

NOVEMBER/DECEMBER 1972

NORTH CAROLINA **ARCHITECT**



PUBLISHED BY THE NORTH CAROLINA CHAPTER OF THE AMERICAN INSTITUTE OF ARCHITECTS

for architects, builders and owners

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- The first section spells out CAPABILITIES, LIMITATIONS and DEFINITIONS along with AS-

SEMBLY ARRANGEMENTS and details.

- The section on design principals deals with APPEARANCE, STRUCTURAL INTEGRITY, control of WATER and AIR MOVEMENT, GLAZING and PANELING information.
- A section on installation explains SLAB ASSEMBLIES and STACK ASSEMBLIES.
- Also included is applicable DESIGN WINDLOAD information and WINDLOAD charts.

Many sectional drawings of part and assembly details illustrate much of the comprehensive text and specifically show details of the BIN-A-WALL System. With typical shop drawings included, ours is a most complete manual on curtain wall systems.

This manual is written in depth to serve architects and builders, yet it is understandable to owners and interested investors. If you are planning a building and are not familiar with the BIN-A-WALL Curtain Wall System, send now for this Manual. Use it as a point of common reference by all involved persons in your next project. Send for your copy today.



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Four myths about architects.

"To the architect, time is no object."

The truth is that in the new science of fast construction, it is *architects* who are the pioneers. Using new techniques like "Fast Track" and "Critical Path," they are meeting and even beating some murderous deadlines. At the site for Memorex's huge new headquarters in Santa Clara, California, architects had steelwork up in 3 weeks, the first products rolling off assembly lines within 9 months, and the entire complex (4 buildings, which won awards for their good looks) finished inside of 2 years!

"He loves to spend your money because his fee is a percentage."

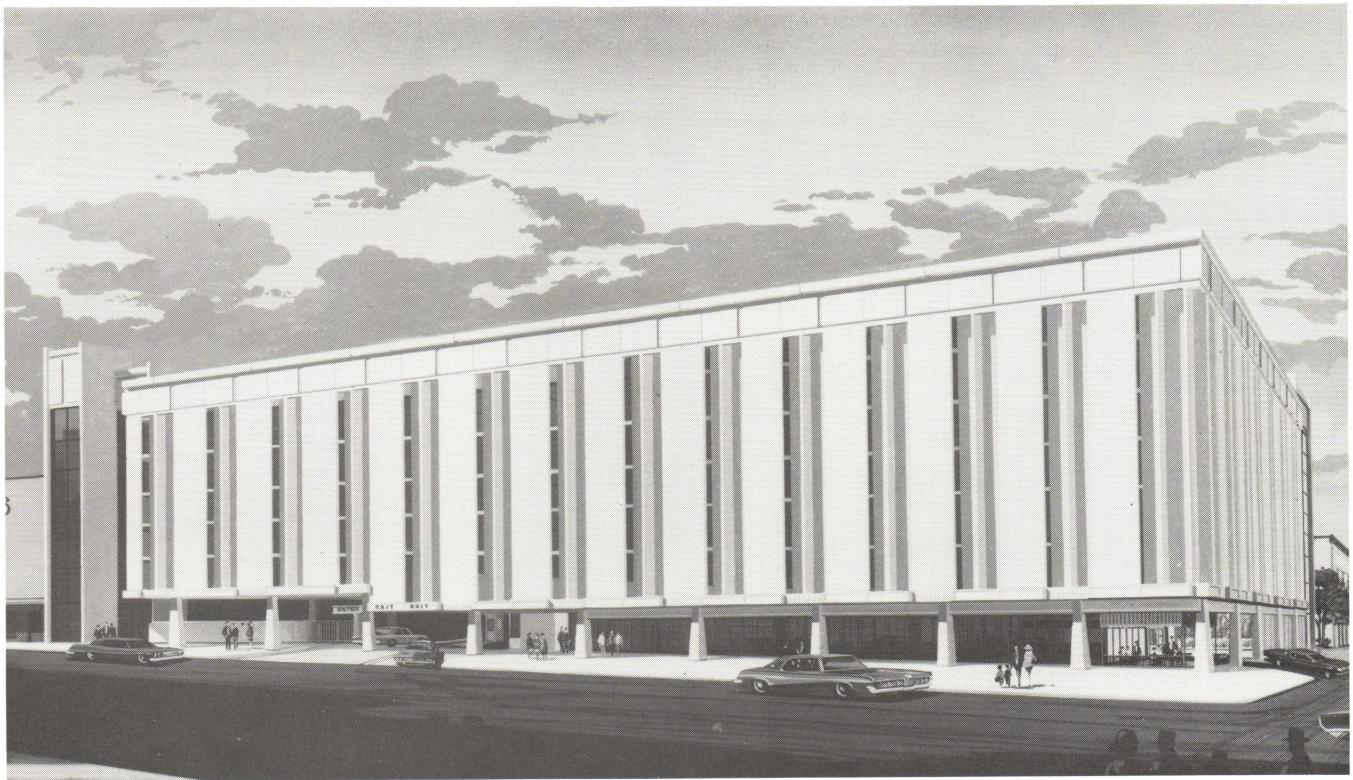
The truth is that architects today will often negotiate a *fixed fee* before they begin work. But the architect who did Cities Service Oil's headquarters in Tulsa was working for the traditional percentage. He found a way to use the outer walls as a truss, thus reducing the cost of the building by \$1,000,000 and—incidentally—clipping a sizable sum off his own fee!

"His estimate is an under-estimate."

The truth is that despite the dizzying impact of inflation, architects' estimates have proved to be surprisingly realistic. A random sampling of 25 architectural projects in North Carolina last year showed that final construction costs were \$3,195,843 *under* the architects' original estimates. And there's no reason to believe that North Carolina's architects are any shrewder than the rest.

"He cares more about the way it looks than the way it works."

Ten businessmen who've dealt with architects recently have taken the trouble to demolish *this* myth. They describe how their architects gave them buildings that work in ways they would never have thought of themselves, and we've put their stories into a booklet. We'll send you a copy, free: Just drop a card to American Institute of Architects, 1785 Massachusetts Avenue, N.W., Washington, D.C. 20036. (It happens to be a good-looking booklet, as well.)



Greensboro's newest parking garage to feature Southern elevators with glass enclosures

Space for 630 automobiles will be provided in Greensboro's newest parking garage on South Greene street. Costing \$2.5 million, vertical transportation for the seven levels will be provided by Southern elevators with glass enclosures. Visitors using the garage will get a good view of the city from these modern elevators.

Architect: J. Hyatt Hammond Associates, Inc., AIA

General Contractor: Daniel Construction Company of North Carolina



SOUTHERN ELEVATOR CO.

Main Offices and Plant: Greensboro, N. C.

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Opinions expressed by contributors are not necessarily those of the North Carolina Chapter of the American Institute of Architects.

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COVER PHOTO: Board Room, AIA Tower, Raleigh
Photo by Gordon H. Schenck, Jr.

Last week, Barron Kinsey solved tile-setting problems for Dan River Mills and Burlington Industries. This week, he's doing the same for John.

Barron Kinsey is Mid-State Tile Company's technical representative.

Because he's had 39 years experience with ceramic tile, a lot of big companies call on him for help.

But Barron is never too busy with big companies to help little companies. Like a lot of contractors, John Kepley has never installed a pool before and he needs advice.

What's the best tile for a pool? Unglazed porcelain ceramics. They're frost-proof and can come non-slip. And come in 40 colors to dress up the job.

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You can get Barron's advice, too. Free. And you don't even have to use the tile we sell. All you have to do is have a tile-setting problem. Or a question about acids. Extreme heat or cold. Steam pressure. Exposure to moisture. You name it.

But sending Barron Kinsey to your office, showroom or job site is just one way the people at Mid-State can make things easier for you. Here are a few other ways:

Our tile comes in 85 colors. Which is a broader range than most of our competition. In addition to porcelain ceramics, it also comes in

15 textured glazes. 10 matte finishes, with no extra charge for mattes.

As well as 20 brights. And in an innovative designers' line that can turn residential and commercial projects into showplaces.

To find out more about what we can do for you, call Barron at 704/246-5915. (He's also ready to show you what Mid-State's new premixed grout can do. It's a new premixed formula that comes in colors, resists mildew, chipping and staining and eliminates call backs.)



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HAIL TO THE CHIEF

Charlotte architect S. Scott Ferebee, Jr., FAIA, was formally installed as the 1973 president of The American Institute of Architects in ceremonies held at The National Gallery of Art in Washington on December 8. He succeeds Max O. Urbahn, FAIA, New York City, as head of the 24,000-member national professional society.

In addition to Ferebee, five other officers were installed. They included the new first vice president (president-elect), Archibald C. Rogers, FAIA, of Baltimore; three vice presidents, Louis de Moll, FAIA, of Philadelphia (re-elected for a second term); Van B. Bruner, of Haddonfield, N. J., and David A. Pugh, FAIA, of Portland, Ore. and a secretary, Hilliard T. Smith, Jr., FAIA, of Lake Worth, Fla. Twelve new regional directors were also installed.

Ferebee, who heads the Charlotte firm of Ferebee, Walters and Associates, has served AIA as first vice president for the past year. He has also served on the Institute's Board as Director of AIA's South Atlantic region; as chairman of the Commission on Professional Practice, and on numerous national committees.

He was president of the North Carolina Chapter in 1964, following terms as its vice president and treasurer.

Ferebee, a paratrooper in the 101st Airborne Division during World War II, has remained active in the U. S. Army Reserve and currently holds the rank of Major General. He serves as Commanding General of the 108th Division (Training).

He is a member of St. Paul Methodist Church and has served in numerous church offices.

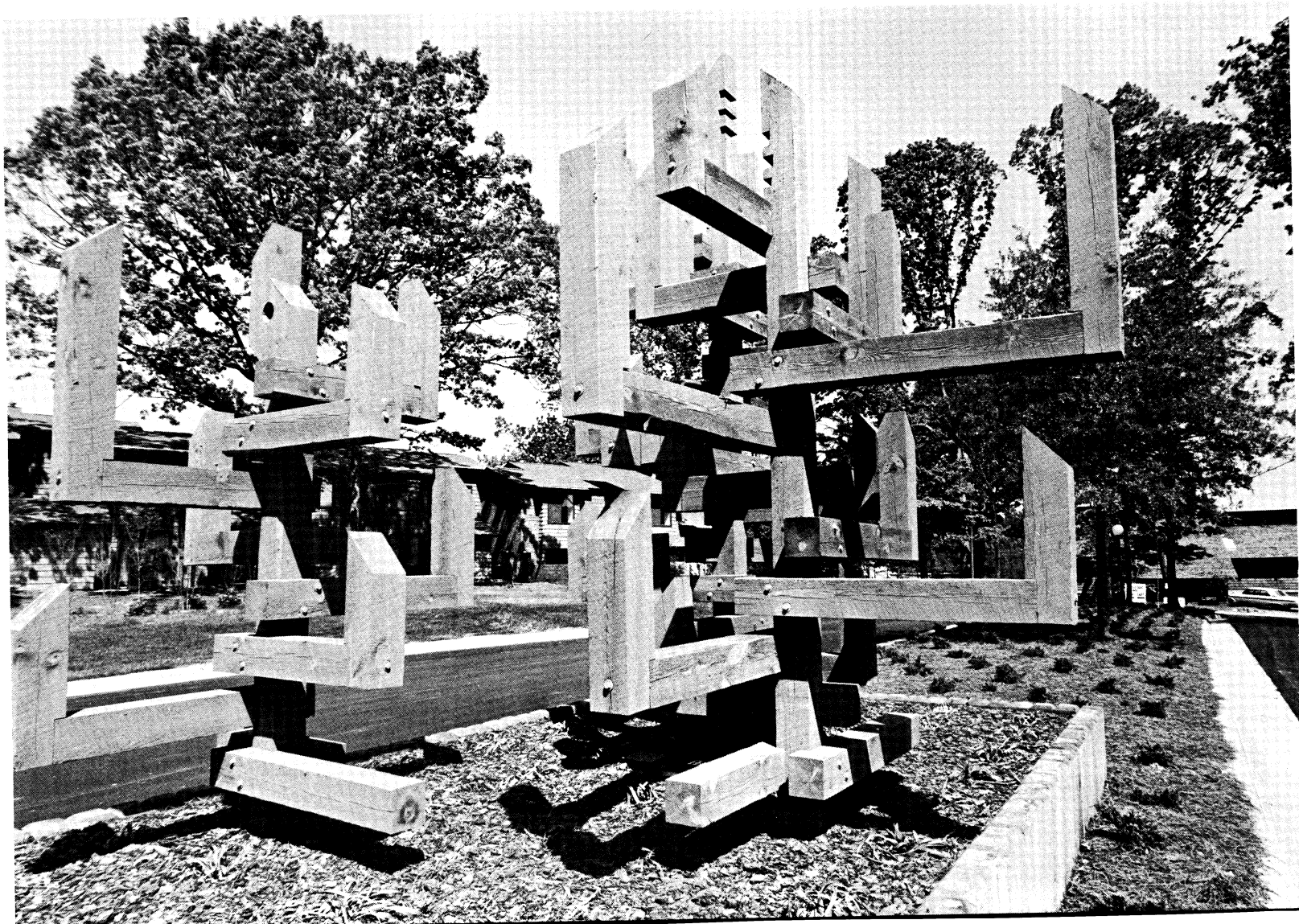
He and his wife, the former Elizabeth Cooper, of Asbury, N. J., are the parents of three children, Scott III, John, and Caroline.

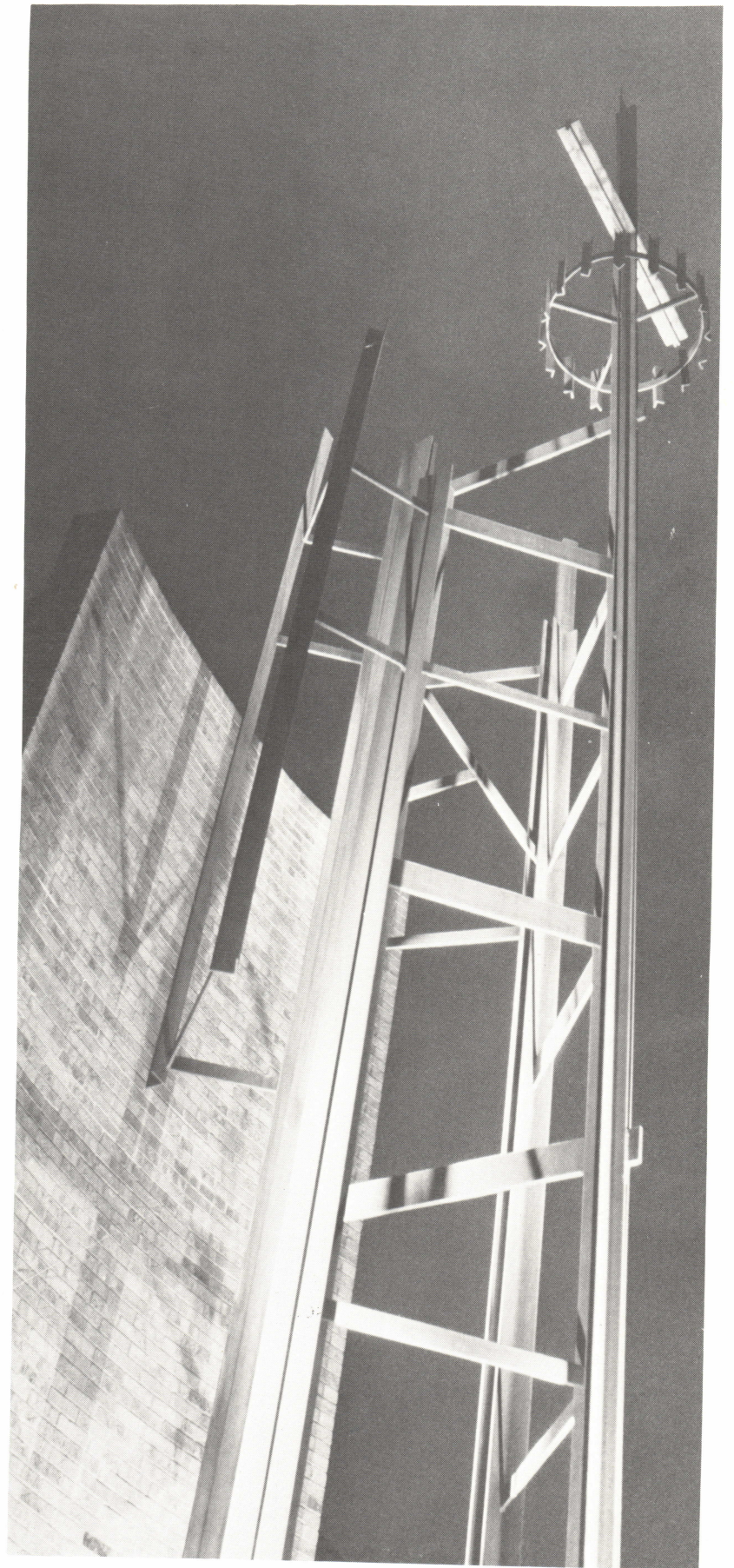
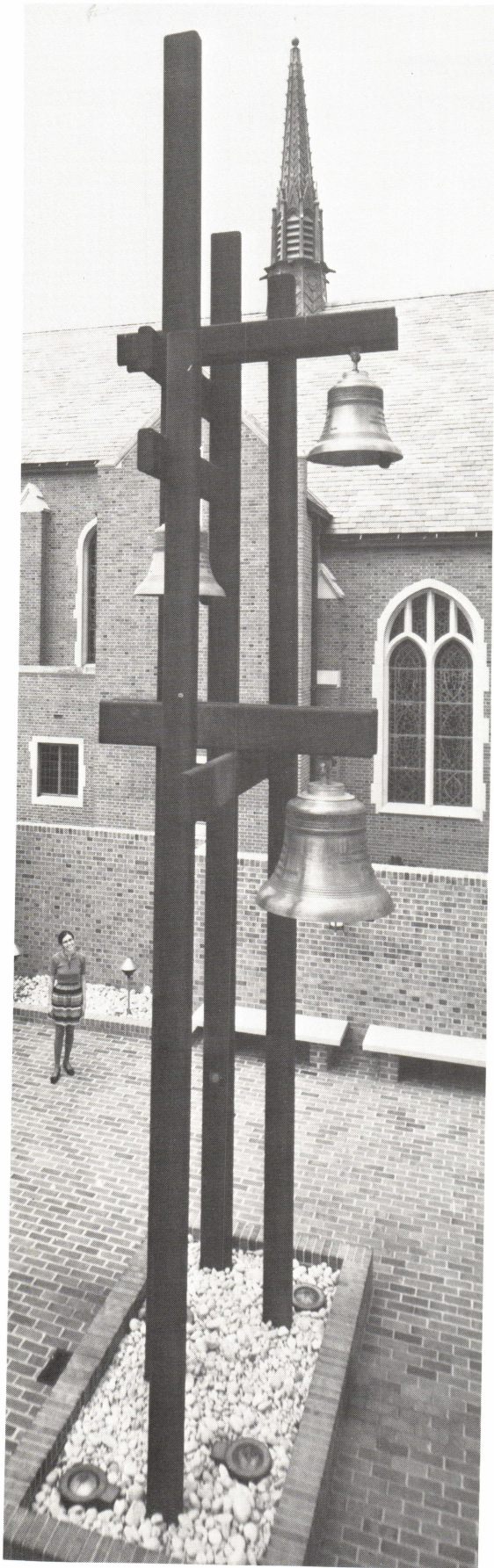


NOW AND THEN

Back when cars had running boards and rumble seats and children rode bicycles and played in dusty, unpaved streets, churches were as easily recognized as the corner drug store. Often in the rural and small town areas, the cross atop a church spire was the tallest point in the community and, of course, the church was the center of most of the activity. Today, the church steeple concept has drastically changed in keeping with the more contemporary design of churches. Areas once dotted with traditional rectangular churches topped by the traditional steeple and cross, have been replaced by more sophisticated edifices. Imaginative religious symbols may be free standing towers or may be an innovative approach to the traditional. The variety in design arouses the imagination of the passerby.

Not only has architecture and life style changed during the past few decades, but a great deal more innovative symbolism is evidenced by the use of outdoor sculpture. More and more sculpture, whether of natural materials or man-made, is being integrated into various building programs. A prime example is entranceways to new developments, apartment complexes and neighborhood mini-parks. So, even the traditional outdoor play areas for children have taken on esthetically pleasing designs. Another example is the contemporary design of public waste receptacles. The clichéd connotation of "sculpture" such as adorns the palaces and gardens of Europe will soon be (or may already be) only for history buffs. Marble, bronze and plaster figures are being replaced by interesting designs of wood, steel, aluminum and natural stone. Take a drive around your community and note the different, unobtrusive, but interesting landscaped spots.





NEW DEAN TO HEAD NCSU'S SCHOOL OF DESIGN



Claude E. McKinney, 43, has been named dean of the School of Design at North Carolina State University, Chancellor John T. Caldwell announced recently.

McKinney, now director of the Urban Life Center, Columbia, Maryland, succeeds Dean Henry L. Kamphoefner, veteran dean of State's famed School of Design who is retiring.

Kamphoefner has been dean since 1948 when the school was formed. It included programs in architecture, landscape architecture, product design and urban design.

McKinney is a native of Greensboro and a graduate of the University of North Carolina at Chapel Hill.

In making the announcement, Chancellor Caldwell said Dean Kamphoefner and his faculty have earned an international reputation for the School of Design.

"We are extremely fortunate now to have a new dean who has a distinguished reputation, great energy and leadership, and marvelous personal qualities."

Chancellor Caldwell said McKinney will assume his position at State as soon as the new dean can conclude his responsibilities with the Urban Life Center.

McKinney was born in Greensboro. He graduated from the University at Chapel Hill in 1951 with a B. A. and earned Phi Beta Kappa honors. He took graduate work at Chapel Hill in 1951-52 in painting and design.

McKinney has extensive experience in design work in both academic and business fields. He was head of the art department at Livingstone State Teachers College, 1953-57; designer for the Office of Naval Research, 1957-59; vice president for research and later executive vice president, Technical Animations Inc., Port Washington, New York, 1959-68; president, Technamation Inc., 1967-68; design consultant, 1968-69; an officer and later director of The Urban Life Center at the new city of Columbia, Maryland, since 1970.

He is a member of numerous professional organizations in the field of visual design, advertising, and audiovisuals, including the Museum of Modern Art.

McKinney is married to the former Mimi McCall, daughter of Mr. and Mrs. Robert L. McCall, Highland Court, Spartanburg, S. C.

He is the son of Mrs. Clyde McKinney, West Rotary Drive, High Point, N. C.

The McKinneys vacation in North Carolina each summer, staying near Blowing Rock in Watauga County.

N. C. DESIGN FOUNDATION ELECTS OFFICERS



Seated from left are: Nisbet P. Rodgers of Lexington, outgoing president of the Design Foundation; NCSU Chancellor John T. Caldwell; and A. Cabell Ford, Jr. of Charlotte, new president of the foundation. Standing from left are: veteran Dean of Design Henry L. Kamphoefner; Richard L. Rice of Raleigh, vice president of the foundation; and Rudolph Pate, foundation secretary and director of the NCSU Office of Foundations and Development.

A. Cabell Ford, Jr., Charlotte businessman, and Raleigh architect Richard L. Rice, AIA, were elected Tuesday to top offices in the N. C. Design Foundation, which raises funds for N. C. State University's School of Design.

Ford, vice president of southern regional sales for Carolina Solite Corp., succeeds Nisbet P. Rodgers of Lexington.

Other officers named at a directors meeting were Rudolph Pate, secretary, and John D. Wright, treasurer. Both are members of the NCSU administration.

The elections came following reports by Chancellor John T. Caldwell and Dean of Design Henry L. Kamphoefner on the work of the nationally noted school.

The Design Foundation, established in 1949, has raised more than a quarter of a million dollars in private funds for the school.

Elected to the executive committee in addition to Ford and Rice were the following: C. C. Woods, Jr., Durham; Dan P. MacMillan, Jr., AIA, Fayetteville; Fred W. Butner, Jr., AIA, Winston-Salem; Joseph S. Williams, Rocky Mount; and Claude P. Smith, Raleigh.

Ford, Lucius R. Evans, AIA, Raleigh, and John D. Latimer, AIA, Durham, were elected to the foundation's investment committee.

Named as new directors were the following: George C. Turner, Raleigh; Robert V. Thomas, Durham; C. T. Wilson, Durham; Walter E. Blue, Jr., AIA, Greensboro; Fred Adams, Raleigh; Hyman Dave, Asheville; and John Brewer, Raleigh.

KAMPHOEFNER HONORED

An Honorary Doctor of Laws degree has been conferred upon Dean Henry L. Kamphoefner of North Carolina State University by Ball State University.

Kamphoefner, a veteran of 24 years as dean of the School of Design at NCSU, was honored during ceremonies dedicating a new \$2.2 million College of Architecture and Planning building at the Indiana University.

Honored with Kamphoefner were Eli Lilly, retired chairman of the board of Eli Lilly Company; and J. Irwin Miller, chairman of the board of Cummins Engine Co.

Dean Kamphoefner was honored for 35 years of distinguished leadership in architectural education in America.

In 1937 he joined the University of Oklahoma architecture faculty as an assistant professor. Later he became full professor, acting director of the School of Architecture and in 1944 coordinator of campus planning at Oklahoma.

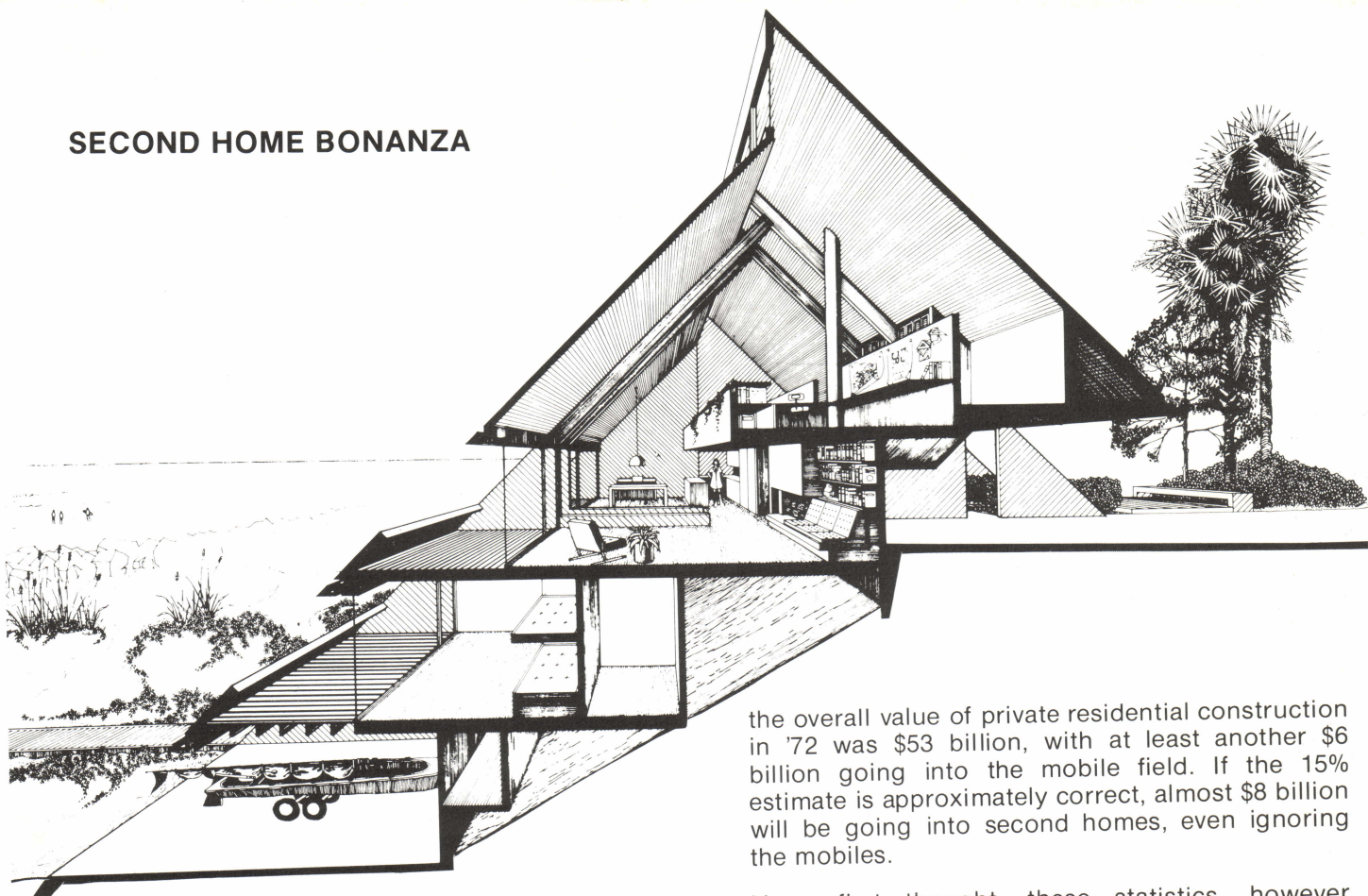
In 1948 Dean Kamphoefner was named Dean of the School of Design at North Carolina State University where he has brought distinction to the school for the programs in which its students have been invited to participate. The school was one of seven American design schools invited to participate in the Museum of Modern Art's "Good Design Show" and it was invited by the U. S. Department of State's Foreign Information Service to participate in preparing an exhibit on "American Architectural Education" which circulated in European and Latin American countries.

North Carolina State's design students also were selected to exhibit their work at the Congress of the International Union of Architects in Paris. In addition to having a number of prominent American architects among his school's former students, Dean Kamphoefner also has six former students who are deans of colleges of architecture in the U. S.

He is a Fellow of the American Institute of Architects and has been a member of its advisory committees that assisted in the establishment of three schools of architecture, including the one at Ball State University in 1965. Dean Kamphoefner at that time also served in the dual role of president of the Association of Collegiate Schools of Architecture.

Registered to practice architecture in North Carolina, Iowa, Minnesota and Oklahoma, Dean Kamphoefner has been in private practice and during World War II was an associate architect in the Design Division of the Bureau of Yards and Docks, U. S. Navy, and served as architect and designer for the Associated Architects and Engineers of Oklahoma City.

SECOND HOME BONANZA



the overall value of private residential construction in '72 was \$53 billion, with at least another \$6 billion going into the mobile field. If the 15% estimate is approximately correct, almost \$8 billion will be going into second homes, even ignoring the mobiles.

Upon first thought, these statistics, however formidable, may not seem significant. It may seem arguable that there is no important economic distinction between erecting a first home or a second home. But for most construction or other shelter-related industries, this second house is a different market of spectacularly expanding horizons. Since, even by unSherlockian logic, no one can have a second home who does not have a first one, this fortunate or capable new home owner is likely to be enjoying a fairly comfortable standard of living at present, and to be seeking comforts and conveniences equal to those in home #1.

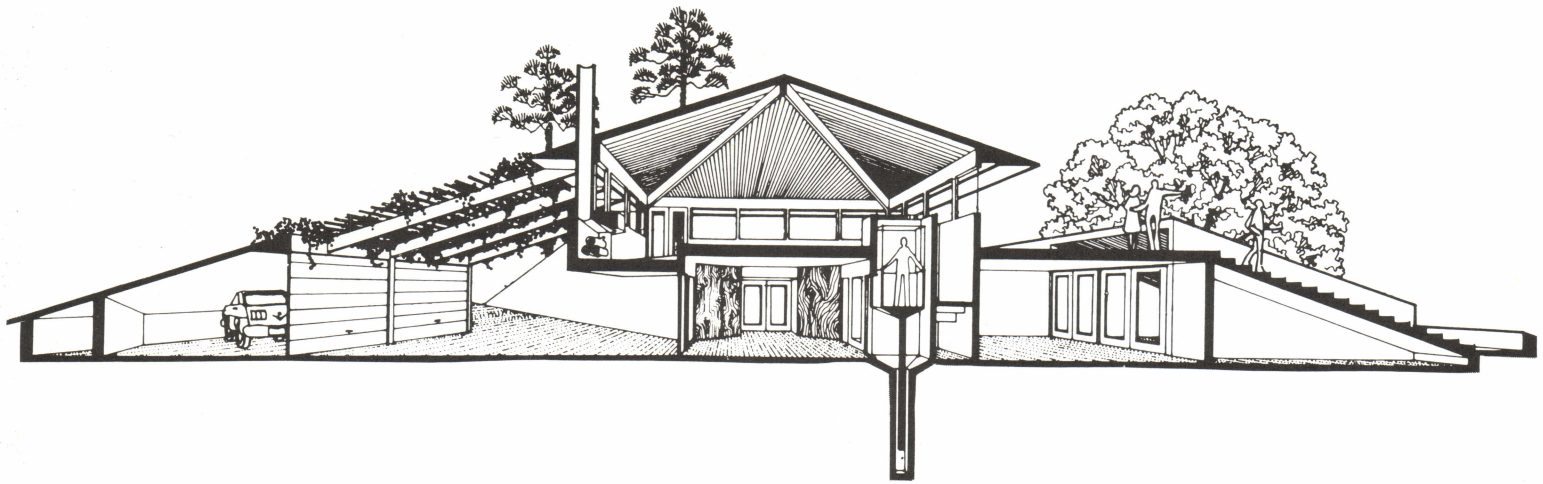
The two-car, two-TV family, long-since commonplace, is rapidly being overtaken by the two-home family. Those of us who are still breathless trying to keep up with single mortgage or rent payments, may not be more than passingly aware of this change in life-styles. But, for those who think in terms of markets, services or investments, it has implications for growth and profit that may make it one of the most significant business, political and social factors of our time.

Residential housing starts will number 2.35 million for 1972 and 10 to 15% are estimated to be second homes. At the same time, the mobile home industry sold almost 600,000 units, and a considerable, though undetermined, number of these are believed to be second homes. These are total figures drawn from the National Association of Home Builders, which comes as near to being authoritative as anyone or anything in the somewhat anarchistic home building field. In any case,

Thus, the second-home family is a customer for a second refrigerator, dishwasher, couch, bedding and all the other conveniences as well as necessities that make the average American house a luxury-loaded home—from disguised toilet bowl brushes to electronic organ.

The U. S. Census Bureau is quoted as estimating that 200,000 second homes will soon be built annually and makes no estimate or prediction about mobile homes.

It depends upon the calculations of Professor Richard Ragatz, Department of Urban Planning at the University of Oregon, to determine the present existence of three million vacation homes and the projection that 10 to 15% of all future construction starts will be a portion of what William Howells, Professor of Anthropology at Harvard, says is "part of the population explosion and part of the pollution explosion."



Using the present three million second-home owners as a base, we can pretty well describe the breed:

- 45% spent more than \$15,000 excluding land cost
- More than 50% have incomes over \$15,000
- 89% have a site more than ½ acre in size
- 45% have built on land worth more than \$5,000
- 55% are between 31 and 50 years old

More than 50% of present owners plan to retire to their present vacation homes.

Even this sketchy profile suggests that the second-home owner or the would-be owner, is a customer for just about everything any one-home owner uses, for comfort, convenience and appearance. Given the large number with a site more than one-acre in size, it seems likely that they will also be customers for power saws, power mowers and other power equipment that the average suburban resident can afford to do without.

While the second home may be conceived or planned for a simpler, less formal way of life, observation suggests that this means a bigger market rather than a smaller one. Most Europeans, for example the Norwegians and Swedes, who maintain summer cottages, think of them as being stark and free of complications, often without electricity or running water. Obviously, simplicity can easily be achieved by doing without. Generally speaking, however, this is not the American way. Americans cut down on labor by turning the task over to machines or equipment.

Thus, like the first house, a second house requires a full quota of equipment from top to bottom: all appliances, furniture for sleeping, sitting and dining; utensils for cooking, tableware and linens, plus the innumerable items used for outdoor living, gardening and playing; all products pinpointed specifically for the leisure life, whether it's

lived on a boat, in a barn, bungalow, simply or grandly, at beach, mountains, desert. Even the television set which may be slighted while the second house is a-planning and a-building, becomes a necessity when the new home is completed.

The second house is a special interest that's just a little different from all the rest. First, it usually involves both partners in a marriage and frequently their children as well. It represents one of the largest expenditures they will ever make. It is not a single purchase for a single use, but a major investment that utilizes a considerable portion of their time and requires countless decisions about objects ranging from a scissors to a snow-mobile, from a lazy-susan to a station wagon.

As medical science brings longer life, vacations stretch to a month and workweeks shrink to four days, as disposable income rises, the second house becomes more attractive and more useful.

FIVE CRITERIA FOR FUTURE DESIGN

The president-elect of the American Institute of Architects has advanced five new criteria that "should be generic to all who design" urban communities, buildings, and transport vehicles and the pathways along which they run.

Archibald C. Rogers, FAIA, Chairman of the Board, RTKL, Inc., of Baltimore, Md., and presently AIA vice president, believes that the five criteria will be used to test design in the future of architects, traffic engineers and others.

He was among four speakers who spoke on urban development, design and renewal and their relation to urban transportation at a National Academy of Engineering symposium in Washington, D. C. in October.

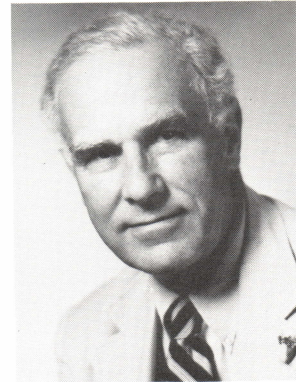
Rogers first outlined four basic transportation-planning concepts. These involve: (1) giving proper priority to the concept that every trip begins and ends on a person's feet instead of wheels; (2) planning to reduce the necessity for travel by bringing more closely together a person's residence, job and recreation; (3) planning transportation so that it is more important than just solving traffic problems and becomes a part of a total "corridor system"; and (4) adhering to the concept that design is for people, not just for buses, railroad cars or automobiles.

Then Rogers set forth these five new design criteria:

"First, we will use a criteria of competence in lieu of efficiency. Competence includes efficiency but goes beyond it. No doubt the building must work, but it must work as part of a larger system, and it is that interrelationship between an element and the overall system which, if properly solved through design, will be judged as being competent.

"Second is economic viability, but on a broader matrix of costs and benefits. The consumer will have to pay in our society, and we do not know if he is willing to pay. We seldom ask him. But he may have to pay certain costs and derive thereby certain benefits which are not now in this cost-benefit matrix. He may have to pay for diminishing ecologic damage, and for ameliorating social disruption, in addition to conventional cost and user benefits.

"Thirdly esthetics, which are part of all design of urban architecture, the architecture of our cities, have been so since man came out of the caves... But a post-Renaissance view of esthetics which will take it out of the ivory tower, out of the hands of the potentate elite taste-



Archibald C. Rogers, FAIA

maker, and put it into the hands of a society which is sophisticated, which hungers for recognition, and hungers for art.

"Fourthly a new criterion, and one of great urgency. Everything we design should be aimed at equilibrium with its natural setting. Under the laws of physics, I am sure this is not attainable, but we can approach it more. Everything that we design, be it vehicles, pathways or buildings or communities, should seek to minimize the gobbling up of irreplaceable resources and should seek to minimize the repayment for these resources in terms of harmful effluents.

"Lastly, and perhaps of greatest importance, the fifth criterion which I believe today has been left out of our equation and may indeed have been left out of the entire Renaissance equation, a community architecture in all of its elements in sympathy with those who use it. Those who indwell it, and those who are touched by it."

Rogers said the fifth criterion is most difficult to achieve. He added that a large and very beautiful public housing project at St. Louis was an ironic and tragic illustration. The project, he pointed out, was designed by a very fine architect some ten years ago and won a design award, which was deserved under the criteria then and now.

"Yet this summer," Rogers said, "it was blown up, because it was a social tragedy that did not work. Partly a failure of we architects but more importantly, I think, a failure in attitude, a failure in understanding of what the end-purpose of this project was to be."

SCHOOL PLANNING CONFERENCE SET FOR 1973

The North Carolina Chapter of the American Institute of Architects is joining the Division of School Planning of the Department of Public Instruction and other professional organizations in sponsoring the SCHOOL PLANNING CONFERENCE 1973 which will be held in Charlotte on March 27 and 28 next year. The Division of Superintendents of the North Carolina Association of Educators, the Professional Engineers of North Carolina, and the North Carolina Section of the Southeastern Chapter of the American Society of Landscape Architects are also joining the Division of School Planning in sponsoring this event.

Nationally known speakers for the Conference include S. Scott Ferebee, Jr., who will at that time be national president of The American Institute of Architects. Some of the other speakers on the program will be Dr. Jack R. Frymier, Professor of Education, Ohio State University, President-Elect of the Association for Supervision and Curriculum Development; Ben Graves, Project Director, Educational Facilities Laboratories, President-Elect of the Council of Educational

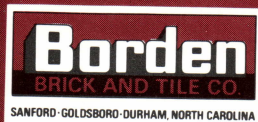
Facility Planners of Chicago; R. S. Browning, Staff Attorney, Lawyers' Committee for Civil Rights Under Law from Washington, D. C.; and Robert M. Stafford, Professional Engineer, Roofing Consultant of Charlotte.

The Conference will deal with the challenges that face educators and their planning professionals, challenges that result from the increasing concerns for environmental conservation, educational change, new technology in the building industry, extensive rehabilitation and remodeling of existing facilities, the involvement of representatives from other agencies both in the public and private sector, the greater voice in planning from those for whom the school is built, new patterns in school finance; such practical matters as roofing problems will also be on the program.

Initial announcements have been sent to architects. Anyone who has not received an announcement should communicate directly with the Division of School Planning, North Carolina Department of Public Instruction, Raleigh, North Carolina, 27602.

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SYDNEY OPERA HOUSE NEARING COMPLETION

The Sydney Opera House sits on Bennelong Point which juts out into the middle of Sydney Harbour, its unique concrete sails unfurled, waiting for workmen to finish its interior. The first performance is now scheduled for 1973, some 14 years after construction started.

Danish architect Jorn Utzon's design was selected out of 223 entries from 32 countries submitted during the architectural competition. The final peninsular site, a 200 yard long by 150 yard wide peninsula near the commercial center of the city, was selected from 21 different locations. The completed work will cover a four-and-a-half acre area, with the building complex 186 yards long and up to 116 yards wide.

There are three sets of roof systems in the complex which is comprised of 5 performing halls, a restaurant and performers facility. The buildings are roofed with a series of concrete shell-like arches, resembling sails, the tallest rising 221 feet above sea level.

Total seating is 5,350 persons with the majority, 2,700 people, accommodated in the Concert Hall. All the rooms are versatile and can hold a variety of shows ranging from opera to lectures, ballets, festivals, conventions and telecasts. The Opera Hall holds 1,500 people; Drama Theatre, 600; Cinema Theatre, 450; and, Recital/Reception Room, 100 persons.

Now under direction of Minister for Public Works David Hughes, the initial construction, the first of three stages, began in March, 1959.

Stage 1: Base

The first step was the building of a base to the podium level and took four years. The base contains 550 three-foot diameter concrete piers and 32 columns. Some of the piers are sunk more than 70 feet into the earth and they would stretch two-and-a-half miles if placed end to end.

Stage 2: Roofs

The piers and columns have to be strong. They support 120,000 tons of concrete and 6,000 tons of steel. The roofs, composed mostly of precast elements, contains 2,194 concrete sections weighing up to 15 tons a piece. The roof is covered with 4,220 precast concrete units faced with over one million matte and glaze finish tiles. The total roof weight is 26,800 tons. Work began on Stage 2 in November, 1963 and was completed almost four years later, in March, 1967.

Constructed by Hornibrook Group, the roof contains concrete shell-like parts that made the work like a giant jigsaw puzzle shaped with inverted butterfly wings. The shell-like parts, designed to

look like sailboats in the harbor, were constructed out of 2,420 precast concrete parts. The shell components consist of side beam arch segments, ridge beam segments, beams, slabs and tile panels of various sizes and shapes. The total weight of the segments, which range from 5 to 11 tons apiece, is more than 21,000 tons.

Each shell is supported by ribs; each rib is made up of wedge-shaped segments. The number of segments in the ribs varies from 5 to 13 depending on the rib size. The segments were placed one on top of another from each side of the shell until they met at the apex where the keystone (top ridge beam segment) was placed.

Temporary stressing cables were used to prestress rib sections during construction; then 217 miles of permanent cables were added. Stressing of the ribs to each other, done on both sides of the ribs to form a unitary structure, was also achieved by stressing cables. These were placed through the top of the adjacent ribs and through the keystone.

About 10,000 cubic yards of concrete were used in the roof construction. The design strength of the concrete had a minimum cube strength of 6,000 psi in 28 days. To achieve this strength, a carefully graded river sand and coarse aggregate was selected. Some of the special units required a minimum design strength of 7,500 psi which was achieved by using a mix with 700 lbs. of cement and a three inch slump. To increase the workability of the concrete and to achieve the high strength required, Pozzoloth admixture was used. Pozzoloth admixture was used in the concrete for the tile-faced panels as well.

The concrete ribs, each 15 feet long, were cast on the site in plywood molds, five at a time. They were cured and placed in storage until needed at the construction site.

Cubes were taken from each grade of concrete manufactured each day and sent to the Public Works Department Concrete Testing Laboratory for 7-day and 28-day compressive strength results. Regular checks were made on the scale mechanisms and water batching equipment at the batch plant to make sure mix proportions remained constant. The batch plant produced seven different grades of concrete using top size aggregates of $\frac{3}{4}$ of an inch.

The open ends of the shells and the open spaces below the side shells will be glazed with 1 $\frac{1}{4}$ " thick laminated plate glass supported on steel mullions. About 40,000 square feet of glass, with panels up to 10 ft. by 5 ft. in size, will eventually be used. Bronze vertical slats on the outside and smooth finished concrete inside will infill the spaces between overlapping roof sections.

Installation has been completed of a huge revolving stage in Opera Hall, 46 feet in diameter, weighing more than 200 tons. The stage is so delicately rested that it sits less than one-half inch above the ground all the way around. It revolves on a single track leveled to a running tolerance of 0.012 of an inch. The stage has 3,400 square feet.

The whole structure is mounted on a special foundation frame connected to the rail. The tolerance was adjusted with bolts, then non-shrink Embeco grout was poured in. The grout was fed beneath the rail, which is about 15 inches high, and contained by concrete curbs on either side of the rail. The rail can support 250 tons of equipment as high as 40 feet off the ground.

Two nearby winches were also surrounded with grout fed in along the sides of the 5 by 30 foot pieces of equipment.

The whole project is proceeding at an accelerated pace with 1,150 men working on the site. Completion is now well in sight even to the point that furniture is being selected and some has already been ordered.

More than 14,000 lights will be installed through-

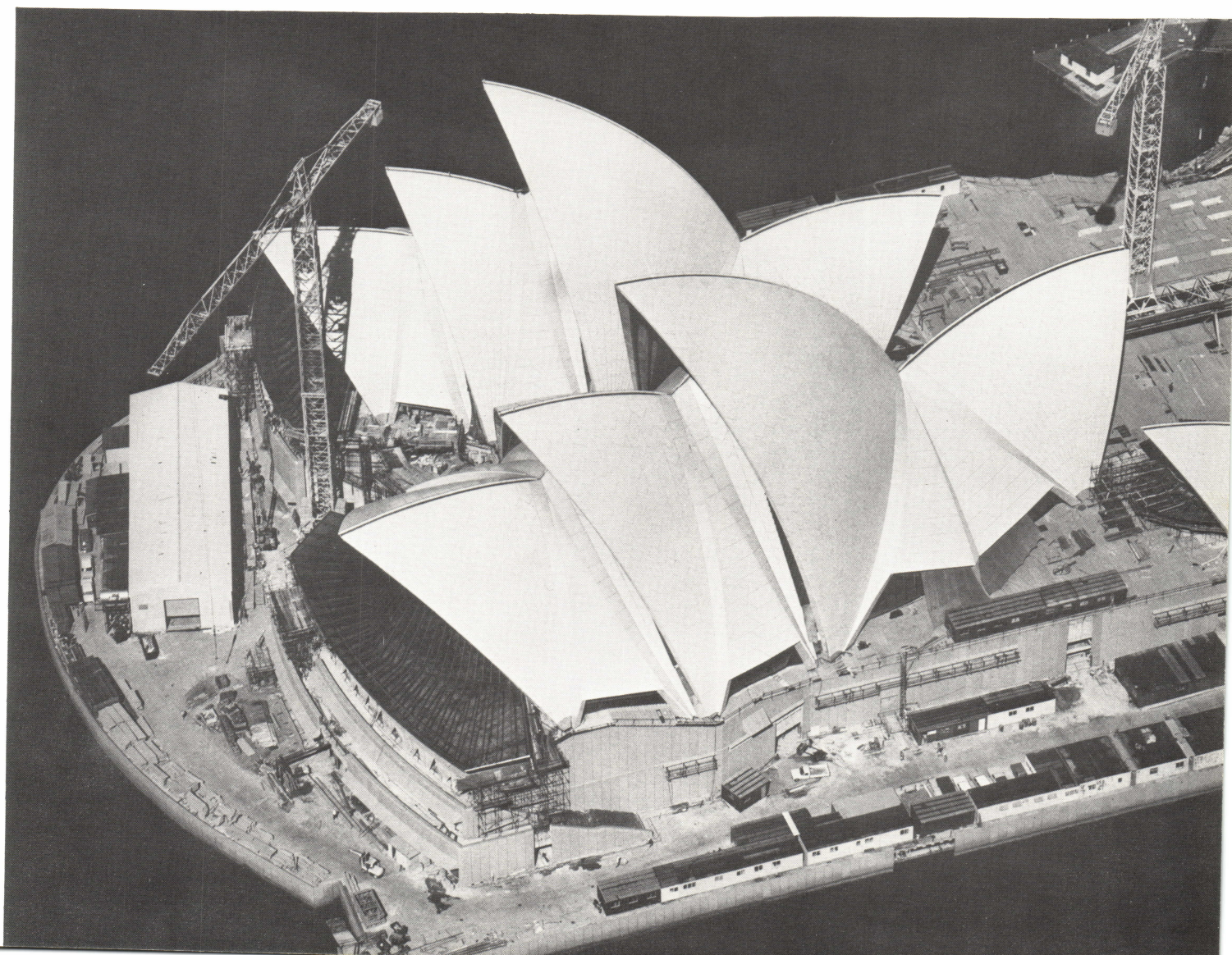
out the complex to make the Opera House a living thing at night.

In early July the two tapestry curtains, costing \$100,000 were unveiled. The "Curtain of the Sun" for the Opera Theatre is 25 feet high and 50 feet wide and weighs about 320 lbs. The "Curtain of the Moon" for the Drama Theatre is 17 feet high and more than 60 feet wide, weighing 250 lbs. They were designed by Australian artist, John Coburn, and were hand-woven in Aubusson, France.

The Constructing Authority, the N. S. W. Department of Public Works, expects the entire project to be completed, with all workmen off the site by June, 1973.

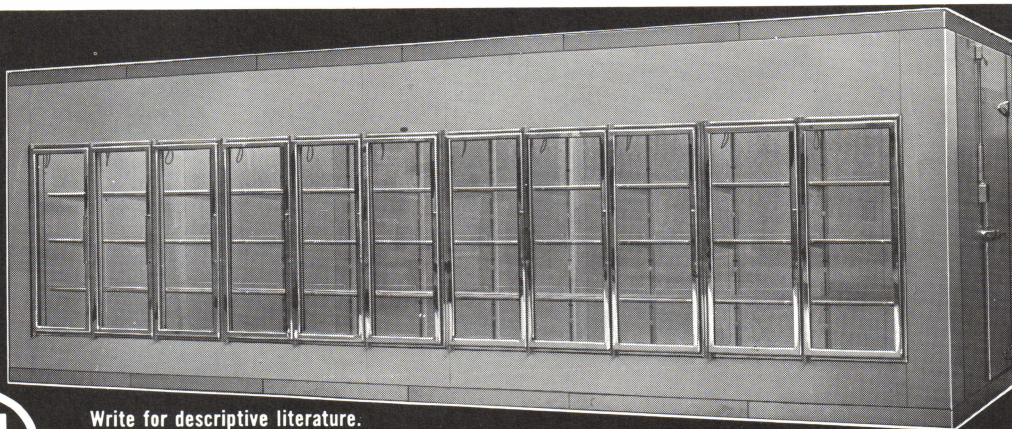
The Opera House is designed to be a visual symbol of its homeland, just as are Egypt's pyramids and Manhattan's skyscrapers.

Local authorities say the Opera House heralds a new cultural era in Australia. Soon after the center opens, The Cleveland Orchestra will present the first concerts to be given by a visiting symphony orchestra. With the outside ready, the inside almost completed, the Opera House is poised to sail on the cultural sea.



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NCAIA SECTION NEWS

The Eastern Section, North Carolina Chapter American Institute of Architects, elected officers for 1972-73 at their fall meeting in Goldsboro. Outgoing President, Henry Flynn, Jr. of Goldsboro announced that Reg McVicker of Laurinburg was elected President; Herbert McKim of Wilmington, Vice-President; Vernon Hicks of Wilmington, Secretary-Treasurer. Elected to a Three Year Term as Director was E. J. Austin of Southern Pines; Two Year Director, Dan Knight of Rocky Mount. Remaining on the Board is Elizabeth Lee of Lumberton.

The following are the newly elected officers of the Piedmont Section NCAIA for 1973: President, Frank Asbury; Vice President, Robert W. Conner; Sec.-Treas., Carl P. Myatt; Directors: 3 years, Robert G. Parks; 2 years, John G. Pappas; 1 year, David J. Arnold; 1 year, Herbert A. Carmen.

At the regular monthly meeting of the Raleigh Section, NCAIA, held December 7, the following were elected to serve as officers and directors for 1973: President, Ted Hunter; Vice-President, Dean Best; Secretary, Tom Shumate; Treasurer, Theresa

Raper; Directors: Bob Rogers, Gene Jones, Bos Beckwith.

The Charlotte Section, NCAIA, met on December 6 and elected the following to serve as officers and directors for 1973: President, Harry Wolf; Vice-President, Michael Tye; Secretary, Gerald Li; Treasurer, Michael Tribble; Directors: Stacy Simmons, Tebee Hawkins, Fred Sadri, Harvey Gantt.

Each Section President serves as a member of the Board of Directors of The North Carolina Chapter AIA.

YOUR AD IN
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PAYS DIVIDENDS



Pictured above are members of the North Carolina Chapter AIA who attended the Winter Meeting of the Chapter at the Sedgefield Inn, Greensboro, January 11, 1952. How many can you identify?

FORMER REGIONAL DIRECTOR CITED

Bernard B. Rothschild, FAIA, of Atlanta, Ga., is the 1973 recipient of the Edward C. Kemper Award of The American Institute of Architects.

The award is given annually in recognition of an "AIA member who has contributed significantly to the Institute and the profession."

Rothschild has been a member of the AIA's Documents Board since 1967 and was chairman from 1969 to 1971. He has played a key role in the development and updating of the contracts and guides to practice which form the basic documents of architectural practice and the construction industry. They are used by architects and contractors throughout the country; they are accepted as standards by the U. S. Government and by most states.

He assisted in negotiating the new Veterans Administration owner-architects contract and is currently writing an insurance guide for architects for the Documents Board.

He is a member of the AIA Editorial Advisory Committee on Architectural Graphic Standards and will be chairman in 1973.

He was chairman of the AIA Committee on Professional Practice in 1967-68 and serves as liaison with the AIA and the Associated General Contractors, the American Subcontractors Association, and the Construction Specifications Institute (CSI). He is president of the CSI Foundation.

A member of the AIA since 1947, he was a director of the South Atlantic region in 1965-68. He has held every office in the North Georgia chapter of the AIA, and in 1972 was president of the Georgia Association, the state-wide organization of architects.

Rothschild is a principal in the firm of Finch Alexander Barnes Rothschild and Paschal, Atlanta. He has been responsible for the designs of several of Atlanta's notable buildings, including the YMCA, Northside Branch; the Jewish Community Center; the First National Bank, and the Cinerama Theatre. Through the Finch-Heery Joint Venture, he has been involved in the design of new stadiums for Atlanta, Cincinnati, and Detroit.

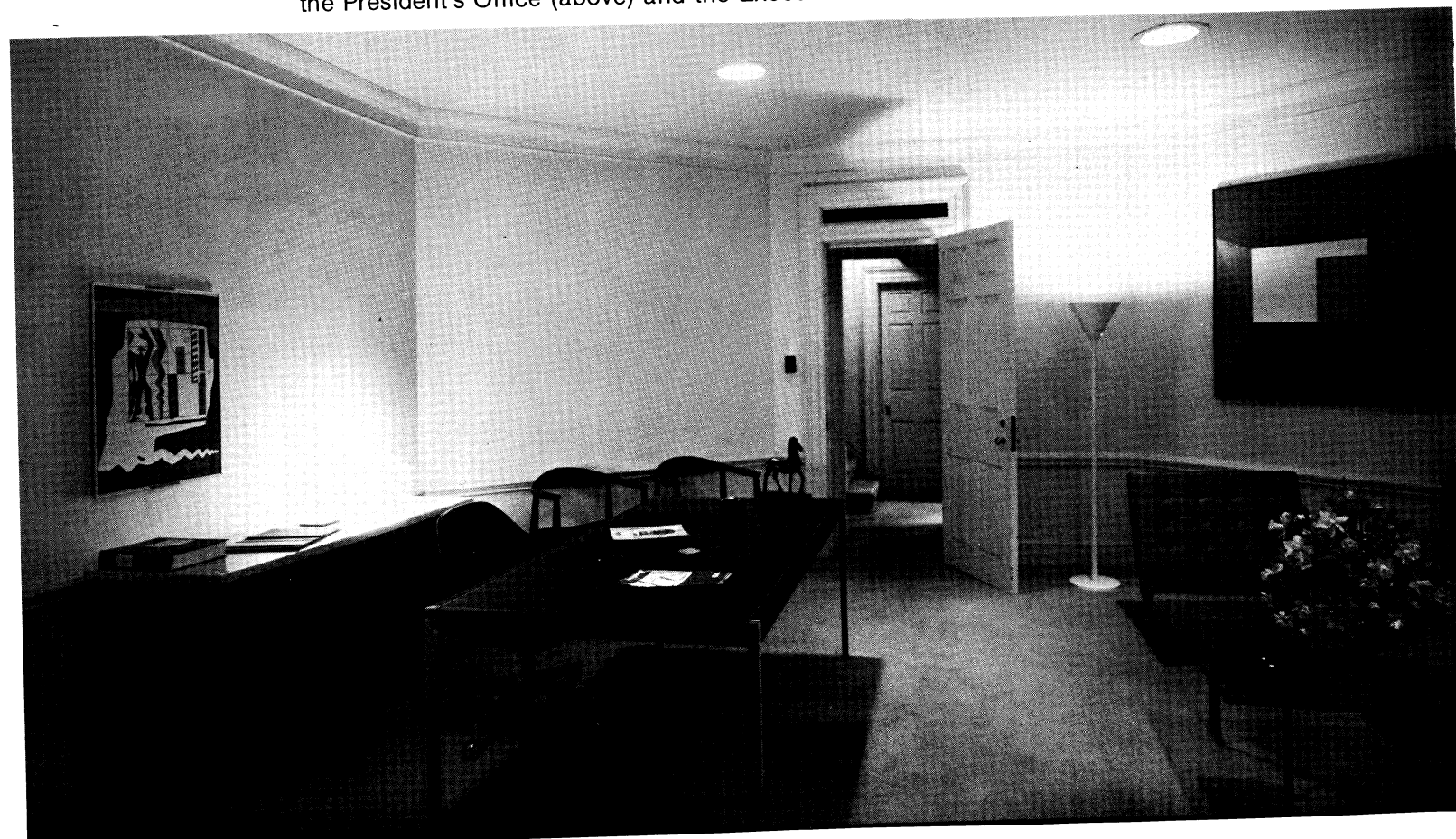
Rothschild was born and raised in Philadelphia and was graduated from the University of Pennsylvania in 1937 with a bachelor of architecture degree.

INCIDENTALLY

The firm name of Loewenstein, Atkinson & Wilson, Architects and Engineers of Greensboro, has been changed to Atkinson, Wilson and Lysiak, Inc.... Norman E. Bartholomew, AIA and William Robert Wakeham, AIA announce the formation of a partnership to practice architecture under the firm name of Bartholomew & Wakeham, Architects, 3700 Computer Dr., Raleigh... Richard C. Bell, A. S. L. A., Wesley B. Frame, A. S. A. S. L. A., Ralph L. Graham, A. S. L. A. and Dan C. L. Sears, Jr., A. S. L. A. announce the formation of a partnership to practice Landscape Architecture under the firm name of Bell Design Group, Box 169, Route 8, Raleigh-Durham Highway, Raleigh... James B. Godwin, landscape architect of Raleigh, was named a Fellow of the American Society of Landscape Architects and cited for excellence in executed works of landscape architecture and service to the Society. Announcement was made at the annual meeting of ASLA in Philadelphia. Mr. Godwin is a past president of the Governor's Beautification Committee, Inc.



AIA Tower Interiors: Complementing the Chapter Board Room (front cover) are the President's Office (above) and the Executive Director's Office (below).





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ARCHITECTURAL PARTNERSHIP ANNOUNCED

Tebee P. Hawkins, Charlotte architect and principal of the firm, Tebee P. Hawkins and Associates, announces the formation of a partnership under the name Hawkins Associates, Architects. The partners are Tebee P. Hawkins, Charles W. Kibler, and Edgar B. Gale.

Mr. Kibler and Mr. Gale have been associate architects with the former firm for several years. Mr. Kibler, a graduate of the School of Architecture at V. P. I., joined the firm in 1958. Mr. Gale, a graduate of the School of Architecture at University of Virginia, joined the firm in 1962.

Mr. Kibler is a member of the West Charlotte Rotary Club, Mint Museum and in past was an active member of the Charlotte Opera Association.

Mr. Gale is a member of Phalanx Lodge No. 31, The Charlotte Central Lions Club, and serves on

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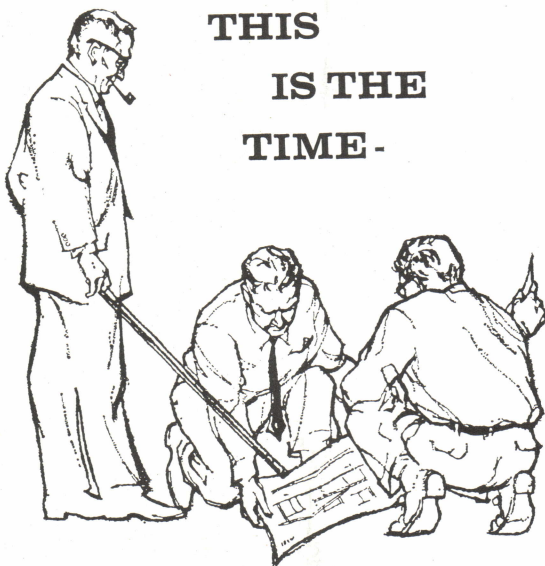
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TIME

*My friend it has occurred to me,
That the moments we let slip by,
Will not be recaptured another day,
They come, they go, and they die . . .*

... Don Tudor

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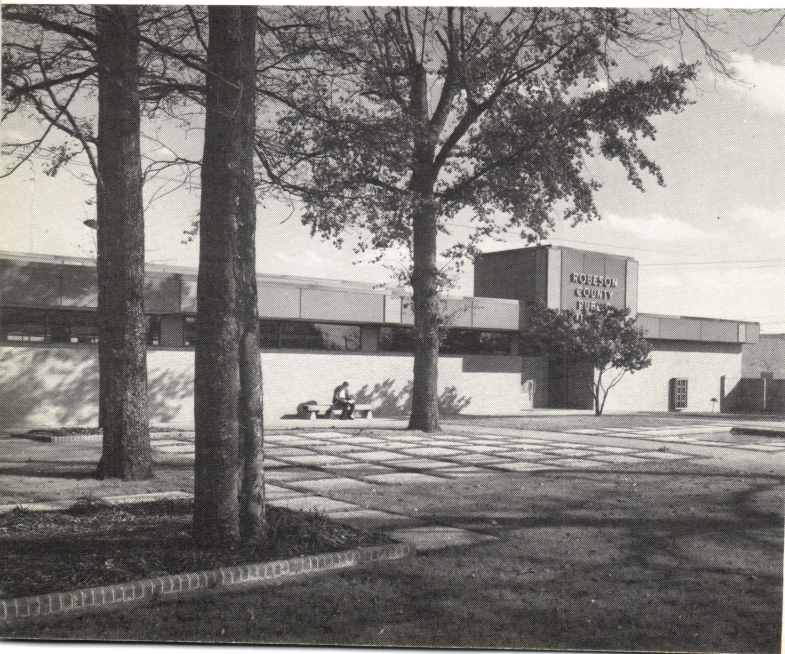
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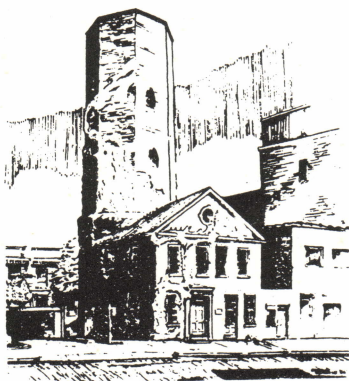
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