
the
florida
architect
January 1967
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DATA CENTER
Architects
THE COMPUTING CENTER
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the
florida
architect
official journal
of the florida
association
of the american
institute of
architects
The computer revolution:

THE PRESIDENT'S MESSAGE

HILLIARD T. SMITH, JR., AIA

THE OCTAGON HOUSE

Built in 1800, our Octagon House has had a long and distinguished record of service. Starting with the residency of President James Madison while the White House was being reconstructed after fire damage in 1814 and continuing through its constant use today as a backdrop for influential entertainment functions of the Institute, it has become a living symbol of our profession, one of which we can be justifiably proud.

As further service to the profession, the Octagon House now has the opportunity to be the medium to provide equity to the Institute for site expansion and construction of long needed and absolutely necessary space to house the national headquarters operation. By your tax deductible contribution to the A.I.A. Foundation, Inc., the Octagon House can be purchased from the Institute. This will provide "front money" for construction of the new building. About $350,000 of the $990,000 goal will be used to restore the Octagon House so that it can continue its service as a site for social functions of the Institute. Anyone attending a gathering in this National Historical Monument cannot help but feel its history and hear the countless footsteps which have passed over its worn floors during a 166 year past.

The proposed new building will contain 130,000 square feet of space. Sixty per cent of this will be for A.I.A use. The forty per cent balance will be leased to selected tenants. Income from the rented space will amortize the mortgage. As A.I.A. services and functions are expanded in the future, the rental space will provide room for this growth. Present projections indicate the building will be adequate for at least 25 years.

To raise the necessary funds, each of the eighteen regions of the Institute have been assigned a quota based upon membership. Florida's quota is $33,000. Certainly this paltry amount should not be a burden to our membership and is little enough to pay for the benefits derived. Your contribution is not only tax deductible, but also may be spread over three payments.

Florida has been recognized as one of the outstanding regions of the Institute. Several of our regional directors have been honored for great contribution to our professional society. Failure of the Florida region to support this worthwhile campaign would be a renunciation of the past and demonstrate a lack of faith in the future. We must not fail our past or our future.

the florida architect
official journal of the florida association of the american institute of architects

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Editorial contributions, including plans and photographs of architects' work, are welcomed but publication cannot be guaranteed. Opinions expressed by contributors are not necessarily those of the Editor or the Florida Association of the AIA. Editorial material may be freely reprinted by other official AIA publications, provided full credit is given to the author and to The FLORIDA ARCHITECT for prior use. . . . Advertisements of products, materials and services adaptable for use in Florida are welcome, but mention of names or use of illustrations, of such materials and products in either editorial or advertising columns does not constitute endorsement by the Florida Association of the AIA. Advertising material must conform to standards of this publication; and the right is reserved to reject such material because of arrangement, copy or illustrations. . . . Controlled circulation postage paid at Miami, Florida. Single copies, 50 cents; subscription, $5.00 per year. February Roster Issue, $2.00 . . . McMurray Printers.

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FRONT COVER — This month's cover was designed especially for "The Florida Architect" by Lowell L. Lotspeich, AIA, of Winter Park.

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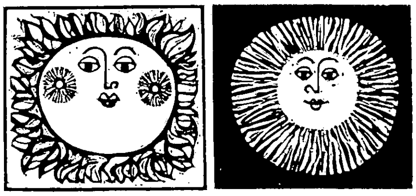

CALENDAR

January 13 - 14
AIA Grass Roots meeting for Chapter Presidents, Octagon, Washington, D. C.

Following is a schedule of Legislative Program presentations to the AIA Chapters:

January 17
Florida Northwest Chapter at Pensacola.

January 18
Florida Northwest Chapter at Marianna.

January 19
Florida North Central Chapter.

January 25
Jacksonville Chapter.

January 26
Daytona Beach Chapter.

January 27
Florida North Chapter.

February 2
Florida Central Chapter.

February 3
Mid-Florida Chapter.

February 4
Florida Gulf Coast Chapter.

February 7
Florida South Chapter.

February 8
Broward County Chapter.

February 9
Palm Beach Chapter.

February 11
FAAIA Board of Directors meeting, St. Petersburg.

February 25
FAAIA Council of Commissioners meeting, 10 a.m., 1000 Ponce de Leon Blvd., Coral Gables (FAAIA Headquarters).

cordial ideas begin with GAS

A WARM, FRIENDLY WELCOME AWAITS GUESTS HERE!

Another example where owners of Florida's more modern motor inns **insist** upon Natural Gas heating. In this case, it's the new Winter Garden Inn at Winter Garden, Florida. ☐ In addition to heating the luxurious units, this half-million dollar architect's dream was designed to use GAS for food preparation and for heating the extra large swimming pool, and all water throughout the inn. Fast recovery of hot water is important when so many showers are taken at approximately the same hour, and GAS heats water faster. GAS thermostatically-controlled room heating insures individual guest's comfort. GAS provides cool, clean cooking with "controlled" heat. Year 'round pleasure is derived from the GAS heated swimming pool. ☐ Take a tip from those who specialize in hospitality . . . GAS will better serve your needs too. Rest assured!

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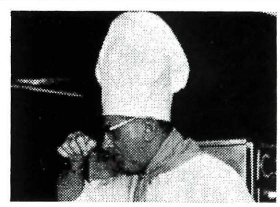

Head chef **Bert Leath** says, "I particularly like baking with GAS — it makes cakes and pastries lighter and fluffier. I've done all my cooking with GAS the past fifteen years . . . it cooks better and the heat is more controllable."

FLORIDA GAS Transmission Company
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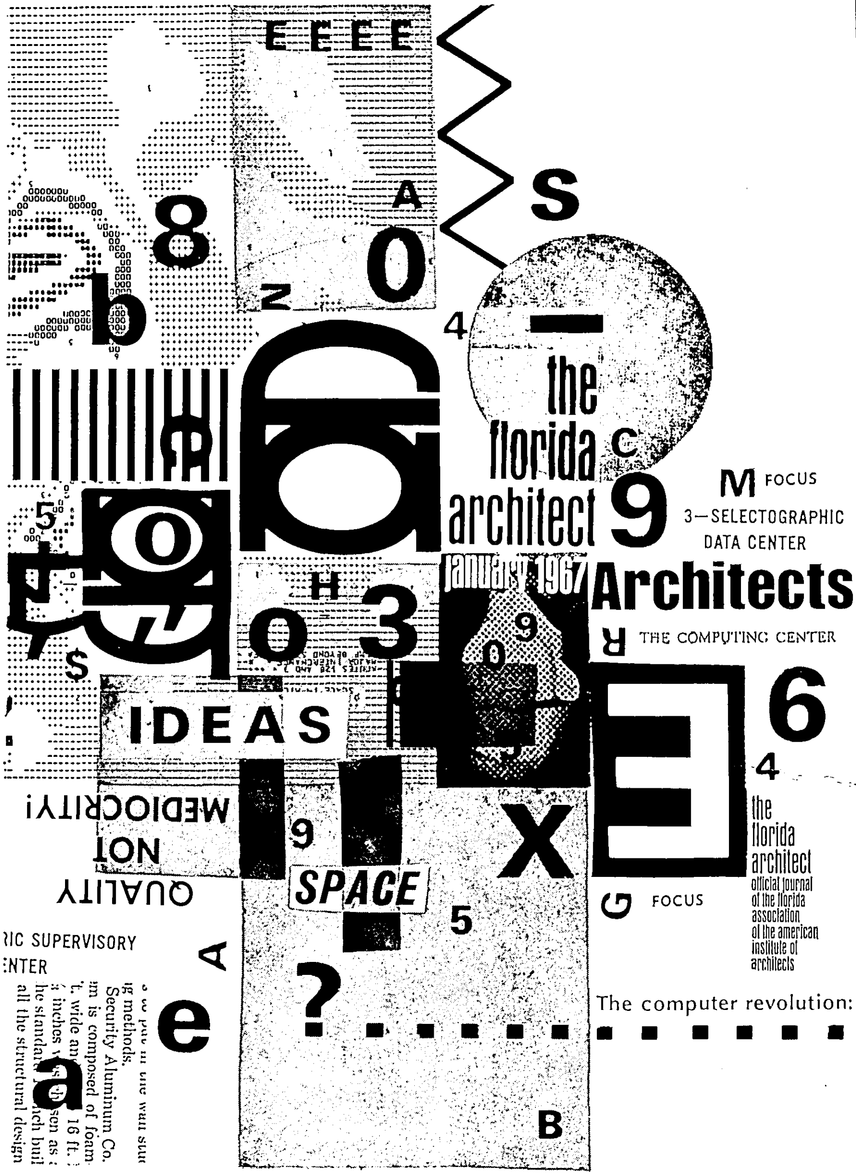
Florida's Pipeline to the Future . . . serving 35 Natural Gas Distribution Companies in over 100 communities throughout the state.



FROM NOW ON

The anticipation of the coming twelve months is not unlike the feeling experienced by the painter standing before an untouched canvas. One has the feeling that to begin is to commit ones-self beyond the point of no return in one swift, ever so colorful, second . . . and yet, all is ahead, and much good can come of it.

Several changes have taken place already as I am certain you noticed before you had even opened the cover of this first issue for 1967. A new publications committee is at work toward making **The Florida Architect** the visually and intellectually stimulating publication that is befitting the profession of architecture at its creative best. Each issue henceforth will feature several articles on a topic that should be of particular interest to the architects of Florida and to the other persons, interested in the architectural profession, who receive and read the magazine. To aid in the accomplishment of this task, an editorial advisory board has been established, composed of Dan Branch of Gainesville, Tom Daniels of Panama City, Bob Broward of Jacksonville, Nils Schweizer of Winter Park, and two members yet to be named.

At a meeting held in Orlando in October, the publications committee and the editorial board began the planning which will form the basis for a continuously evolving format. Each member of the board and the committee will be involved with the formation of a particular month's issue, which will present a point of view, well thought-out. We hope that this point of view will evoke some thoughtful, lively comment from both those who agree and those who disagree. It is that sort of criss-cross of ideas which can be the greatest source of in-depth study. We will publish, the following month, all the letters which are received. In addition, a continuing series of articles is planned on architectural philosophy, and will be begun in April with our entire issue devoted to the subject.

Other topics to be covered include, "Historical Florida", "Urban Design and Florida", "Schools and Architectural Education", "Architectural Photography", and "The Nature of un-natural materials".

It is a long road to the type of creative, inventive chronicle that should be representative of intraprofessional *intercourse*. Our profession is committed by its very existence to be the most creative member of the community. Our demands for order and artistic discipline must never cease, and this must certainly be true for the publication which monthly bears the title **The Florida Architect.**

We ask your help.

Donald I. Singer
Chairman, Publications Committee

Planning Buildings By Computer

The first of this month's series of articles on the role of the computer in architecture seeks to distinguish between architecture as 'the immediate practical process of creating new examples,' and architecture as a scientific process of enquiry into relationships. It is as a tool for the latter that the authors see the most immediate usefulness of the computer.

by Welden E. Clark and James J. Souder, AIA*

(reprinted with permission from "Architectural and Engineering News," March 1965)

**The authors are members of Bolt, Beranek and Newman, Inc. in Los Angeles. Both are registered architects, and both hold architectural degrees from MIT. Mr. Clark is co-director of the BB&N Computer Laboratory. Mr. Souder is former director of a pilot project in computer-aided architectural planning sponsored by AIA and the American Hospital Association.*

The curiosity of architects about computers has been evident from large attendance at several regional conferences dealing with this new technology. Oddly enough, however, not many architects have indicated that they see any but the most pedestrian uses for computers in their work. The responses that arise from these conferences too often are limited to interest in "control over engineering and drafting" and concern with the possibility for "multiplied stupidity" in the misuse of powerful tools.

Much of the uncertainty can be laid at the feet of those trying to use and to explain these new tools —we are still stumbling along, searching for pathways, and our perspectives are not yet very broad. As more of us learn how to use and describe our tools this problem should diminish.

'Noble art' syndrome

There are, however, several easily spotted types of reactions that are evidence of hostility or apathy. One of these says, in essence, "this scientific jazz is probably all right for those dull sorts of projects done by engineers and developers but it has nothing to do with *architecture*, and it certainly is not *creative*." This might be labelled as the *noble art syndrome*.

A second reaction can be phrased as "these marvelous new machines should not be misused for degrading, menial tasks but rather reserved to be used for their lofty purpose by true masters of proven creative ability." This we might call the *noble instrument syndrome*.

The third easily typed reaction goes something like "those machines must be fascinating playthings, with all their flashing lights and gadgets, but it's obvious that no one is able to do a man's work with them." This we will label as the *new gimmick syndrome*.

Clearly, there is no room for informed criticism and thoughtful dispute, and the extreme attitudes paraphrased by the preceding statements are not useful criticism.

Architecture as we know it, be it a house, a church, a factory, or a townscape, cannot be created from a cookbook or from a computer program. One reason is that the language of our cookbooks and of our computers is not rich enough to describe the essential ingredients. A more important reason, though, is that we do not know enough to be able to describe the complex interactions of the ingredients and the variations in desires of the recipients.

The most gifted among us can use new and untried materials, or old materials and old forms in new combinations, to achieve results acknowledged as good architecture. Sometimes the principles inherent in these works can be identified and applied broadly to other works—we then speak of a *style* as *Bay Region*, or *International*, or *Carpenter Gothic*. We have not yet found the understanding and the language that will permit complete rational examination and description of architectural works and their reasons for being. Will we ever reach this state? If so, it would follow that we could design and instruct computers to perform much of what is now done by architects.

An art? A science?

Are we suggesting that architecture is scientific? Not exactly. In casual speech we tend to talk of architecture as a process, a discipline, a way of life. This habit leads to confusion between the result and the means.

One way to avoid the confusion is to adopt limiting definitions for some of the words we use. Let us use the word *architecture* to refer to the bricks and steel, the enclosed and open spaces, the textures and lighting patterns that are the visual context of our human culture. We can allow the definition to cover natural elements as well as man-made ones.

But let us *not* use the word *architecture* to mean the processes that are performed by architects, or the sensory perceptions and intellectual concepts arising from our experiences in that visual context. Instead of using one word to suggest at the same time an intellectual process, a material object and an emotional experience, let us take pains always to define our relationship to the context. Thus we can talk of the *art* (or craft, or technology) of architecture as the immediate practical process of creating new examples, and of the more remote *science* of architecture as the process of inquiry into relationships and the development of theories about those relationships.

Such a distinction between activities enables us to focus on the art of architecture as the process of producing documents for building a church or a laboratory, a school or a memorial, somewhat independent of the uses which society will make of the building. Likewise we can focus on the science of architecture whether we are concerned with theories of seismic design, psychophysical perceptions of space, or cultural symbols.

Creative process— and wastebasket

A part of the folklore of architectural education is the idea that each new building is a unique problem.

This is generally raised in arguments against stock plans and detailed prototype designs, and usually with good reason. The danger in the idea is that it easily becomes stretched to the notion that the *process* of planning and design itself is unique to each project. Many objections to the use of computers (and to many of the analytic techniques of engineering) are seemingly based on this fallacious confusion between a process which is general and a desired solution which may be unique.

The consumption of sketch paper is tribute to the amount of

thought given to each new design problem the architect faces, but the volume of crumpled paper in the wastebaskets suggests that each new problem is submitted to hit or miss testing of ideas against complex backgrounds of information, with the result that thinking is slowed down or circumscribed . . .

'Can they think?'

Controversy recurs on the theme, "Can computers think?" If we define *thinking* as the creative activity performed by the human brain, then the question can be dismissed as ridiculous and our human feelings of superiority are undisturbed. If, however, we regard *thinking* as the purposeful process involved in solving problems, formulating and through mazes, then we can transform our original question into a succession of more meaningful questions having to do with specific actions, explicit criteria for evalution of the actions, and certain particular computers.

With these specific questions, then, we can expect the answer to be sometimes *yes* and at other times *no*. Further, we can expect that when the answer is *no* we can work towards changing that answer by pursuing such question as "What more must we know to design a computer that can *think* in this way?" and "How can we teach the computer to *think* about this problem?"

All this pertains directly to the application of computers in architecture and planning. Some of the tasks we perform as architects and planners can now be done as well, or better, by computers. There are, however, other things that computers cannot now begin to do: here, the difficulty may well be that we cannot say what it is we wish done, or how.

It is fruitful to look for ways to use computers in the production and analysis of architecture. Many of the processes we perform have parallels in other fields where computers are being used with success.

As architects we must improve our understanding of the expanding design problems we face and, since our human resources are limited, any tools which can either help us to see problems better or improve our efficiency in solving them must be thought of as useful tools.

Roles for the computer

The concept of a close mutual relationship between man and machine in the performance of intellectual tasks is intriguing: each extends the capabilities or offsets the shortcomings of the other.[1, 2] Specifically, the computer can rapidly scan large amounts of information, can transform the information, can stimulate the outcome of complex operations (for example, patterns of movements) whose components vary, and can compare outcomes of these computable operations with design criteria or with outcomes of alternative design assumptions.

Only those aspects that are quantifiable can be measured, of course, but such a mutual, or "symbiotic' relationship can allow the man to control the choice of data and analyses, and to provide the judgment and the imaginative insights which elevate the process above the level of mere mechanical manipulation.

The next few years will see useful and relevant application of computers throughout the building process, from the architect's assimilation of the background facets to the control of construction scheduling and of production of components. Some examples have been discussed in the literature [2, 3, 4] and others at recent conferences[5, 6, 7]. One current application by the authors is an aid to visualizing a complex of interrelated spaces such as a large existing medical center. Floor plans to the building, site plans, etc., are *described* to the computer by tracing relevant room outlines and relationships with a graphic input device connected to the computer. The sketches are displayed by the computer as drawn and can be rejected or modified and labelled before storage.

Once a set of *drawings* is available in computer storage, they can be processed for computation of areas, distances, etc. The computer can then be queried to provide data summaries by types of spaces, by areas, by distances between like spaces, and other measures the architect needs to study adequacy of available facilities for present and future uses.

The data can be displayed and plotted as ink line drawings showing, for example, all circulation on one illustration, all rooms of storage and supply function on another, etc. This is not a tool that will radically alter the process of design. It is an example of an aid that can improve effectiveness of man in the design process.

There are many other capabilities. Many useful applications are visible through the cracks in the ivory towers.

Process will not be remote

All current trends in the technology suggest that this will not be a remote process but rather a function deeply imbedded in the architect's office and a viable part of his staff operation. Plans can be traced directly into a computer that can comprehend them and respond quickly to any number of questions.

The same computer can hoard information about human activities that the plans are designed for, or costs of the kinds of space the plans provide, and it can cross reference these kinds of information in responding to complex questions that occur to the designer. When the designer has tested and modified the plans to his satisfaction, they may be stored or printed out.

Today these things are being done in only a few laboratories and a few pioneering architectural and engineering offices, but the authors believe that this kind of tool will be placed in the average architect's office at feasible cost. Some practitioners are already using the available tools and eagerly awaiting stronger ones. Most universities are teaching students in a number of disciplines to use computers in their work. There is small reason to believe that complacency will protect us from the twentieth century.

[1]Licklider, J. C. R., "Man-Computer-Symbiosis," Inst. of Radio Engineers Transactions on Human Factors in Electronics, Vol. HFE-1, No. 1, March 1960.

[2]Souder, J. J., W. E. Clark, J. I. Elkind and M. B. Brown, *Planning for Hospitals: A Systems Approach Using Computer-Aided Techniques,* U. S. Public Health Service Project W-59, publ. by American Hospital Association, Chicago, Ill., 1964.

[3]Alexander, C., *Notes on the Synthesis of Form,* Harvard University Press, Cambridge, Mass., 1964.

[4]Souder, J. J., and W. E. Clark, "Computer Technology: A New Tool for Planning," Journal of the American Institute of Architects, pp. 97-106, October 1963.

[5]Engineering Foundation Conference in the Building Construction System, Andover, New Hampshire, August 1964.

[6]California Council, American Institute of Architects annual meeting, Coronado, Calif., October 1964.

[7]"Architecture and the Computer," the First Boston Architectural Center Conference, Boston, Mass., December 1964.

Application of Computer To Building Design Process

by Robert F. Darby, AIA
Chief, Architectural Division,
Reynolds, Smith and Hills
and
N. W. Bryan, President,
Computer Services Inc.

The design of a building requires the efforts of a variety of individuals from different disciplines and interaction of these individuals with the client, with the construction industry, with material and building component suppliers, and with each other. The building design team must determine the client's requirements, establish criteria and design an esthetically pleasing, functional and economically feasible building.

After the design criteria has been established, the building components and construction methods must be selected from the vast possibilities available. This selection may require coordination with contractors on special or new construction problems and with producers and manufacturers on available materials and products. Previous job histories may be searched for adaptability of materials, client acceptance, etc. All of these methods must be used either intuitively or after a detailed search, and the most economically feasible architectural, structural, mechanical, and electrical components designed and integrated together to form a functional building.

As the building is being designed and as the client requests changes to the original criteria; an up to date cost estimate must be maintained. The design team usually is faced with maintaining a design time schedule and with staying within a design budget. Because of these practical considerations, the number of schemes or methods considered is usually sharply curtailed, which leaves a question as to whether the resulting design is the best or most creative solution.

To compound the building design problem, knowledge and information must be available to apply the design process to a wide range of building types and to serve varied kinds of clients. Office buildings, motels, schools, hospitals, etc. must be designed for public agencies, corporations, private individuals, institutions, etc.

The entire building design process can be defined as an information and communication problem. Members of the design team must communicate with each other, with the client and with a small army of construction industry personnel to obtain the information necessary to design a building. To date, drawings, charts, handbooks, conferences, and telephones have been used to try to solve this communication and information problem.

The electronic computer has been used for several years to solve individual problems arising within the different disciplines, but because of hardware limitations, computer techniques have not been applied to the total building design process. Availability of new electronic computer hardware (third generation computers), with time sharing capability and tremendous increases in computational speed and in storage capability, has removed the hardware limitations. In the next few years, the new electronic computer hardware with its mass storage availability will be used in setting up a building design information system which will revolutionize the building design process.

The computer cannot replace man's emotions, his feel for a design or his creativity, but the information system will help the design team to solve many of the problems of information and communication existing today.

The information system will consist of an information base, an arithmetical description of the building (building model), application subsystems, a designer-oriented language, and a large electron computer with remote time sharing consoles. The information base stored in the computer will contain information about materials, material systems, construction systems, etc. For example, shape, density, cost, thermal conductivity, and reflectivity could be stored for a typical wall material. A geometrical and mathematical model of the building will be defined and maintained within the computer as the design progresses.

A designer-oriented language will allow the designer to communicate with the computer using english language statements. The designer will use this language in defining and maintaining the model and to utilize the application subsystems for the various disciplines. Application subsystems will perform requested calculations and design building components using data from the information base and the building model. Designers will have immediate access to the entire system through remote consoles located in their offices.

Development and utilization of this system, with the computer performing most of the routine work, will free designers to produce better and more creative designs. The computer hardware required to implement this system is now available and is economically feasible for small and large architect and/or engineering firms through the use of time-sharing.

The systems approach to the building design process is not being used today and in fact has not been fully developed. Building designers must develop the programs necessary to implement this approach in the next few years or see the ever-expanding informational and communications problems completely overwhelm and stifle the building design process.

Architecture / Tradition The Computer

By CHARLES B. THOMSEN, AIA
Caudill Rowlett Scott
Architects, Planners, Engineers
Houston, Texas

Not too long ago in an article for *Fortune Magazine* Walter McQuade referred to the "tweedy old profession of architecture". It is a tweedy profession, isn't it? We are rich with tradition. There is a sound and sturdy base of history — a wealth of cultural heritage which guides our actions, and conditions our values.

For the most part, this tradition is good, and, paradoxically, one of the deepest traditions among architects is that of questioning the traditional forms of architecture.

But while we constantly question and challenge the traditional forms of architecture, we are slow to challenge our methods of practice. In fact, most architects continue blindly to use out-dated and antiquated techniques of design, management, and production.

Nevertheless, I am optimistic. During the last 3 years I have had the good fortune to meet and work with a number of architects at Caudill Rowlett Scott, and in other offices, who are challenging some of these old methods — and in the process have become committed to the half-veiled promise offered by computer technology.

Promise of Computers

This technology — the art and science of processing information — will have the most far reaching consequences on the practice of architects of any contemporary technological development.

Those are bold words. And I must admit that there is not yet proof of their accuracy. Indeed, the delight and wonder of working with computers is seductive and has caused many of us who seek this work to overstate our case.

But some facts bear us out. In the last 10 years, computers have developed at a tremendous pace.

Compared to 10 years ago, computers have increased their speed 100 times, they are one-tenth their former size and the cost of computation is one-thousandth that of a decade ago. By one estimate, our capacity to process information is a million times greater than 10 years ago. Presently there are 30,000 computers in the nation worth about eight billion; 1000 times as much strict computational power as 10 years ago.

And all indicators point to an increased rate of development. Those are impressive statistics and we can't afford to scoff at them — or say, "That's interesting, but we are architects, not engineers. This doesn't affect us." It does.

Practical Uses

Speculation aside, a number of practical applications exist which one might profitably pursue.

First, you might use a computer as an arithmetic machine, a calculator, or a super adding machine and with it, do some of your accounting, cost estimating and engineering. You might also build mathematical models of some of your designs — and test their functioning under various conditions.

Secondly, you could use a computer as a meter, like the speedometer of your car, or a barometer. But you would probably be metering the conditions of your firm, perhaps forecasting your manpower demands, determining the amount of overtime that is being recorded, testing your overhead, or sampling the net profit of an active job.

Thirdly, the computer could serve as an electronic filing cabinet which collects, stores, creates, combines and retrieves data.

Used this way, the computer produces your specifications, determines the properties of building materials, or collects some statistics on the successes and failures of your past practice to guide you around future mistakes in management.

All of these things can be done for you with impressive speed. A medium size computer can make a million additions per second, read 90,000 characters of data per second from magnetic tape, and output 1000 lines of information per second on a highspeed printer.

These capabilities will help us as architects to provide better services to our client, to prosper, and at the same time free us of tedium and make our work more enjoyable.

Progress in a Year

At CRS we are trying all these things, and although we have only begun, I believe the prognosis for

success is good. It may be too early to tell. As a concentrated research effort, this work has been underway only a year.

But let me explain how we began.

Three years ago, we solved a major problem for a high-rise office building project with a computer. We determined how high it should be built for maximum economic return.

We had clients who wanted to build on a very choice site in downtown Houston. It was to contain a home office as well as general rentable office space. Our client's charge was "Tell us the optimum building size for maximum economic return."

The answer was complicated, but possible. We needed data in three areas: business economics, construction costs, and the implications of height on the building's efficiency. We were able to formulate the data and with a computer's help, we rapidly calculated the return on investment for buildings from 15 to 50 stories. Incidentally, in this instance, 32 stories was the answer we found.

This succes encouraged us and we have pursued many other applications. At present we are working with several other approaches which will affect design. The most promising appears to be — simulation.

Models

Simulation is the art of model making and testing. A model (or a simulator) is a device which, in some way, can be made to act like a part of the real world.

Of course a model can be a diagram, a girl in a new fashion, a cardboard physical replica of a building, or a numerical structure. But all have one purpose — to imitate something. A computer implemented simulator is no different.

Normally we think of models as a physical tangible entity. It's not necessarily so. We can use numbers as the materials with which to build the model. In the high rise project, we built a model of the economic activity of 35 different buildings and predicted which would be the most profitable.

Now we are trying to build a model of a university — to test its growth and functioning over the next 10 years — and to see how it would respond to varying design criteria.

Our approach is this. When we are asked to develop a master plan for a college or university, we must first establish potential growth and determine how the institution uses its facilities. Precise answers to these two issues require processing enormous quantities of information. Then we must find ways to "grow" the campus. Each new building causes a department to move. The vacated space is filled by another department and eventually the effect ricochets throughout the campus.

We are now working, assisted by an EFL grant, with Hewes, Holz, and Willard of Cambridge, Massachusetts and Duke University to develop a series of programs which will simulate this affect. The programs will show the need for future facilities, help Duke use existing space more effectively, help us determine proper location of new buildings, simulate pedestrian circulation and eventually simulate the physical evolution of the institution.

Of course this is a very ambitious effort but there are other applications which are very simple although also very helpful. Perhaps

"All I know is that every hour it quits for ten minutes and the cup of coffee disappears."

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the most important requirement for good design is sound information. The computer, not as a simulator, but as an information machine, helps.

We are experimenting with a program to retrieve data on building materials. Using this, it is possible to rapidly compare relative characteristics of many construction systems. In this case, the value of the program is not its ability to calculate, but in its ability to select information in a specified way . . .

Graphic Data Processing

. . . Probably one of the biggest impacts on architectural design may come from a new field of computer capability—graphic data processing. Computers were first able only to process numbers. Then they developed the capability to handle letters. Now graphic data processing is becoming a reality. When graphic data processing becomes more economical, it will have a tremendous effect on the process of architecture — not only in the production of working drawings, but in design.

At CRS, we are very anxious for this technology to come. During the last two years, we've been working hard to change our approach to construction systems and accompanying graphic systems. The philosophy is this: we should view construction as an assembly, not of details, but of total systems —a structural system, window wall system, a partitioning system. And if we are able to think about building in this way, we will be able to detail these systems separately, without thinking of them as applied to a specific building. These systems theoretically will then apply to more than one project. The information which describes their properties, their details and graphics will be stored on magnetic tape, or discs — which then can be retrieved by computer, modified by light pen and cathode ray tube by a designer, and then produced on working drawings by a computer driven plotter. This will allow the architects in the firm to spend their efforts to create better systems, working on specific designs rather than grinding out another set of working drawings.

Now this isn't as "cloud nine" as it may sound. It is possible to make architectural drawings with a computer. CRS and others have done it. Hardware is available. At the moment, the problem is not hardware but software — the programs to operate the machines. It's still difficult to get drawings into the computer — lengthy, clumsy instructions have to be written. The techniques for filing these drawings, retrieving them and reproducing them again are still difficult and expensive. But if the progress in graphic data processing over the next five years equals the progress in alpha-numeric processing over the last five years, we shall all be working with computers in our drafting department . . .

Questions and Answers

. . . Some questions no doubt come to mind:

1. How much does it cost?

   Computer time is surprisingly inexpensive. It is often calculated and charged in hundredths of a minute. The real cost of computer operations is developing the capabilities of people and programs. We haven't thorough experience yet, but a wild swinging guess would estimate computer operations at 4 to 5 times the actual hardware costs. The hardware costs vary. You might run a routine program in accounting at a local service bureau, or $50 a month, or lease a small but complete computer for $1500 a month. An elaborate system with a light pen and a cathode ray tube might go for $20,000 a month.

2. How big does a firm have to be before it can use computer operations?

   I really don't know. This varies a great deal with specific applications. For instance, the study that we did for the high rise office building would have been just as useful if CRS was a 1-man firm. On the other hand, our management information system would be useless to a firm of only 15 or 20 people. It simply would not be necessary . . .

3. Will computer technology save architects money?

   I really don't think so. We should be interested in computers as a means of improving our capabilities. Our management information system allows us to run our firm more efficiently. This may reduce costly inefficiencies. There may be greater earnings in fees if computer technology can expand the scope of professional architecture. But few ways will be found to save labor with a computer in a firm that isn't geared to growth.

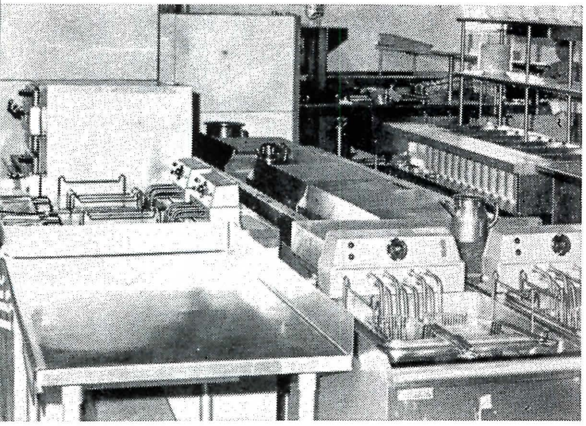
4. Will computer technology produce more beautiful architecture?

   Perhaps — by freeing designers from tedious chores or by providing more precise information which will establish order and discipline.

In design, numbers can be as helpful as butter paper and soft pencils. We use numbers to describe many parts of an architectural problem — dollars per square feet,

(Continued on Page 16)

They know from experience that electric cooking is the better way



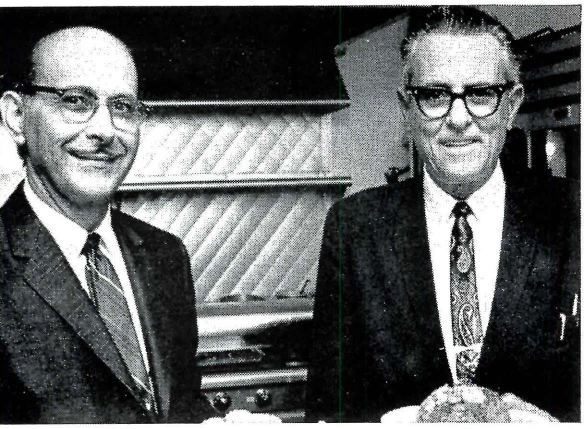
ALL-ELECTRIC KITCHEN OF DOLPHIN RESTAURANT, PANAMA CITY BEACH

W. C. Hales, its proprietor, says: "I've been operating restaurants for many years and I have found electric cooking superior in every way. Our kitchen stays so clean and comfortable that I'm always glad to have our patrons come in and see it."

DANKER'S MOTEL INN, MIAMI

(Recipient of the Award of Merit for Electrical Excellence)

J. Fred Danker, President, says: "Our restaurant kitchen —with 100% electrical equipment—is completely safe, clean and efficient. Our year-round electric air conditioning system insures clean, comfortable cooling and heating in our rooms, as well as in lobby and dining area."



CO-OWNERS OF CAFE SEVILLE, TAMPA

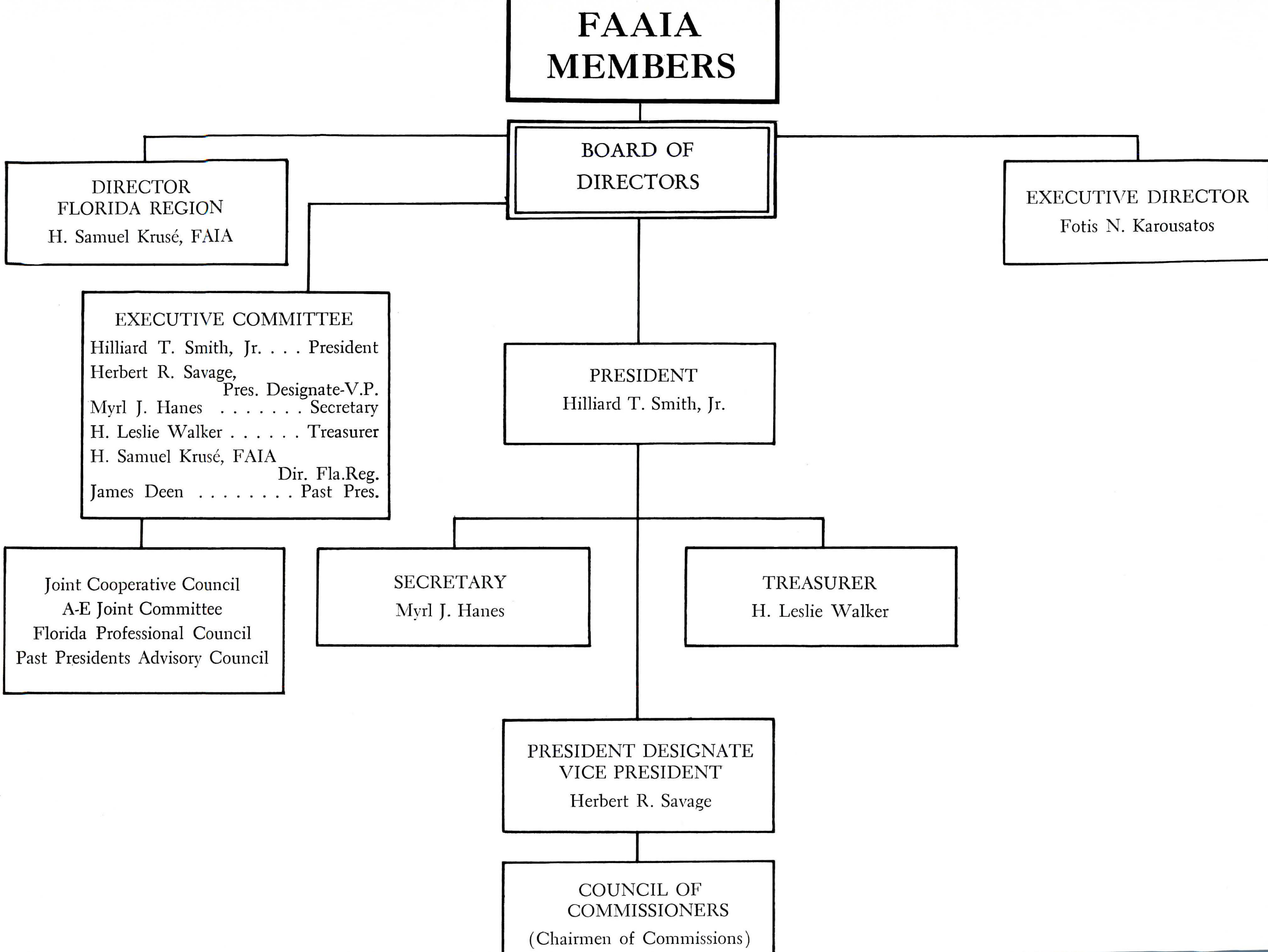
Roberto Rodeiro and Freddie Carreno, declare: "We were impressed with the speed and cleanliness of an all-electric kitchen to begin with. But when a TECO commercial cooking representative showed us the economies to go along with the conveniences — we were sold. Our kitchen stays so clean and cool, our employees are happy — and so are we."

WHATABURGER DRIVE-IN RESTAURANT, SEMINOLE

G. C. Scott, Jr., its owner, says: "I do not regret, for one minute, our decision to go all-electric in cooking equipment, air conditioning, and water heating. Our fry kettles have a rapid heat recovery, and we like the uniformity of heat control on the griddles. We feel we could not obtain this, to the same degree, with fuel-fired equipment . . . and are especially pleased with the low cost of this all-electric operation."

Florida's Electric Companies...Taxpaying, Investor-Owned

ORIDA POWER CORPORATION • TAMPA ELECTRIC COMPANY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Architecture/Tradition . . .

(Continued from Page 10)

quantity of students, length of construction time.

One of the problems we have with numbers and architectural design is that we have not yet found a way to measure beauty, elegance, or grace. Is it because these things are not tangible? Of course not — we can use numbers to define all sorts of non-tangible things — weight, time, speed, heat — and we have assigned units to these things — pounds, hours, miles per hour, degrees F. Perhaps the trouble is that we have no units for beauty. Heat is measured by dimensional change in mercury produced by expansion. Perhaps we need a beauty scale. Larsen Hall at Harvard, then, might be "8 degrees Caudill."

Of course that's foolish because beauty doesn't mean anything specific; it's a term that we use to cover a whole concert of emotional responses. Beauty is a highly personal reaction. It's inconsistent and unpredictable. Furthermore our problems of ugliness are problems of confusion, not of willful malice. And if, as architects, we limit ourselves to solving only visual problems, we limit ourselves unduly.

The computer as an information machine can help us to bring order, to think with more discipline, and to establish, through knowledge, reasonable limits of design freedom. And thus, we will continue to build a more viable tradition in architecture.

AIA Document, A-201, General Conditions

Introduction

During the past several months, we have witnessed a criticism regarding the "hold harmless clause in the revised document A-201 — General Conditions. This criticism stems from contractors who are opposed to being held liable for injury and/or damage through negligence on their part. This is limited indemnification. The architect is still held liable for injury or damage which is attributable in whole or in substantial part to a defect in the drawings or specifications.

Contrary to opinions generated from contractors that the indemnification is not insurable, we find the following companies ready to provide appropriate insurance: Continental, Traveler's, Insurance Company of North America, and Lumbermen's Mutual.

Also worthy of note is that with contractors who were covered by a Comprehensive General Liability policy with a blanket contractural liability endorsement prior to October 1, 1966, no additional insurance premium is required.

We would tend to agree this controversy should have been settled by the Institute and AGC on a national level. But the current revision has been taking place for the past two years. At the last moment, after the Denver AIA convention this past June, AGC Board informed the Institute that endorsement could not be given, after tentative approval by an official of the contractors' organization. Based on legal and insurance counsel, A-201 as revised was published. There was no alternative since the present Workmen's Compensation Laws are not adequate and the owner and architects must be relieved of the harrassments occuring from contractors' negligence.

Furthermore, NSPE has provided for an indemnification clause in their contracts for years and, in fact, their clause is more stringent than A-201. State and Federal agencies include this clause in their contracts.

We, the architects and contractors, must accept the "hold harmless" clause as being here to stay. Architects are urged to insist on this clause in their contracts. A special report on this matter by our Regional Director H. Samuel Kruse is here provided.

By H. Samuel Krusé, FAIA
Director, Florida Region

Document A-201 has a new format in which the previous 44 Articles have been reorganized into 14 Articles under which all items pertaining to the subject heading are included in the Article bearing the subject heading. Previously one had to search the Document to be sure, for example, that he had all the items relating to Changes in Work or Insurance. Documents A-101, *Owner — Contractor Agreement* and B-131, *Owner — Architect Agreement* have been coordinated with A-201 and the same terminology used for all three Documents.

Although there have been many minor changes made in the revision of A-201, it retains all of the provisions of the 1963 Edition so that historical continuity is preserved. The major change is the introduction of an indemnification clause in Par. 4.18 which places the responsibility for damages and injuries arising out of acts which are solely or principally due to the Contractor's acts of negligence. Par. 11.1.2 requires the Contractor to insure this responsibility by including Contractural Liability coverage in his Public Liability policy at not less than the limits specified and protecting the owner and his architect.

Some architects might question the mildness of the language of the clause, since their own or the National Society of Professional Engineers documents have included a more stringent indemnification clause. In absence of a generally accepted standard, there have been many different indemnification clauses as there are owners, contractors and attorneys. Some were innocuous with little or no protection for the owner and his architect while others were unreasonably harsh and perhaps not enforceable in the courts. The clause in the new A-201 provides the necessary protection and is not in conflict with existing laws regulating the use of hold-harmless clauses in contracts.

Some architects are not certain what additional specifications must be written or new action to be required of them by reason of this indemnification clause.

The architect will specify, as he has always, the limits of coverage for bodily injury and property damage. His method for determining the limits with the owner and his insurance counsellor is unchanged. His specification writing is no different than the way he has been writing insurance requirements.

If the Contractor is covered by a Comprehensive General Liability Policy with a blanket contractural liability endorsement, he is automatically protected, pays no more premium and does not even have to report the contract to the insurance company. Some companies write General Liability Policies which require a specified contracts type of contractural liability endorsement where the coverage is for a specific contract. Most insurance companies will write this type without additional premium. The better contractors usually carry one or the other of this type of protection.

Most companies will classify the A-201 type of liability for rating purposes as Intermediate Form,

and in a few instances as Limited. For a $1,000,000 project where he has specified liability insurance limits as $100,000/$300,000 for bodily injury and $100,000 for property damage, the premium is about $600. Where Contractors have experience credits or dividends, the cost would be less. The contractor doesn't really bear the cost of the premium.

One word of warning. A-201 makes it clear that the architect is responsible for his mistakes and the architect must be sure he provides his own protection for errors and omissions. The indemnification clause in A-201 merely protects the owner and his architect from the *Contractor's negligence* related to the construction of the project. It only protects the architect from the "scatter-shot type" of claims (on the increase lately) made by people hurt or damaged by the construction process.

The following presents the provision in A-201 relating to indemnification:

Indemnification

"4.18 Indemnification

4.18.1 The Contractor shall indemnify and hold harmless the Owner and the Architect and their agents and employees from and against all claims, damages, losses and expenses including attorneys' fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom, and (b) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

4.18.2 In any and all claims against the Owner or Architect or any of their agents or employees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Paragraph 4.18 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under workmen's compensation acts, disability benefit acts or other employee benefit acts.

4.18.3 The obligations of the Contractor under this Paragraph 4.18 shall not extend to any claim, damage, loss or expense which is attributable in whole or in substantial part to a defect in drawings or specifications prepared by the Architect."

INFORMATIONAL MEETING ON REVISED AIA DOCUMENTS

An important For-Your-Information meeting on the following revised documents of the American Institute of Architects:

A-101 . . . Owner-Contractor Agreement Form
A-201 . . . General Conditions
B-131 . . . Owner-Architect Agreement Form

A representative of the Institute will be present to discuss these documents in detail and to answer any questions. Architects and contractors are urged to attend this vital session at Parliament House Motel, 410 N. Orange Blossom Trail in Orlando . . . January 28th as 10 a.m. This meeting is being sponsored by the Florida Association of the AIA.

AREA SEMINAR

An area seminar, scheduled for Jacksonville on March 10-11, 1967, will take the design question one step further . . . with the aid of top-flight speakers.

Seminar coordinator Don Edge, AIA, has significantly entitled the upcoming seminar "Design Accomplishment," with heavy emphasis on the "accomplishment" part. Design chairman for the seminar is Dan P. Branch, AIA, and Accomplishment chairman is John P. Stevens, AIA.

Part of the AIA's "continuing education" program, this seminar will be held in Jacksonville's Thunderbird Motel. In order to spotlight the effort and correlation between design and its accomplishment, the seminar will utilize an outstanding building as a 'living example'—the Gulf Life Center, a 27-stories-tall building on a 12-acre St. John's River-front site across from downtown Jacksonville. The building is also the tallest, pre-cast, post-tensioned concrete structure in the nation. It was designed by Welton Becket & Associates of Los Angeles. Kemp, Bunch & Jackson of Jacksonville are associate architects.

Representatives from both architectural firms will be on hand to take an active part in the seminar. Moderator and dinner speaker will be Mr. Jan Rowan, editor of "Progressive Architecture" magazine.

All panelists will attend all sessions of the two-day coordinated seminar. Presentations will place emphasis on how various offices and people resolved the design. In addition, table-top exhibits will be displayed by Producer Council members and other invited guests.

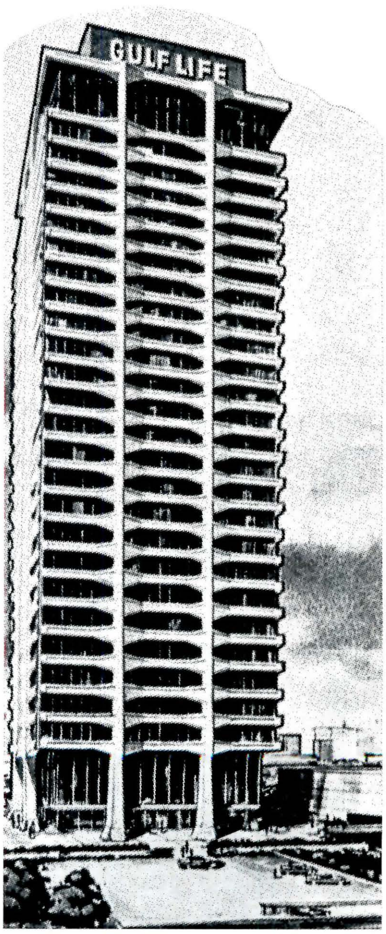
Registration fee is $17.00 ($10.00 for students) and this includes three meals.

One of the principal panelists at the seminar will be Mr. Hal Schley, vice president of building for Gulf Life Center. Gulf Life Insurance Company has given enthusiastic support to seminar leaders for use of the building as a "Design Accomplishment" example.

"Our design concept for the Gulf Life Tower was conceived to capture the solidity and vitality of a growing insurance company," architect Welton Becket, FAIA, explained. "In addition, we sought to utilize a material which would visually unify the several structures on the site." he continued. "We selected concrete for its design flexibility and evolved the precast, post-tensioning construction as a single solution to presenting the bold image we sought, providing relative economy, shortening the construction time, and providing long-span, column-free floor areas which is a desirable characteristic of space for insurance company operations."

The 430-ft.-high tower completely exposes its sculptured structural frame on the exterior. The structural frame is supported by eight tapered concrete columns, two on each side of the square tower. Precast, prestressed concrete beams join the two columns at every floor and cantilever outward a distance of over 40 ft. on either side. Each of the beams consists of 14 precast concrete segments strung together with high strength steel rods and then post-tensioned by tightening fasteners on either end of the rods.

A glass-enclosed lobby at the entrance level is recessed from a glass-enclosed, two-story-high bank on the second level, which is in turn recessed from the tower's window walls. Escalators serve the banking floor from the lobby as do the building's 12 passenger and 2 service elevators. On a concourse level is a 600-seat cafeteria overlooking the river, an employee lounge and a large kitchen.



GASGRAM

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NATURAL GAS
IN THE HEADLINES

BIG TAMPA BUILDER SCORES ON FIRST JOB—GOES FOR TWO! Skyline Homebuilders, Inc., long-time successful West Coast builders, launched their first natural gas development, College Village, near Tampa's U. of So. Florida last August. Plans for 300 homes in three years included natural gas built-in ranges and ovens, water heaters, central heating, ducted for eventual air conditioning, gaslights and patio grills. With thirty-six homes already finished, and plans for completion telescoped to two years, Skyline has started another new Tampa subdivision — with the same lineup of natural gas services from Peoples Gas System.

NATGAS WATER HEATER KEEPS 400 SKIPPERS IN HOT WATER. Over 400 visiting yachtsmen and their crews who berthed in Sarasota's million-dollar Marina Mar last season had no hot water problems. A single Ruud natural gas water heater took care of everything—showers, dockside shops, a Galley snack bar and the 300-seat "Upper Deck" restaurant—which incidentally uses natural gas for range, oven and broiler in its smartly modern kitchen.

GOLD FAUCETS IN SWANK CLUB SPOUT NATGAS HOT WATER. When Miami's ultra-ultra Palm Bay Club installed gold bathroom fixtures, it served notice that only the very best of everything would be provided to its socialite patronage. So how do they cook, heat water, warm the swimming pool, light the extensive marina and grounds? With natural gas, naturally!

"CLEAN, DEPENDABLE, SAFE" — SO BIG JAX NURSING HOME BUYS — Following the lead of hundreds of hospitals and health-oriented institutions, Jacksonville's big, new Eartha White Nursing Home installed two 1,500,000 BTU per hour boilers for heating, added two 1,000,000 BTU units for hot water, rounded out a "clean sweep" with all-gas kitchen facilities. Florida Gas stressed cleanliness, dependability and safety as essential in institutions caring for sick and disabled.

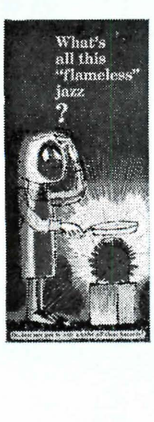
OLD SAN FRANCISCO SHOWPLACE BRINGS GASLIGHT ERA TO FT. LAUDERDALE. Only the decor in Homer Weimer's Old San Francisco Restaurant in Fort Lauderdale dates back to the "Gay Nineties." Everything else is completely new and modern, from the gleaming, spanking-clean all-gas kitchen to the battery of four 9-ton Bryant natural gas air conditioners, and the high-speed Ruud hot water system. Peoples Gas had no problem convincing owner Weimer—he was already sold on natural gas from his Pacific Coast operations.

NATURAL GAS IS GOOD BUSINESS FOR STETSON BUSINESS SCHOOL. New home of Stetson University's School of Business will have natural gas central heating—one of nine new systems being supplied at the Deland school by Florida Home Gas Company. Other new systems are in the new men's dormitory and the Sigma Nu Fraternity House. Gas heating in six other buildings replaces oil.

NATURAL GAS SPELLS EFFICIENCY IN ANY LANGUAGE. Latin flavor of Miami's Cuban community reflected in new Florida Gas customers there: Wayjoy Cuban Baker with new gas oven; same for Fernandez Bakery; two Rita Coin Laundries switching from L.P. to natural gas; natural gas cooker for Giralda Meat Provisions, Inc.; cooking and water heating in swank Les Violin's Supper Club; Camaguey Sportswear with a new steam boiler.

SPEAKING OF SUDDEN DEATH . . . TWO MONTHS, THEN CURTAINS! After one of the shortest experiences on record — two months — Dudley Funeral Home of New Smyrna Beach moved out eight tons of brand new electric air conditioning and replaced it with natural gas. Continuing the trend to natural gas, South Florida Natural Gas also signed up Tom & Marion's Bar-B-Que.

CUISINE OF MANY NATIONS UNITED IN MIAMI WITH NATURAL GAS. Valenti's famous Italian restaurant has enlarged its all-gas kitchen and added 14 gaslights. New Wan's Mandarin House prepares its Chinese cuisine in an all-gas setup. Scanda House's brand new Swedish Smorgasbord adds another nationality to the natgas parade, and on Miami Beach, the celebrated French cuisine of Le Parisien continues to win awards for its "flavorful flame" delights.



NATIONAL PUBLICATION COMBATS "FLAMELESS" PROPAGANDA. Produced by American Gas Association, a new booklet faces facts in the comparison of gas vs. electric service. Pointing out that there is potential danger in any energy source, the booklet concludes that only the misuse of the service causes trouble. As evidence that flame, under proper control, can be even less hazardous than a non-flame energy source, the AGA cites Washington, D. C. records showing a ratio of electric meters to gas meters of 1.1 to 1, whereas the ratio of electric fires to fires attributed to gas was 26 to 1.

Joe and Emily Lowe Art Gallery

January 7 - 29

MORRIS LAPIDUS — FORTY YEARS OF ARCHITECTURE

A retrospective of the work of one of the architects who has played a most influential role in commercial building in the second quarter of the 20th Century, particularly in the area of hotel and communal living projects.

JOHN KLINKENBERG — RECENT WORK

Paintings and drawings done in the last year by this outstanding painter and artist, who is also a member of the University of Miami Department of Art faculty.

February 4 - 26

THE ART AND ARTIFACTS OF COLONIAL AMERICA

An exhibition assembled by the Gallery Staff under the sponsorship of the Beaux Arts organization from numerous private and public collections of the Decorative Arts — furniture, ceramics, sculpture, painting and utilitarian objects of the Colonial period.

THE SCHOOL OF PARIS — CONTEMPORARY FRENCH PAINTING

A survey of the work that is being done by second and third generations of the renowned School of Paris painters.

February 22 - March 10

CONTEMPORARY BRITISH PAINTING

A loan exhibition of present day work by approximately thirty of Great Britain's leading artists assembled by the Tate Gallery in London.

March 4 - 31

THE JOHNSON WAX COLLECTION — ART, U.S.A.

A collection assembled by the Nordness Galleries for the Johnson Wax Company as a survey of the present stage of the Arts in the United States.

GEORGE STARK — SCULPTURE

A one-man exhibition of the work of this promising young professional artist. The Gallery hopes every year to be able to give one or two one-man shows to such artists.

April 2 - 30

JUANITA MAYE — CERAMICS

A look at the work of the last year of the many diverse uses that can made toward an artistic end of this medium.

FELLOWSHIP COMPETITION

A national competition open to any graduating senior of an accredited art school or university in the United States or nearby countries. The prizes offered will be several fellowships and scholarships to the University of Miami Graduate School of Fine Arts.

BEAUX ARTS RENTAL SHOW

An exhibition of new items available for sale and loan in the Beaux Arts Rental Gallery.

May 6 - 30

THE LAND AND THE FLOWER

An exhibition of thirty landscapes from the Gallery's permanent collection in cooperation with several garden clubs of Miami. The participating members will each choose one painting as the inspiration for flower arrangements to be displayed in a setting with the painting.

All Year

THE KRESS COLLECTION OF MASTERS OF THE 14th - 18th CENTURIES

Kress Wing.

THE ALFRED I. BARTON COLLECTION OF PRIMITIVE ART

Barton Wing.

Hours

10 a.m. to 5 p.m., Tuesday-Saturday.

2-5 p.m. Sunday. 8-10 p.m. Wednesday.

(All Lowe Gallery exhibitions are open to the public without charge)

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Architectural Schools and Education

Coming in March . . .

A Look at Florida's Heritage

Coming in April . . .

"Say Something Architectural!"

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This Is Red River Rubble . . .

It's a hard, fine-grained sandstone from the now-dry bed of the Kiamichi River in Oklahoma. In color it ranges from a warm umber through a variety of brownish reds to warm, light tan . . . Face textures are just as varied. Over thousands of years rushing water has sculptured each individual stone with an infinite diversity of hollows, ridges, striations, swirls — and has worn each surface to a soft, mellow smoothness . . . The general character of this unusual stone suggests its use in broad, unbroken areas wherein rugged scale and rich color are dominating factors of design . . . Age and exposure can do nothing to this stone except enhance the mellow richness of its natural beauty. . .

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