planning for sub-areas within an overall plan. The essential features of a master plan include effective land-use, effective methods to relate sub-areas, and provide a central integrating element.

205. Williams, R. C., "Aids to Planning a Student Union," College and University Business 8:33, May, 1950.

The author concentrates on a number of important ideas that must be considered in preliminary planning of student unions. These areas include employment of the director during early planning, no commitment to a rigid time schedule, employment of a professional consultant, and a realistic financial evaluation.

G. EXPANSION

206. Allen, John S., "A New University is Born," College and University Business 29:34-37, July, 1960.

Allen states four principles that guided the planning of the University of South Florida and then describes the construction and financing of the first few buildings on the new campus.

207. Bangsberg, Harry F., "Wisconsin Builds Nine in '59," College and University Business 28:57-59, June, 1960.

A brief article which describes the building of nine student unions in the Wisconsin state system. A table condenses meaningful construction data.

208. Bennett, Wells, and Blocker, Clyde E., "The Community Center," College and University Business 28:42-45, January, 1960.

The authors focus on the role taken by the Board of Education working with citizens of Flint in the development of Flint Community Junior College.

209. "Birth of a College: Florida Presbyterian's Recipe for Success," American School and University 38:25-27, 40, December, 1965.

This article illustrates how educational needs and programs can be integrated into a relationship with the physical plant. Explaining the educational program of the college and then indicating how an architectural firm designed physical structures facilitating the educational goals is an example of long-range campus planning. Florida Presbyterian is carrying out a 90 building, \$25 million development program.

210. Byrd, Harold B., "Growing Pains Assail University of Alaska," College and University Business 28:75-77, April, 1960.

Byrd discusses the impact of increasing enrollment on the University of Alaska and the resultant expansion within the framework provided by the Alaska Public Works Act until statehood was achieved. Since then a new survey of facilities and financing is being conducted with funds from the Ford Foundation and Educational Facilities Laboratories, Inc.

211. Cochran, F. Lee, and Fyfe, William B., "Seminary Reflects Beauty of Its Setting," College and University Business 32:66-69, March, 1962.

The authors discuss the master plan and construction for Calvin College and Seminary at a new location.

212. "Dormitories Change with the Changing Times," American School and University 38:38-39, 48, August, 1966.

This article focuses on the different campuses that have or are currently contemplating high-rise dormitories. Problems that have arisen with

this type of structure in terms of cost, student behavior, and reaction from the public are treated.

213. Dunsworth, W. L., "From a Moose Pasture to a Campus," College and University Business 31:32-38, August, 1961.

Dunsworth discusses the present status and future planned expansion of Alaska Methodist University. Floor plans and campus plans are presented.

214. Erickson, Arthur, "University on a Mountain-top," College and University Business 42:53-55, January, 1967.

To build a multi-million dollar complex on top of a mountain takes not only fortitude but foresight. Simon Fraser University is located on top of Burnaby Mt. in British Columbia with an "unusual single building complex." The over-riding idea was to allow a horizontal relationship to be transferred in terraces which follow the contours. The architectural concept was to blend the buildings into the contour of the hilltop allowing the university to "become" part of it. It is massed around a mall, which is covered, at the central point of the school. At one side is the academic "zone," at the other is the recreational and residential zone. The author is quite concerned with the overall facility blending harmoniously with the physical environment and he states "that no building has an independent identity. He stresses the intent of creating a "rhythm" with the landscape.

215. Harris, Jack, "When Carthage College Expanded It Went a Long Way," College and University Business 36:55-57, February, 1964.

The opening of Carthage College in Kenosha, Wisconsin, provided a unique urban campus to complement the existing rural-oriented campus in Illinois (300 miles apart). Harris focuses on a description of the four buildings that were first built and looks into the flexibility of these buildings as campus enrollment enlarges. The author also claims that the cost of \$4.3 million which includes furnishings, site work, equipment, and buildings was cheaper than a new college due to the fact that one board of trustees and administrative staff handles both campuses. Harris does not indicate shape or size of the campus, nor does he indicate building arrangements, but he has included a cost breakdown for the buildings.

216. Kurtzman, David H., "A City University's Multi-Million Dollar Plant Expansion Program," American School and University 39:41, May, 1967.

In the next ten years the University of Pittsburgh plans 3,600,000 square feet of new construction. This compares favorably with the construction since 1954--5,400,000 square feet at a cost of \$100 million. The author discusses the highlights of the campus expansion in terms of the planning stages which include plant needs, financing and site acquisition, architectural features, and style.

217. Meathe, Philip J., "New College Planned to Grow by Leaps and Bounds," College and University Business 39:62-66, September, 1965.

This article not only provides a descriptive analysis of why the site of the campus of Grand Valley State College was selected and why the design was chosen but relates it to the educational needs and objectives of the institution. Located in an area of high population, it is a commuters' college with liberal arts and teacher education as primary concerns. Also

the article lists in detail the costs, footage, occupant footage, etc. of the first four buildings plus a detailed floor plan. This article allows a synthesis of educational needs, costs, and architect's actual plans.

218. "A New Briarcliff Keeps Its Old, Small Campus Touch," American School and University 38:21-22, July, 1966.

This article discusses the master plan and the progress of Briarcliff Colleges' \$6.8 million expansion program. Construction included classrooms, dorms, and library.

219. Rork, John B., and D'Amico, Louis A., "How Well Are Colleges and Universities Equipped to Provide Residential Accommodations?" Educational Record 43:57-61, January, 1962.

The authors indicate that because of rising student enrollments most institutions will be seriously considering expanding their present housing facilities and those institutions not providing housing at this time will also consider doing so. Thus the authors provide data from a U.S. Office of Education study on campus housing facilities. Two graphs provide data on (1) residential information according to student enrollment and (2) residential information according to type of institution. An analysis of the data prompts the authors to list six major suggestions involving construction and expansion of facilities at various types and sizes of institutions.

220. Rork, John G., and Robbins, Leslie F., compilers, Casebook on Campus Planning and Institutional Development Ten Institutions How They Did It, Office of Education, circular no. 667 (OE-51003), U.S. Department of Health, Education, and Welfare, Washington, D.C., 1962, 162 pp.

Ten case studies representing the planning of new institutions, movement to a new location, and expansion are highlighted in this publication. The purpose is to present individual experiences as a manifestation of how planning overcomes the specific difficulties of each campus.

Each study indicates the educational goals; how these relate to the physical plant structure, and the decision underlying the planning process.

221. Saarinen, E., "Planning the Campus of Brandeis University," The American School and University, 1951-1952, pp. 313-326, edited by Walter D. Cocking, American School Publishing Company, New York, 1951.

This article describes the major buildings to be constructed. It has architect's drawings of all buildings indicating its modern architecture and integrating features. There is also a site plan indicating relative placement of buildings. Finally, the author has provided a list of buildings to be constructed and the anticipated costs (1951).

222. Stade, Charles E., "New Campus Fulfills Small College's Big Plans," College and University Business 38:59-62, April, 1965.

The author focuses on the relationship between planning, costs, and the goals of the Bethany Theological Seminary's new campus. Materials, individual costs, and the buildings constructed are commented on.

223. Swinburne, H. H., "Temple University's Master Expansion Program," The American School and University, 1958-1959, pp. 97-110, edited by Walter D. Cocking, American School Publishing Company, New York, 1958.

Universities must consider people, land, buildings, time, money, and change in planning for physical facilities that will complement the education process. Temple University followed these factors in outlining a \$75 million expansion to take place in two phases (1957). The author focuses on the reasons for expansion, considerations for arrangements, on building needs, and outlines specifications. Maps of the campus are included with detailed science department requirements.

224. "University's Thirteen-Building Program Pulls Drawstring on Subway Campus," Engineering News-Record 153:26-27, December 23, 1954.

A very short article that describes the start of a \$27 million expansion program at St. John's University of Brooklyn, New York. Thirteen buildings are included in the plan which is slated for completion by 1970. The general campus layout, priorities, and costs are briefly discussed.

H. UTILIZATION

225. Avots, Ivar, "Space Utilization Studies," College and University Business 24:36-37, March, 1958.

Avots indicates the importance of utilization studies but also states that certain problems must be considered before a space utilization study can be successfully begun and concluded. Avots focuses on type of forms to be used, instruction in the use of these forms, type of materials needed during study, time schedule, and summarization comparison methods. These five areas were revealed by a project undertaken at the Taylor Management Laboratory at the University of Pennsylvania.

226. Baker, James A., and Baxter, Alfred W., Jr., "Space Formula Can Help Planners Determine Optimum Number and Size of Classrooms," College and University Business 33:27-31, July, 1962.

The authors' purpose is to introduce a mathematical model by which probabilities of optimum size and distribution of classrooms can be approximated.

227. Burns, Gerald P., "Colleges Make Their Dollars Work Overtime, Utilization Study Shows," College and University Business 37:54, December, 1964.

A short article reporting the main ideas from a survey about the conservation of resources by Independent College Funds of American, Inc. Burns indicates degree of utilization of space, type of program, value of plant, construction intent, and purchasing power from 352 institutions averaging 1,040 students (1963-1964).

228. Bursh, Charles, and Taylor, Ruel J., "Master Plans," College and University Business 9:37-41, November, 1950.

The use of detailed long-range plans is a necessity before a state system of colleges can be constructed or remodeled. The authors' purpose is to illustrate how California's Department of Education arrived at the number of classrooms needed to handle increasing enrollments in a statewide system. A formula was developed using data about full-time equivalent, average class size per subject, number of class hours per week for 15 hours of credit, and room saturation hours per week per subject in order to determine the classrooms needed for a particular discipline. Illustrations of the use and the rationale behind the formula are presented.

229. Butler, John H., "Formula For Faculty Offices," College and University Business 25:25-27, September, 1958.

The focus of this article is the use of a formula to determine the need of faculty offices before planning of buildings. Presenting a general formula, Butler derives formulas for estimating office needs in terms of lecture and laboratory classrooms. He uses actual situations to illustrate their practicality.

230. Cornell, Francis G., "Buildings From Elephants, Dinosaurs and Whatnots," College and University Business 25:19-22, December, 1958.

Cornell examines enrollment projection procedures and how they may or may not be useful in helping to facilitate further planning. Using real data, but in a hypothetical manner, the author illustrates how numerous types of projections are more useful than a single figure.

231. _____, "How to Manage Space," College and University Business 30:61-65, May, 1961.

The management of space begins with an inventory of space. Cornell categorizes types of space, lists type of data needed, emphasizes difficulties encountered in establishing norms, and lists space requirement procedures in an effort to design the type of study needed to collect space data.

232. Doi, J. I., "Planning for Faculty Office Space," Higher Education 14:96-99, February, 1958.

Doi concentrates on faculty office space in the overall institutional space utilization. He suggests that emphasis on classroom and laboratory space study has resulted in neglect of proper concern for other uses, among them faculty offices. Generally, classroom and laboratory space accounts for 40% of the physical plant. If the other space uses are not considered, a false projection in future enrollments could occur as a corresponding increase in space allotments for faculty may not be considered. The author also found that faculty space should be increased to allow for clerical help, increased confrontation with students to permit more privacy. Doi suggests that improper plant planning is a "barrier" to sound curriculum development--and can become a morale factor.

233. Fuller, William S., "How the Space Factor Can Provide Flexible Planning of Facilities Use," College and University Business 38:62, May, 1965.

The author describes and presents examples of a concept known as the "space factor." The space factor is a technique designed to measure space efficiency by expressing both utilization and space allocation at the same time.

234. _____, "How to Keep Space Planning Down to Earth," College and University Business 32:63-65, April, 1962.

Fuller's purpose is to give an overview of how and why space studies are made and what use they serve. He differentiates between space allocation and utilization and places proper emphasis on each.

235. Fuller, William S., and Rork, John B., "Classroom Space Per Student: Here's How to Figure It," College and University Business 31:43-47, September, 1961.

The authors show how function, size, and shape are important elements to consider in determining square feet per student-station. They indicate briefly how other authors have determined these figures and discuss their advantages and disadvantages before presenting their thesis.

236. _____, "College Classroom Planning," Higher Education 17:13-14, April, 1961.

The authors use data from two U.S. Office of Education studies to develop guidelines which show that the determination of classroom capacity is not a function of data on student-station alone. Function, shape, and size of classroom must be considered along with averages in order to fully consider capacity of classrooms. This article includes two tables which present data on (1) average room size, average student-station, and average number of stations; and (2) condition of buildings.

237. Gores, Harold B., "Facilities for the Future," Liberal Education 14:34-47, March, 1963.

Gores presents information on higher education planning, flexibility, utilization of space, housing, science facilities, libraries, and new forms and materials as determined by the Educational Facilities Laboratories (1963) regarding the practices in construction and planning.

238. Graham, Marshall A., "Space Formula Technic Aids Classroom Planning," College and University Business 30:68-70, May, 1961.

Graham presents a nomogram designed to establish existing and potential capacities of classrooms plus establishing dimensions of planned facilities. Instruction in the use of the nomogram and an illustration of it are presented.

239. "How Can Colleges and Universities Make Most Effective Use of New Knowledge Concerning Educational Facilities?" in 1960 Current Issues in Higher Education, pp. 197-208, edited by G. Kerry Smith, The Proceedings of the Fifteenth Annual National Conference on Higher Education, Association for Higher Education, Washington, 1960.

Four speakers discuss the factors involved and the procedures taken to increase space utilization and/or design of physical facilities. The studies of these physical facilities were in part funded by the Educational Facilities Laboratories (EFL) and resulted in data usable in determining space utilization.

240. Lambert, A. C., "Don't Plan Too Many Small Classrooms," College and University Business 16:47-48, April, 1954.

The focus of this article is the advantages and disadvantages of various sized classrooms. The author suggests that planning of classroom size is derived from judgment factors rather than from scientific evidence. The article also contains diagrams showing the arrangement and capacity of various sized rooms.

241. Loomis, Wayne W., "Low Utilization: Is It a Disease or a Symptom?" College and University Business 36:51, April, 1964.

A brief article in which the author strongly suggests that low utilization is a symptom of a disease caused by inefficiency in course planning and growth. He suggests curricula reform and revision as treatment.

242. Masiko, Peter, Jr., "Complete Use of Classroom Space," College and University Business 20:23-24, May, 1956.

The author illustrates the possibility of achieving 100% classroom utilization. Although Masiko states that 100% utilization may not be desirable it nevertheless may be necessary. In order to accomplish this goal, a lettering system was used to assign courses. A diagram helps explain the system.

243. Middlebrook, W. T., "Space Utilization Worked Out at Minnesota May Serve As a General Guide," College and University Business 8:24-26, May, 1950.

The determination of space allocation becomes increasingly difficult with increasing enrollments. At Minnesota increased enrollment forced a change in normal space allocation procedures. This article outlines the procedural changes that occurred and analyzes the effectiveness of the changes.

244. "Physical Plant Utilization and Planning--Panel Discussion," College and University Business 40:424-429, Summer, 1965.

This article summarizes remarks made by the panel relating to space allocation programs, administration of these programs, and timing and costs involved. Concepts are condensed but important overall ideas by men involved in physical plant management are in evidence.

245. Russell, J. D., "Utilization of Building Space in Institutions of Higher Education," College and University Business 32:481-493, Summer, 1957.

J. Dale Russell at the time of the publication of this article was preparing a Manual designed, through the collection of data, to help institutions develop effective space utilization studies. The Manual is to assist administrators in making more efficient use of their physical plant. Russell indicates that such efficiency is a sign of good management and must be undertaken due to enrollment pressures. Russell indicates how the data were collected, interpreted, and the mode of presentation. Only 101 institutions responded clearly so that norms could be effectively utilized in the study. Russell indicates that with only 101 institutions providing the data, the norms "must be considered very tentative," but that they are "surprisingly stable."

246. Schwehr, Frederick E., "Eliminate Guesswork from Planning," College and University Business 30:55-58, May, 1961.

Schwehr presents a technique used in Wisconsin designed to collect reliable data for planning and management. Termed the "analysis sketch method" the technique provides cost estimates, instructional program analysis, space allocation, and site plan. The author also presents procedures used to develop this method of analysis and illustrates form sheets used.

247. Smith, Donovan E., "College and University Space Requirements," in The American School and University, 1954-1955, pp. 287-296, edited by Walter D. Cocking, American School Publishing Company, New York, 1954.

Space allocation is most important in planning of facilities. But what guidelines are to be used in this allocation? Smith advances some answers by discussing how the University of California attempted building measurement in the planning of \$150 million of buildings since World War II. Smith feels requirements can be defined in terms of square feet of space per building. Using tables he presents a method for the measurement of space, formulation of guidelines, and the application of these guidelines in a hypothetical case. The author reports that in their planning, all floor space is reduced to a per student basis. Thus faculty-student ratios are used. Smith points out that these guidelines may not be applicable to other types than instructional space.

248. _____, "Effective Use of Space Including Equipment and Other Facilities," College and University Business 19:34-35, September, 1955.

Smith indicates how institutions can more effectively utilize existing space, equipment, and facilities. The author concentrates on organizational controls, procedures, and standards in overall administration of space.

249. _____, "How Can Institutions Increase the Effectiveness of the Use of Space, Equipment and Other Facilities?" in National Conference on Higher Education, 1955 Current Issues in Higher Education, pp. 150-158, edited by G. Kerry Smith, The Proceedings of the Tenth Annual National Conference on Higher Education Association for Higher Education, Washington, 1955.

Increasing student enrollment emphasizes the need for a more effective allocation of space within college and university academic buildings. The author suggests a number of points that he feels should lead to a more effective utilization of space. Three major areas include administration, statistical analysis of utilization, and planning practices. Smith feels decentralized scheduling of classes with parallel reporting of schedules to a central office is necessary for good administrative analysis and decision. But favorable space utilization of all types of space is best achieved through centralized administration. Physical plant planning must be "objective, campus-wide, long-range" planning based on educational theory and the institution's educational programs.

250. Stickler, W. Hugh, "The Expanding Role of Institutional Research," College and University Business 30:79-80, April, 1961.

The author comments on the importance of the role Institutional Research plays in planning in colleges and universities. Institutional Research is defined, the thrust of Institutional Research at Florida State is presented, and guiding principles for a program of Institutional Research are given.

251. Taylor, Roger, "How to Plan and Achieve Maximum Facility Usage," College and University Business 30:59-60, May, 1961.

Taylor presents the type of analysis needed to ensure effective utilization of available space.

252. Thompson, Kelly, "'Step Schedule' Increases Classroom Utilization," College and University Business 30:66-67, May, 1961.

Western Kentucky State increased utilization of classrooms 57% by employing the method of "step scheduling." Thompson presents the mechanics and the advantages of this system which was designed to increase classroom utilization.

253. Tonigan, Richard F., "Using Facilities Effectively," American School and University 38:55-56, October, 1965.

This article calls for each institution to have an effective space allocation program. Tonigan states that in many cases where administrators feel new programs cannot be introduced it is attributed to lack of space; in reality it is poor utilization of existing space. He calls for a program designed to maximize existing space utilization by first conducting an analysis of existing conditions, then analyzing the educational programs, setting up a committee with responsibility, and then assigning activities to a proper location.

254. Wilson, William O., "Solving Space Problems Via Maximum Plant Use," American School and University 38:42, September, 1965.

Even though Wilson stresses the area of the public school his purpose is applicable to colleges. The increasing pressure of enrollments, concepts about the value of education, and the technical nature of education require more and more buildings. In terms of financing these buildings, Wilson claims that the present tax structure is not adequate. In view of this he points out that utilization of the present physical plant must increase.

255. Zanfino, Frank J., "How Many Students Can Your College Accommodate? Here's a Simple Formula to Help You Find Out," College and University Business 34:49-52, May, 1963.

Zanfino concentrates his discussion on a formula which is designed to calculate optimum number of students per semester. He contends this formula is usable provided all physical space data are available.

I. PARKING

256. Brewster, Sam F., "Site Development Pays Off," College and University Business 12:44-45, January, 1952.

The article focuses on the steps taken at Alabama Polytechnic to analyze the space between buildings, the formulation of a plan, and the carrying out of that plan designed to increase the functionality and esthetics of that space. Consideration should be given to landscaping, parking and walking site development, and the future incorporation of site development in architect planning of buildings.

257. Brower, Martin, "U.C.L.A. Keeps Pace With Its Parking Problem," College and University Business 30:41-43, January, 1961.

With an estimated enrollment of 27,500 students by 1967, U.C.L.A. calculated a need for approximately 23,000 parking spaces. This article discusses the need for parking, the intended construction program, and the costs involved in a seven-year program designed to alleviate the parking problem in the immediate periphery of ten structures located on the main campus.

258. du Von, J., "Campus Landscape," American Education 2:18-24, May, 1966.

The author focuses on site problems. In the last decade colleges and universities are doing more than mere construction of facilities-- they are meeting their problem of site head on and turning facilities into functional assets. By consulting a reputable firm, problems of site (parking, transportation, drainage, arrangements, and other area design) are resolved as integrated elements of university planning. Du Von stresses that the total environment is most important to ensure that the character of an institution is compatible with the function of the university. The author uses Grand Valley State College, UCLA, SIU, and Florida Presbyterian College as examples.

259. Egner, Anton J., "How Big Can You Get?" College and University Business 37:57-61, November, 1964.

The purpose of this article is to show the relationship between enrollment potential and physical size. The author conducted walking time studies in order to advance understanding of an optimum student enrollment based upon limiting factors of the physical campus. According to Egner's findings, arrangements of academic, administrative, recreational, library, and housing areas which are elements of the campus may be predicated on walking time, time between classes, heights of buildings, and density of buildings.

260. Finlay, Louis E., and Lahti, Robert E., "Demands of Effective Site Selection," Junior College Journal 37:17-20, May, 1967.

The selection of a proper site for a new campus demands careful inquiry about cost, location, size, availability of public utilities, and accessibility. This article is a discussion of these factors in consideration of campus planning. The authors use a dialogue between a planner and an administrator to present the steps involved, facts to be considered, and procedure in selection of a new site.

261. Hannum, Paul C., "The Cars That Come to the Campus," College and University Business 22:33-36, February, 1952.

The use of space for parking areas is a result of an increasing use of motor transportation by all personnel connected with institutions. In urban areas this constitutes a major problem. This article focuses on conditions responsible for the problem and attempts to alleviate the parking problem on the UCLA campus.

262. Lautner, Harold W., "Building Traffic Safety Into a Campus," College and University Business 29:27-29, July, 1960.

This article illustrates how correct planning of spatial relationships can result in fewer major traffic arteries which hinder and affect the safety of students. The examples are drawn mainly from Michigan State University and a booklet on traffic safety within residential areas, written by the author.

263. McMinn, J. Malcolm, "Parking In On the Rise at PSC," American School and University 39:59, 111, May, 1967.

The author focuses on parking problems and tentative solutions through a question-and-answer type format. Much of the information has been derived from experience at Portland State College which has one 8-story parking area and plans two more.

264. Pearce, H. W., "Parking Lot Control," College and University Business 20:46-47, April, 1956.

The purpose of this article is to describe a possible solution to parking problems in high density areas where control is a must. The solution presented is an interesting device requiring a "key" to activate a gate; thus entrance is provided only to a controlled number. This represents an attempt by one institution to regulate a growing problem on all campuses.

265. Sheeder, E. Thomas, "How to Control Your Parking Situation," College and University Business 31:49-51, October, 1961.

The author describes the parking situation, policies toward parking, and implementation of these policies at SUNY of Fredonia.

266. Walshe, T. G., "We Solved the Parking Problem on Our Campus," College and University Business 30:62-64, April, 1961.

This article illustrates the methods by which Hofstra College met a growing parking problem. The discussion includes allocation of space and administrative controls.

J. COLLEGE-COMMUNITY RELATIONS

267. Ashworth, K. H., "Urban Renewal and the University: A Tool for Campus Expansion and Neighborhood Improvement," Journal of Higher Education 35:393-396, December, 1964.

The increased enrollments at institutions of higher education impel institutional authorities to consider new ways of coping with this problem. The author shows how urban renewal can be utilized to good advantage in urban-academic communities to help alleviate population pressures. Urban renewal is used to regenerate a neighborhood as an asset with the total community. The benefit to the institution is in the decreased cost of cleared land, vis-a-vis uncleared land, where costs are increased by the value of the buildings thereon. Ashworth shows how Section 112 of the Housing Act of 1959, when properly applied by the university and the city, has four distinct advantages to the University.

268. Baur, Catherine, "Housing Policy and the Educational System," Annals of the American Academy of Political and Social Sciences 302:17-27, November, 1955.

Within the past 40 years, and especially since World War II, a dramatic "revolution" in building homes has materialized. Before the onset of the depression years most homes were financed and built by individuals and small contractors. Sometimes large parcels of land were purchased and then subdivided. Since World War II however, large scale operations have evolved in which hundreds of homes are built, roads and utilities provided, and mortgages financed, all in a period of two years. This type of evolutionary landscape produced a community of housing but one more than lacking in proper civic facilities. The author points to three basic issues that have developed: (1) mass-production of housing requires long-range planning of community, (2) mass-produced housing creates a social segregation, and (3) the consumer, who comes last, has little choice relating to total environment. The implication of this type of housing for elementary and secondary education facility location is that it creates more problems than it solves.

269. Bennett, Wells, and Blocker, Clyde E., "Urban Development in Flint," College and University Business 28:48-50, February, 1960.

The authors comment on the integration of the Flint Community Junior College as an entity within the master plan of the city of Flint, Michigan.

270. Brodinsky, B. P., "Improvement in Building Costs Will Save College and University Construction Costs," College and University Business 11:28-32, November, 1951.

The author examines pertinent points about building codes and the relationship with college facility construction. It is necessary for a college business official to ask about his own particular code: age of code, contents, and is the code rigid or flexible? He stresses six steps colleges can follow to modernize building codes affecting their construction.

271. Carothers, Neil J., "University Circle Institutions Round Out Urban Site," College and University Business 34:53-57, May, 1963.

The impact of the University Circle Development Foundation of Cleveland on development of 488 acres in Cleveland is the focus of this article. The author describes the function, organization, and the spirit promoted by this foundation since its inception in 1952 on a 20-year plan involving 29 social and educational institutions and costing approximately \$174.5 million.

272. Duhl, L. J., "University and the Urban Condition," Educational Record 46:330-334, Summer, 1965.

The author warns the educator that not only is he lax in town-gown relationships, but also that other factions of society are invading his domain, while he is blind to both. Duhl sees the university as the agent best suited for social change and thus social leadership. The values, ideas, and spirit of education should not only continue but extend into all areas of society. He does not say that the universities are not involved; it is just that they get involved too late. He concludes by stressing that institutions provide a community role in educating people.

273. Foegen, J. H., "With Dollars and Diplomas a College Boosts Its Community," American School and University 39:45-46, March, 1967.

The author discusses the value of higher education to a community. Estimates are made as to the amount of money construction expenditures, student spending, payrolls, etc. place in the local economy.

274. Folger, J. K., "Urban Sprawl in the Academic Community: Alleviating the University's Growing Pains," Journal of Higher Education 34:450-457, November, 1963.

This article relates the increased enrollment of institutions and the resultant problems that occur analogous to the urban community. As the universities grow larger an average size of 20,000 to 25,000 would be common. Furthermore, these 500 to 600 institutions will enroll "5,000 students or more, three fourths of all students in attendance." Thus size alone will create problems, especially in administration which will accrue more and more specialized functions. As the faculty increases in numbers they will lose a feeling of administrative participation and importance to these specializations. As size increases and instruction becomes more impersonal the relationship between intellectual growth and social and living arrangements becomes polarized. The author suggests as solutions to the above problems: (1) selection of high potential students for special treatment; (2) enlist intellectual students to help motivate others; (3) a different approach to housing arrangements; and (4) more attention to planning of an educational nature.

275. Hardy, Leslie P., "A City Zones for University Expansion," College and University Business 20:30, June, 1956.

This article describes a new ordinance which zoned 50 acres for University use in Akron. Hardy traces the inspection of the ordinance and indicates the importance of the ordinance to the municipal university.

276. Harnwell, Gaylord, "A University's Struggle for Community Improvement," College and University Business 30:71-75, May, 1961.

The management of space is not restricted to the campus but extends to areas beyond the campus proper. Harnwell indicates the reciprocal impact of the academic and urban communities and discusses the linkages that are operating in Philadelphia via the University, the city, and the West Philadelphia Corporation.

277. Hester, James M., "Urbanization and Higher Education," in 1966 Current Issues in Higher Education, pp. 68-92, edited by G. Kerry Smith, The Proceedings of the Twenty-first Annual National Conference on Higher Education, Washington, 1966.

There is no doubt that in recent years the academic community and the urban community are becoming more integrated. The urban institution has been fostered by the increased urbanization of population and the resultant interchange is one of mutual benefit. Even so, there are both disruptive and cohesive forces and Hester focuses on these forces. Cohesive forces are economical educational opportunities, attractive qualities for other functions, research to solve urban problems, and the urban community as a relevant intellectual environment. Disruptive forces are: inadequate finances, land shortage, family amenities, and provincialism, induced by commuting students.

278. Knox, Naphtali H., "The Urban Community: A Planning Guide," College and University Business 42:58-63, April, 1967.

"In small community and large, the university is the strategic focus of social and cultural organization." The influence of the university on the urban community is being widely recognized but until recently the universities were more concerned with "planning buildings" instead of "planning communities." There can be no doubt that the "impact area" of any institution goes far beyond the institution's land ownership and/or control and that expertise in planning can help to make benefits available to both the urban and academic communities. The author identifies housing, university growth, related institutions, traffic and parking, and commercial facilities as problem areas that place special burdens on an urban community when they are not identified and considered at the proper time in the planning process.

279. Kraushaar, John L., "How Much of an Asset Is a College," College and University Business 36:43-45, February, 1964.

The economic support of an area depends on whether the economic functions are basic or non-basic in nature. Basic functions bring money into an area by selling outside, while non-basic functions usually just spread the money throughout an area without generating new levels. Kraushaar conducted a study to determine whether the University of Bridgeport contributed to the area's economy in a positive fashion. It does--to the level approaching \$10 million a year. Because most students are from outside the area they become economic assets while at the institution. The study used questionnaires to determine what and how much the student body was spending of the total.

280. Levi, Julian H., "The Influence of Environment on Urban Institutions," The Educational Record 42:137-141, April, 1961.

The acquisition of land for expansion is a difficult procedure for a "land-locked" institution. It is only too obvious that institutions must occupy space and yet many find themselves completely surrounded by occupied land when expansion is necessary. This situation indicates one reason why institutions should be aware of the surrounding physical environment. The author examines four questions: (1) Why should the surrounding environment be of concern? (2) How to approach the conditions? (3) What can an institution do to secure an adequate campus area? and (4) In what way can federal urban renewal programs be used? The author also indicates how Section 112 of the Housing Act of 1959 can help achieve better campus neighborhoods.

281. Martorana, S. U., and Ayers, Archie R., "Industry Likes to Locate Near a College or University," College and University Business 29:29-32, October, 1960.

The perceptions and attitudes of industrial executives toward locations near institutions of higher education are reflected in this article. Survey results show that 35 of 53 executives considered higher education as an important factor in choosing industrial location sites. Quotations from top executives are presented indicating their reflections about the urban and academic areas.

282. Moore, Wilbert E., "Forecasting the Future: The United States in 1980," Educational Research 45:341-354, Fall, 1964.

The overall status, structure, and trends of our society have important implications for higher education. The author, a sociologist, discusses in some depth the trends of population and levels and styles of life. His approach is twofold in that he views both sides of the problems. For instance, in terms of population trends he predicts by 1980 there will be 11.5 million students in higher education. He indicates the possible social and economic benefits but he also indicates that what now is a "sellers" market may become a "buyer's" market. Moreover, increased population also means increased taxation for increased facilities. The implications of the author's predictions are viewed in terms of libraries and teaching.

283. Newmann, F. M., and Oliver, E. W., "Education and Community," Harvard Educational Review 37:61-106, Winter, 1967.

The authors attack the American "system" of education. Instead of concentrating on the techniques of education, they question the goals to which we presently adhere. The article is in four parts: I. "Two Interpretations of Modern American Society," II. "A Re-examination of the Premises of Contemporary American Education," III. "The Direction of Modern Educational Change," and IV. "A Proposal for Education in Community." The premises of education include: (1) education as formal schooling, (2) education as a publicly operated monopoly, and (3) education structured similar to corporate business. The authors feel that many problems of education are derived from these basic premises. The goals of American style education are also questioned in the sense that the goals are always achieved, rarely are the goals themselves questioned as to their adequacy or validity. An alternative offered by the authors would alter the context of education as now conceived. They perceive a school-laboratory-studio-work-community seminar context through which all age groups, all

diverse cultures could interact and communicate. The contexts indicate the authors are stressing education as "systematic instruction, action, and reflection."

The authors dissent from the prevailing type of reform by going beyond this "restrictive" tradition of value judgments that are not seriously, if at all, questioned or even adequately justified. It is a plea to re-evaluate the present structure in terms of "community" relationships and the "great society" arguments.

284. Parsons, Kermit C., "Universities and Cities," Journal of Higher Education 34:205-216, April, 1963.

One of the more difficult problems facing the university today is the acquisition of land for expansion of physical facilities. By acquiring land the university can and does increase tensions between the city, the institution, and the immediate neighborhood. The author felt that previously the city and the institution were at odds in that each acted as if the other were not there. Section 112 of the Housing Act of 1959 has, to a great extent, overcome this dichotomy. Today in Chicago, Cleveland, Philadelphia and other cities both institutions (city and University) are cooperating in this venture of acquisition of land. The rapprochement of city and university fostered by government legislation strengthened the ability to acquire land for expansion, decreased the tendency for contiguous neighborhood deterioration, and increased the economic assets of both communities. Money credits extended by Section 112 reduced monetary worries but did nothing to alleviate social and political conflicts. The author feels that these problems remain to be resolved. In a joint urban-renewal project the university must strive for a balance between the one extreme of limiting itself to the objectives of an academic environment and the opposite extreme of improvement for all who will reside and work in that area. A "middle road" is the way to achieve a favorable environment conducive to both academic and urban communities.

285. Solnitt, Albert, "Town and Gown: One Community," Teachers College Record 68:289-294, January, 1967.

The construction of a building on a campus creates an environment of its own. Taken with the whole campus the physical structure creates a different environment. Taken in view of the whole urban community, the academic community should be an integrated element. Solnitt claims it isn't, but it should be. His thesis is how the academic community and the urban community should be integrated to allow reciprocal linkages.

286. Tonigan, Richard F., "Plant Management and Good Community Relations," American School and University 39:69-70, October, 1966.

This article focuses on the area of school-community relationships. Tonigan states that people representing local business firms, city services, and local citizens can enhance these school-community relations via an advisory group.

287. "The University in an Urbanized America," editorial, Journal of Higher Education 34:458-461, November, 1963.

The editor of the Journal of Higher Education addresses himself to those trends that may be potentially dangerous to the recognized, worthwhile

values. The major trend of growth in the university is seen by the editor as disruptive in the sense of the ability of individuals to see the whole. The editor feels that this growth leads to specialization within the faculty. Thus the administration takes over the area of decision-making generally reserved for the faculty. Again this fragmenting takes place in the students as a greater divergence in abilities, social background, etc. becomes apparent. It leads to vocational training rather than education. The author concludes that the "growing interdependence of town and gown is desirable but higher education should not lose its identification and orientation." The editor feels that "traps" can be avoided by careful, and previously neglected, planning.

288. Violich, Francis, "The City Planning Process: A Framework for Community Education," Annals of the American Academy of Political and Social Science 302:8-16, November, 1955.

Educational facilities are not divorced from the community--they should not be built, but planned. The author discusses first the rationale for community and/or regional planning and procedures for planning. Only by proper land-use arrangement can the total social fabric of a community serve the "best interests of a community." Secondly, he discusses the place of the elementary, secondary, and college levels of education within the community. Two basic theories, the neighborhood and community concepts, are discussed along with the obstacles involved in proper school siting (financing, uneven population distribution, spatial location, government).

289. Wright, Richard Sims, Jr., "They Fought for Urban Renewal," College and University Business 30:76-81, May, 1961.

Wright presents a brief synthesis of the work of the University of Chicago and the South East Chicago Commission that contributed to a rehabilitation of an urban neighborhood and university.

K. BUILDING DESCRIPTION

Without Floor Plans

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The Bulletin of the School of Education, Indiana University, was first published in 1924 and has appeared regularly since that time. A complete list of bulletins may be obtained from the School of Education upon request. The studies included in the present volume and in the two volumes immediately preceding it in date are listed below. Unless otherwise indicated, these may be obtained for \$1.25 each from the Indiana University Bookstore, Bloomington, Indiana.

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