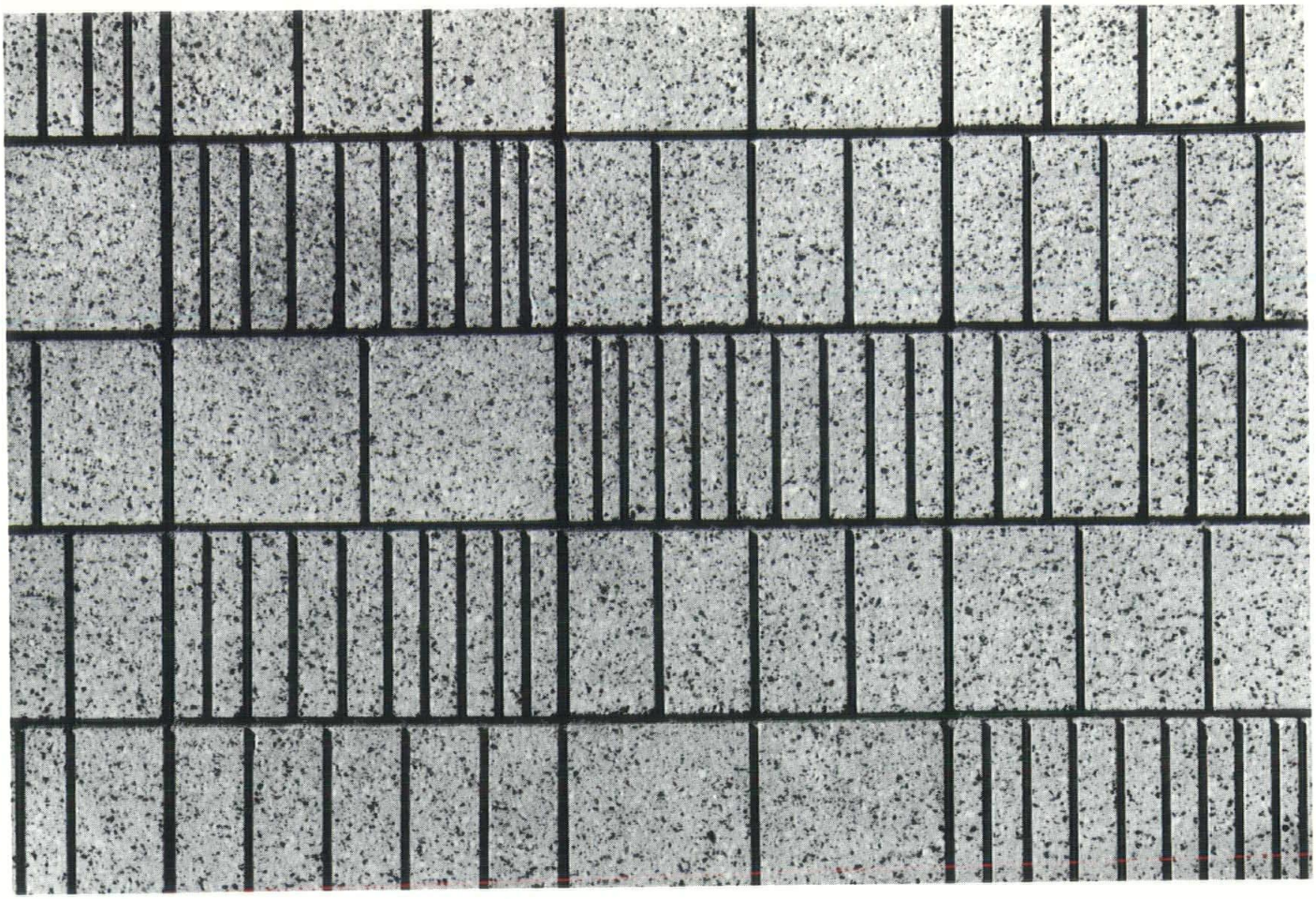
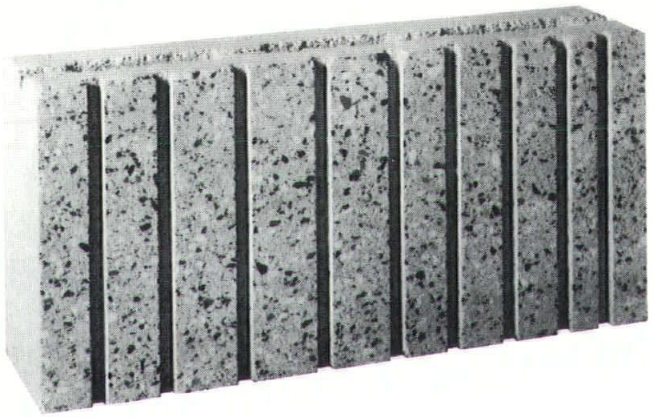
CONNECTICUT ARCHITECT

MAY–JUNE 1974

THE ART OF DRAWING THE CITY





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CONNECTICUT ARCHITECT

Volume 10, Number 3 May–June 1974

Cover: It is easy to understand why Hartford artist Richard Welling has been called "The Architect's Illustrator." This sketch shows the capital's new Financial Center, with Center Church in the foreground. Dick Welling has devoted the major part of his career to "The Art of Drawing the City," and a profile on the artist and his work begins on page 12.

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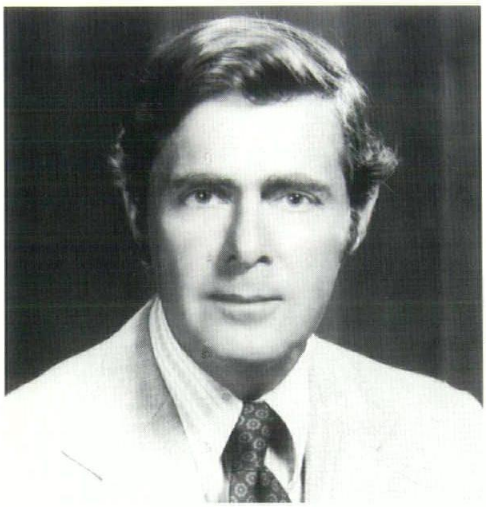
....from the CSA



Photography: Capitol Studios

David N. LaBau

From the President

With the first half of this administrative term of office behind us, it appears that less than half of the goals we've set for the Chapter have been achieved. A batting average of 400 isn't bad for a baseball player, but for a Chapter President it simply isn't good enough.

To date, we have seen three issues of the new *Connecticut Architect*, each one improving upon its predecessor; and, with increased advertising, we hope to end the year in the black.

Our Education Commission is functioning well, and Mike Buckley, having presented good seminars to date, has prepared even better ones for the months ahead.

Our legislative program this year was one more of reaction than of action, and it is our plan to structure a more positive course for the 1975 Session of the General Assembly.

The Membership Commission, under Phyllis Olson, has done a good job. For some reason, however, each year we seem to lose about the same number of members as we gain, and this process does not help us financially. However, we are confident that we can end the year with a net gain.

A Public Relations Program has not as yet been developed. We have obtained a wealth of information from National, and efforts in this area will be seen in the fall.

In addition, we have been working closely with a cross-section of the building industry over the last few months in order to get a better perspective on common problems facing the industry and the economy. In the fall, we plan to organize committees to work together on specific educational, legislative and public relations matters. We believe that this forum will be of great assistance to all of us in the months and years ahead.

We still have policy decisions to make on such matters as political contributions, fee schedule and the architectural selection process for state work. Your suggestions on these and other matters pertaining to the Chapter and the health of the profession are most welcome. We are anxious to provide you with programs and information that will aid you in doing a better job.

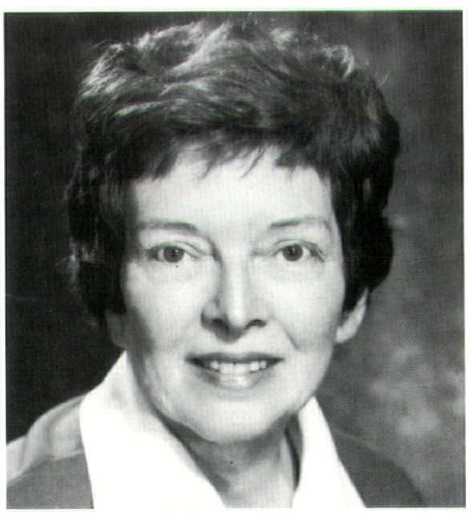
David N. LaBau, AIA

From the Membership Chairman

Thanks to the efforts of many of our members, we have added 40 new names to the CSA roster.

Categories of the new members include: 23 Corporate Members, eight Professional Associates, two Associates, one Professional Affiliate and six Student Associates.

CSA members of the Telephone Committee who helped us to achieve this increase in membership were: Lawrence R. Frazier, Kenneth E. Allen, Robert A. Sapack, John A. Matthews, Glenn H. Gregg, Richard E. Schoenhardt, Paul V. Elsberry, Jr., Stephen J. Joncus, Arthur E. De Salvo, Jr. Richard Foster, Jack H. Schecter, Richard S. Lawrence, Allan J. Dehar, Thomas C. Babbitt, and John A. Kaestle.



Photography: Joseph P. Naylor

Phyllis V. Olson

We urge everyone to help us at least double this increase in membership as our goal for 1974!

The list of new members follows:

Corporate Members

Jerome H. Appel
Norman S. Baier, Jr.
Helen F. Behrens
William A. Briggs
James Patrick Cassidy
John Deegan
Jeffrey L. Elovitz
John W. Gallagher
Bruce Campbell Graham
William Herbert Grover
Gabriel Harel
Larry Adam Henry
Mary Hanes Holbeck
John David Jacobson
Richard Roberts Kennedy
Richard Steven Lawrence
Robert Adams McKelvey
William J. Petchler, Jr.
Clarence Edward Phillips
Robert Lorimer Phillsbury
William Peter Raffone, Jr.
James Volney Righter
Ira Shapiro

Professional Associates

Edward W. Campbell
Bruce F. Carmichael
Roy Edward Cook
Andre Sosthene Janet, Jr.
Herbert M. Short
Roger Alexander Terni
Cecil Daniel Wright
Drexel Evans Yeager

Associates

Clifford Cooper
Frederick E. Wojick

Professional Affiliates

Michael Richard Hough

Student Associates

Francis Charles Klein
James Richard Manna
Toni Jewell Nathaniel
Marilyn Sue Payton
Michael Anthony Sims
Peter Randolph Edward Zander

Phyllis V. Olson, A

(Continued to page 21)

The planet is now the object of design: the consequences of building design are global through the consumption of energy and resources that it requires and the place it takes in an existing ecosystem. If the car and the water-flush toilet rank as the most inefficient tools now used for human ecology, our buildings may not be far behind, particularly those that consume large amounts of energy in order to compensate for the designer's disregard of climate.

Architects once studied the rules of proportion for the styles and orders of the Classic temple. The earth is now that temple: the rules are those of building and living within the limits of the world's balance of material resources and energy.

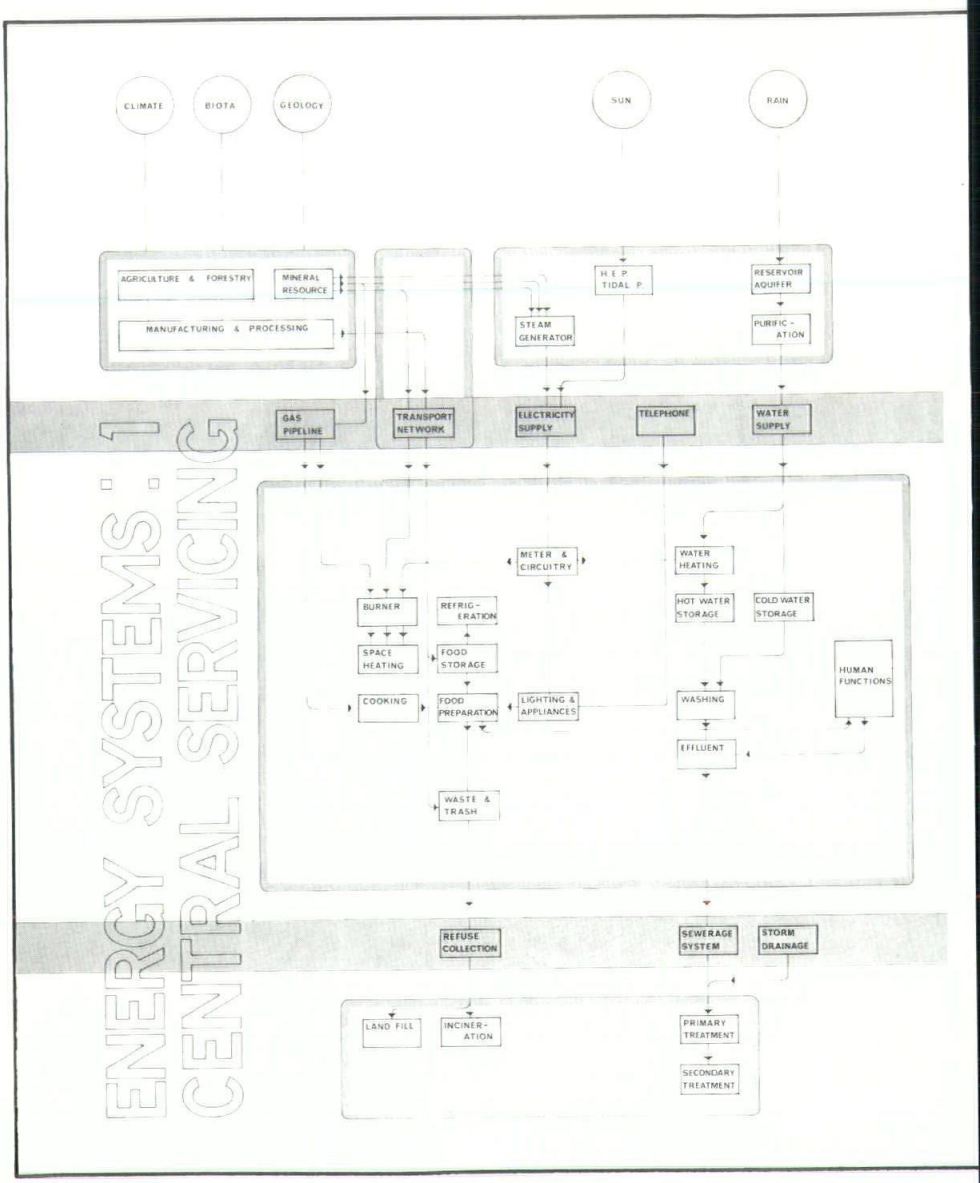
Energy Conservation in *Architecture*

Part 2: Alternative Energy Sources

by Donald Watson, AIA and Everett Barber, Jr.

This is the second of a two-part article on energy conservation in architecture, illustrated by reference to experimental house designs. The first article, which appeared in the March-April issue, reviewed climatology and natural building designs. In this article, alternative energy sources, particularly applications of solar energy, are discussed.

Donald Watson, AIA, is an architect in Guilford, Connecticut, and a member of the visiting faculty at the Yale School of Architecture. Everett Barber, Jr., is an Assistant Professor of Environmental Technologies at Yale and President of Sunworks, Inc. of Guilford, Connecticut. This article is adapted from remarks to the Joint Producers Council-CSA Chapter Meeting in March.



In this article, the current installations in several Connecticut houses of solar and wind energy systems are presented as examples of alternative energy sources for buildings. Based on present technological forecasts, the solutions to both immediate and long-term energy needs in buildings probably will not lie with one single energy source, but instead will require the design-with-nature approach that was reviewed in the previous article and combinations of alternative energy sources that are now under development. These include solar flat-plate collector and windmill energy systems, neither one of which is new. In the United States, solar devices for heating houses date back to the 1930's, and windmills have always been a familiar part of the agricultural landscape. These devices now regain our attention as part of the exploration to build and operate buildings with low-impact and pollution-free technology.

Studies of energy conservation in housing were proposed in 1927 by R. Buckminster Fuller.[1] As part of the "universal design requirements of a scientific dwelling," Fuller listed a catalogue of energy needs and climatic impacts, including the global implication of resources consumed in building. Few architects picked up the cue, and as recently as in May, 1972, at a M.I.T. Housing Research Conference, only two of more than 30 research papers discussed the problems of energy budget. Now, two years later, proposals abound for energy research in architecture.

Self-Sufficient Housing. Several worthy research efforts have centered around the subject of self-sufficient housing—also referred to as energy-independent housing or autonomous-servicing. Notable among these is the Ecol Operation, a project of the Brace Research Institute of McGill University.[2] The Brace Institute, primarily concerned with new technology for developing nations, has completed construction of a house which demonstrates a number of resource and energy conserving elements. These include a building block fabricated from sulphur, a reclaimable by-product of pollution abatement devices at oil refineries and smelters. The sulphur is employed as a bonding agent in a concrete aggregate mix, and molded into blocks with interlocking joinery that permits mortarless wall construction. All the other materials in the house were selected to implement possible "self-help" construction, including the roofing which is constructed from re-used concrete sewer pipes cut lengthwise into quarter-round roof channel tiles. The roof surface also collects rain water, which is then purified in a solar still and economized for domestic washing. A windmill provides electric power for the house.

A second effort, of interest because of its proposal for waste reclamation within a household, is a University of California design for a house which incorporates a microbiological recycle system for water, nutrients and energy.[3] The principles explored in this house, for application to groups of dwellings, are based on the use of algae for the reclamation from household wastes of nutrients for garden crop production, purified water for garden and household needs, and methane gas for cooking. The algae production unit, which is mounted on a roof terrace, also produces sufficient algae slurry to feed a cow, as well as dewatered and dried algae for chicken feed.

These experimental designs, therefore, replicate at the house scale the cycle of resources that will be required for sustaining our human habitat at the urban and global scale. The extent to which existing houses are presently dependent upon central service networks for energy supply is compared in **Figure 1** with possible service autonomy by the use of solar, wind and rainfall sources.[4]

The alternate energy technologies discussed below are, therefore, only part of the exploration that can be expected to proceed rapidly now that the importance of the energy budget over the life cycle of a building has been recognized—in effect, to reduce the environmental impact of the house.

Solar Flat Plate Collectors. Solar-heated houses have been developed over the past

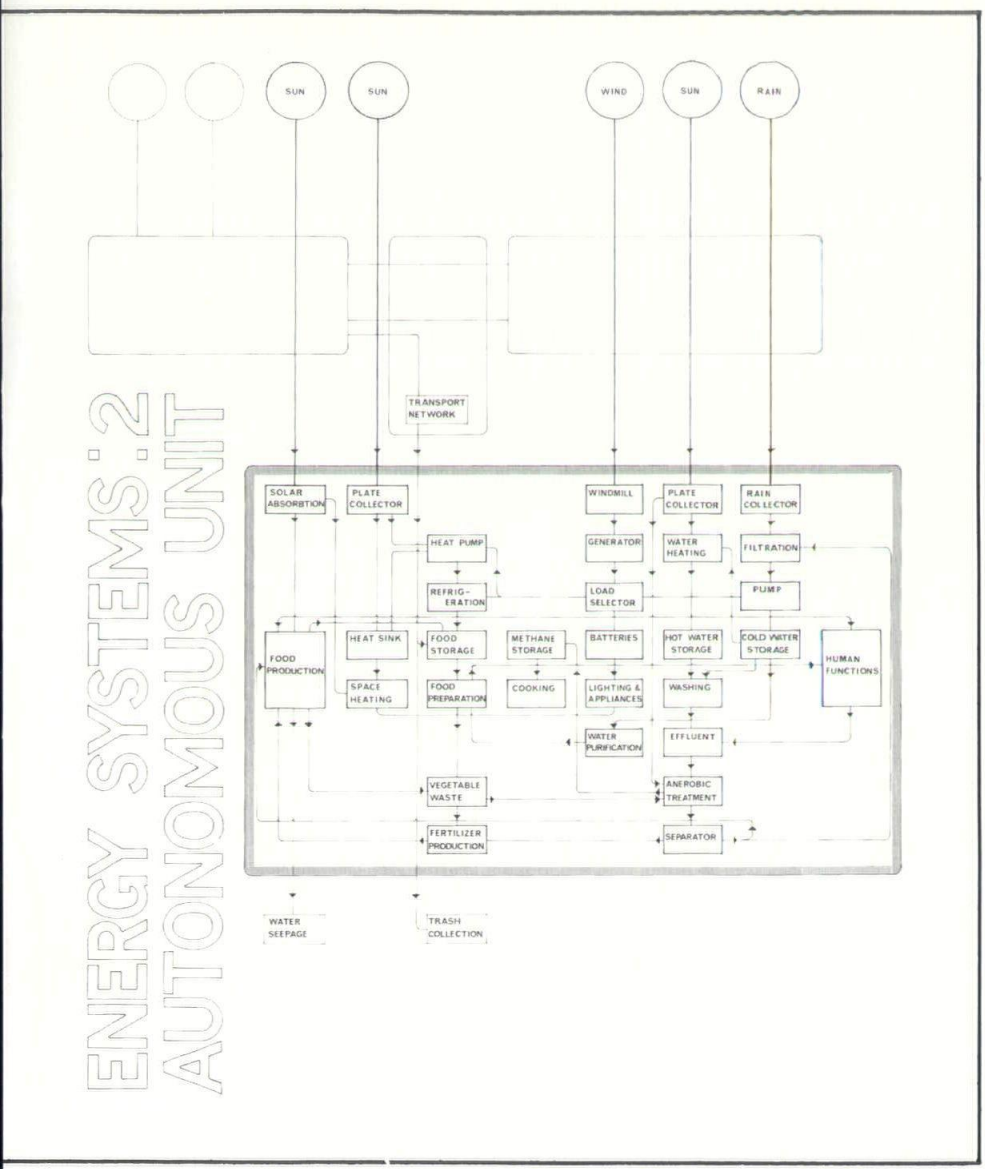


Figure 1. *The extent to which existing houses are dependent upon central service networks for energy supply is compared with possible service autonomy by the use of solar, wind and rainfall sources.*

30 years which take advantage of the direct photothermal or "greenhouse" effect of solar radiation. This is only one of the dozen or more phenomena through which solar energy is available — wind, hydrolic, photosynthetic, photovoltaic, and ocean-thermal cycles are others that remain only partially tapped.[5] The Cabot Research Program at M.I.T. carried out the most comprehensive research to date of solar heating for houses in a series of experimental installations from 1939 to 1956. Although none of the M.I.T. houses remain solar-heated today, each installation was fully instrumented over several heating seasons with progressive improvements made in the solar technology with each new house. The results of the M.I.T. effort were summarized, even in the context of 1950's fuel costs, with the conclusion that "the use of solar energy to heat and/or air condition homes is attractive, entirely feasible, and worthy of continued research."[6] Many other houses have been built that are partially or totally heated by solar energy and are documented in the growing literature on solar energy.[7]

The discussion in this article will, therefore, address only the particular type of solar heating used in the present Connecticut installations, a flat-plate collector system that provides low-temperature heat with relatively simple technology. In order to review the basic elements of different solar collectors and to indicate how they vary, both in cost effectiveness and architectural constraints for space heating, a number of systems will be described, beginning with the most familiar and elemental—a south-facing window.

Solar Windows. In temperate zones, south-facing window walls receive up to twice the amount of heat gain in winter as in summer, due to the lower angle of the winter sun.[8] Such windows with a roof overhang to block summer sun and admit winter sun were publicized in the 1950's as a feature that "solar-heated" a house or room. Unfortunately, without adequate insulation applied during the balance of the day and night-time period, the heat loss from plate glass—or even insulated glass—more than exceeds any potential heat gain. However, a carefully constructed insulating shutter system on the interior of the glass could be added to prevent heat loss through the glass area at night and, thereby, the "solar-window" would indeed function as a heat source. A variation of an interior insulating shutter is an idea of designer Dave Harrison, a "bead wall" in which styrofoam beads are automatically blown into a glass sandwich for night-time insulation and then removed during the day. The additional provision of a heat-absorptive masonry surface on the interior floor or wall would provide some heat retaining characteristics as well.[9]

Michel Solar Wall. A next step in progressively effective solar-collector heating systems is perhaps illustrated by a design developed by French architect J. Michel.[10] Inside a thermal glass wall, a second wall of black, concrete block is placed to act as a heat sink. At the top and bottom of the wall are vents that variously allow the heat to be drawn into the room as needed or evacuated to the exterior. The advantages of such a disposition of a heat collector are the relatively low cost and the ease of construction. There is an apparent shortcoming in that the heat inlet into the room is high, but this could be overcome if applied to multi-storied buildings with heat inlets at the floors that admit the heated air from the wall panel below.

Reflective Operable Wall. An effective variation of the Window Wall has been built by Steve and Holly Baer in a zonohedron house structure in New Mexico.[11] To insulate the south facing glass areas at night, an operable wall is located on the outside. The wall can be swung down during the day into the open position: reflective finish on the inside surface of the operable wall then increases the amount of solar radiation received by the heat sink, in this case, a vertical rack of 55 gallon drums filled with water and painted black on the exterior faces. This arrangement nonetheless allows visibility between the cylindrical drums out the window. The Baers also report that there is some slight cooling that is effected during the summer—when the insulating panels are in the closed position during the day—as the water in the tanks draws some heat from the air. This cooling process would be greatly increased if the tanks could be opened more directly to night-sky cooling, as in the following example.

Sky-Therm Roof. A further step in solar heating—and cooling in hot-dry climate zones where the night temperatures are considerably lower than daytime temperatures—is the Sky-Therm roof, a design of Engineer Harold Hay, in which water-filled plastic bags are exposed on the roof to the winter sun and then insulated by an operable panel at night, allowing the stored heat to radiate through a metal ceiling into the room below.[12] During the summer,

the process is reversed. With the insulating panel closed during the day, the water bags cool the room below by convection. At night, with the insulating panel opened, the heat is lost from the plastic bags to the cool night sky. This design has been built in Arizona and in Atascadero, California.

In the solar heating devices discussed to this point, there is the advantage of simplicity and economy, but none of them would meet long-term storage requirements needed in temperate or colder climates. In a sense, they simply augment the solar radiation gained by building surfaces during sunny winter days with some storage effected for two to eight hours. On the other hand, the solar collectors that are discussed below have been designed to heat a sizable storage medium that would have a heating capacity of from three to six days in temperate and even cool zones. Again, in order to limit the discussion to a brief introduction of solar heating in dwellings, only a few alternatives are presented as representative of an innumerable range of collector and heat-storage designs that are fully described in solar research literature.[13]

In the following examples, the solar heat is obtained by a flat-plate collector mounted in a fixed position on a building structure. Flat-plate collectors are invariably oriented to the south or near south—any orientation from south to south-west is permissible—and at an angle of inclination that varies depending on the specific latitude and expected performance of the system. For example, for a panel that is expected to provide winter space heating only and that is situated in New England, an inclination angle of latitude plus 15 degrees is generally considered ideal. If air-conditioning requirements were also to be met, then a lower angle, equal to the local latitude, would receive greater year-round insulation. These and other technical criteria for solar heating in buildings are discussed in detail in a separate paper by the authors.[14]

Thomason Solaris System. The collector design of inventor H. Thomason, built and operating in several houses in the Washington, D.C. area, has advantages of economy and simplicity of construction.[15] The collector is composed of a corrugated sheet of galvanized metal or aluminum painted black and covered with glass. The corrugations of the sheet metal provide channels through which water is allowed to slowly trickle during winter sunlight hours from a feeder pipe at the top ridge. The water is heated in its passage down the collector and piped from the bottom gutter to a heat storage tank, which in the Solaris system is a hot water tank encased in a bed of fist-size rocks. The heated air between the rocks is then ducted through the house as necessary. In one of Thomason's designs, summer cooling is achieved by passing the water down an exposed roof surface during summer nights, where it is cooled and then passed into the storage system to provide cool air. This would only be appropriate in the same hot-dry climate zones as the Sky-therm roof. In the Washington, D.C. installations, cooling is effected by using a conventional compression refrigeration unit with the advantage of operating at night when condensing temperatures are much lower to chill the storage media as a source of cool air during the day.

Löf Collector Design. The design of solar engineer, George O. G. Löf, one of the foremost researchers in solar energy, is of interest because it is an air system.[16] The collectors are composed of a series of glass fins under a glass cover, alternately clear and black-painted. These pieces of glass absorb solar radiation and, in turn, heat the air that passes at a controlled velocity from the bottom to the top of the enclosed collector. The heated air is then passed through a rock storage tank and thereafter ducted through the house as required. The advantage of such an air system is that it is free of leakage problems that might occur in "wet" systems. However, a greater area of collector surface is required in order to obtain an efficiency comparable to the liquid collectors, such as described below.

Liquid Media Collectors. The most common variant of the flat-plate collectors that have been developed since the early M.I.T. experiments uses a liquid rather than air or other gas media to transport heat away from the absorber. The cost of liquid collectors is normally higher than those using air. However, pipes from the collectors require less volume in a building than do air ducts. Ducts are also more difficult to seal and insulate fully. The components of a flat-plate collector—the covering surface, the absorber—are subjects of continuing research and discussion among solar energy engineers. The design of the collector that is used on the projects illustrated below, developed by Everett Barber, Jr. over several years of a comparative analysis, uses a single cover sheet of glass, rather than the double-glass covers that have been frequently installed. A single sheet, together with the particular selective surface that coats the metal absorber, has been shown to yield a higher annual thermal performance than double glass at less cost. Glass is used instead of plastic because it has good solar transmittance and good long wave absorption to contain within the air space the heat that is re-emitted from the metal absorber. Few plastics have both of these qualities at comparative cost or durability characteristics.

From the flat-plate collector, the liquid is piped in a closed circuit through a water thermal storage tank, where it is expected to maintain temperatures that range between 75° and 210° Fahrenheit. Rock thermal storage could also be used, just as in the Solaris system described above. The selection of a storage medium is normally based on trade-offs between cost and space considerations.[14]

From the thermal storage, the hot water is piped as needed into a fan-coil unit to heat the air in a forced hot air distribution system. Because the water temperatures in the thermal storage may be as low as 75°, the size of the hot-air distribution ducts is larger than normally installed for conventionally-fueled furnace temperatures. An alternate distribution that also operates well with the low temperature water obtainable from solar panels is a radiant floor system.

Pyramidal Optics Installation. A variation of the normally exposed installation of a flat-plate collector has been proposed by two Stamford, Connecticut engineers and demonstrated in a prototype building.[17] The flat-plate collector is placed within a roof shed structure, the south face of which is opened only during sunshine hours so that reflective surfaces on the interior of the operable face and the other interior faces of the shed reflect the solar radiation and allow a heat build up within the shed of up to 150° Fahrenheit. The advantage of such an installation is that the flat-plate collector is relatively well protected from wind losses and severe weather that otherwise necessitate careful flashing around an exposed collector.

Other collector designs. The systems described above represent various types of collectors that have already been developed and used to obtain partial or complete building space heating from solar radiation. In addition to the flat-plate collector mounted in a fixed position, other possibilities include an adjustable mounted collector which allows changes in the angles of inclination either monthly or even daily with automatic sun-following controls. Concave focusing collectors have been developed, which are more appropriate for locations other than in New England, where the incident sky radiation from clouds and the general atmosphere diffuses the source of radiation—only direct parallel sun rays are effective

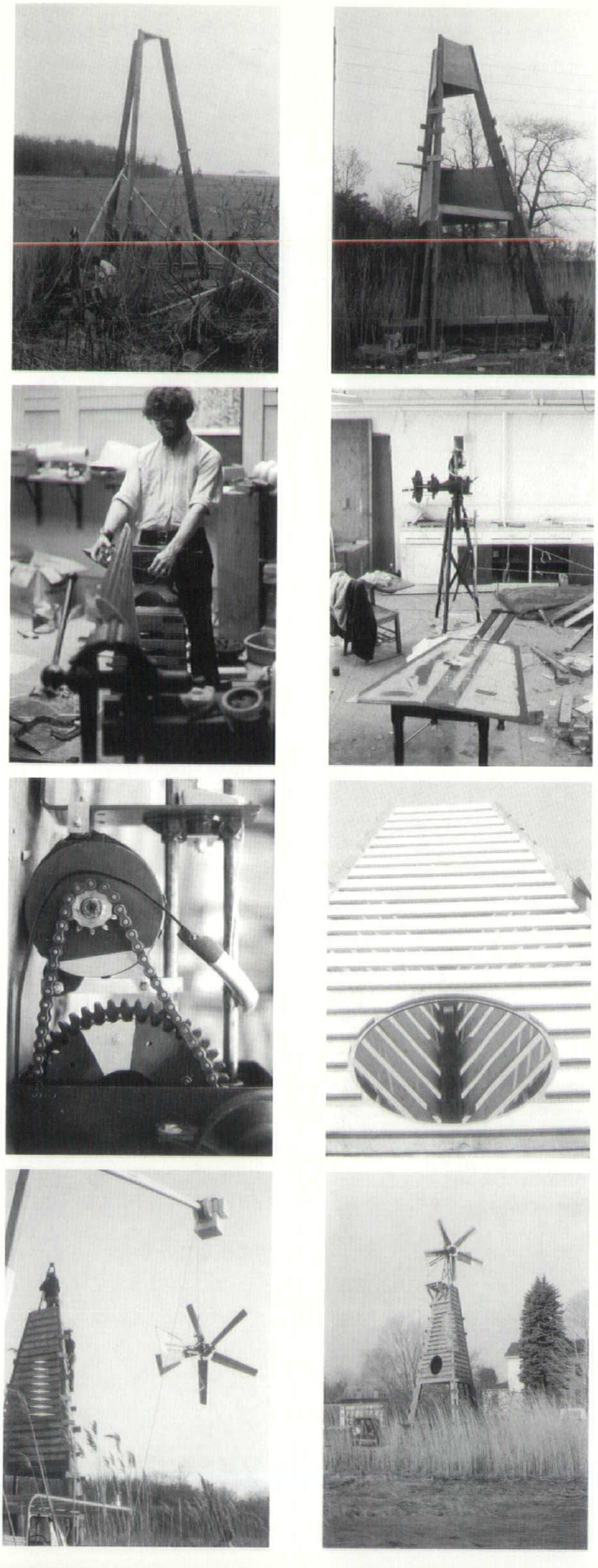


Figure 2. *Construction sequence of the windmill for the Bloomer residence.*

for focusing collectors. Advanced research in photo-voltaic solar cells, that can be used to generate electricity, and in salt storage systems, which use the heat of fusion instead of the specific heat of a storage medium, promises additional advances that may relieve the present constraints of panel and storage sizes with which the architect must contend in order to incorporate the solar panels into a building design.

The following examples of projects being completed in Connecticut are offered to demonstrate both the aesthetic and energy-conserving features inherent in low-impact technology.

Windmill for Bloomer Residence. The windmill provides AC current for domestic hot water heating, **Figure 2**. It was executed by a group of Yale Architecture students at a materials cost of approximately $1500.[18] The equipment was fabricated from used machine parts recovered from junkyards and, in the case of the windmill gear, from a nearby site, where windmills were commonly used up to the 1940's.

The design was developed with a high regard for the aesthetic possibilities of such a structure. A playhouse and gazebo are integrated into the windmill base. The machinery is brightly painted and encased in plastic for visibility. A lightbulb illuminates the equipment as the windmill operates at night. Wind is one of the ways in which solar energy is available for pollution-free and unlimited use, evidenced by the growing interest in and commercial availability of windmill plants.[19]

Solar House. This residence, located in a Connecticut shoreline community, is apparently the first effort in the State to use solar collectors for a major portion of house-heating requirements. Zoning regulations limited the height of the structure, and the building lot was otherwise constricted by property line setbacks. In the design, three rows of collectors face the south. The north sides of the raised roof sheds formed by the collectors are used for clerestory windows in order to encourage natural ventilation and summer cooling. The overhangs on the south provide summer shade for the window areas. **Figure 5** is a cross-section through the house and diagrams the solar heating system, composed of Collectors (A), a 2000-gallon water Thermal Storage (B), and a Fan-coil and forced hot-air Distribution Ducts (C). The auxiliary system is an oil-fired domestic water heater (D).

Although a less than ideal amount of solar panels was used because of the zoning height re-

Figure 3

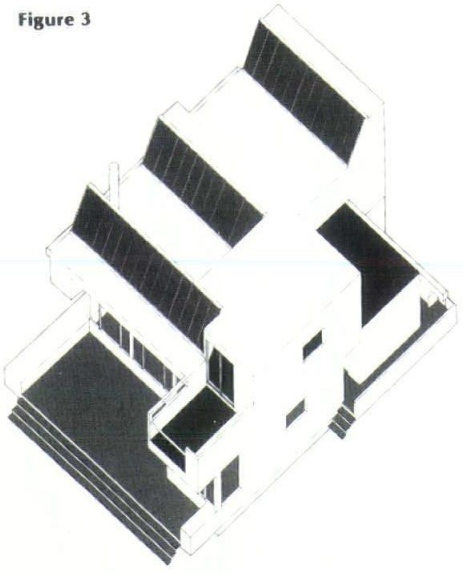
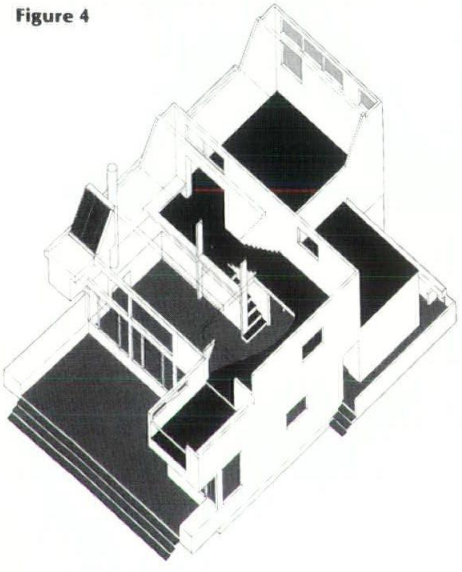


Figure 4



Figures 3 and 4. *Isometric sections of the solar house in Westbrook, Connecticut. Architect: Donald Watson, AIA; Engineer: Everett Barber, Jr.*

strictions and other design requirements—the panel area normally recommended is up to 40% of the heated floor space—the solar system in this design is expected to provide 45% of the space heating and almost all of the hot water, which together could total 65% of the house heating requirements. The owner is expected to be able to realize a return on the investment by fuel savings in a six- to ten-year period. Based on the actual contractor receipts for the completed installation in this house, the additional cost of a solar heating plant was $2.40 per square foot over the amount of an earlier bid for an equivalent conventionally-fueled heating system. However, this square-foot price does not include the cost of carpentry and roof flashing that is normally required in roof-mounted collectors. To anticipate the additional construction cost involved in solar heating, the rule-of-thumb cost for budgeting future projects might be estimated somewhat higher.

Barber Residence. Designed in collaboration with the owner by the architectural firm of Charles W. Moore Associates, this 1,300 square foot, three-bedroom residence, slated for construction this year, incorporates a wide range of energy conservation features that have been discussed in these two articles, **Figure 6.**

SOLAR HEATING: The roof faces south and will be inclined at a 57° angle from the horizontal and have about 450 square feet of usable collector area. Solar heat will be stored in a tank, 5 feet in diameter and 12 feet high, located inside the house. Solar energy is expected to provide an estimated 60% of annual heating requirements, and an oversize water heater will serve as an auxiliary heater. The heat-distribution system is designed to permit gravity circulation of hot water in the storage tank to heat upstairs portion of house in the event of power failure.

NATURAL VENTILATION: A belvedere on the top of the house will be used during hot weather to vent warm air from within the house (note the louvers in the sides of the belvedere). The chimney effect, which occurs when the air inside the house is warmer than air outside, causes the air inside the house to escape through the belvedere louvers. Warm air leaving through the louvers makes way for cooler air to enter the house through open windows at the ground floor. Wind assists the operation of the belvedere. (This is similar to the belvederes used for years on barns). The chimney effect is further aided during warm weather by the gravity circulation of otherwise unused heat from the solar collectors through several finned coils inside the throat of the belvedere.

WIND/ELECTRIC POWER: Two 10′ diameter windmills are being used without storage to augment the local utility company power. About 80% of the electric power requirements are expected to come from the wind.

FIREPLACE: A large stone fireplace will be a central element in the design of the house and will serve as an auxiliary source of heating. Boiler tubes will be placed above the smoke shelf of the fireplace. These will be directly connected to the solar heat storage tank. Thus, some of the heat which would normally escape up the chimney will be recovered and circulated by gravity flow to the solar heat storage tank, which stands vertically behind the fireplace. In addition, the fireplace will partially augment solar heating of the heat storage tank, thereby helping to heat the house.

A thermostatically operated damper in the fireplace will close when the fire goes out and so prevent heat loss through an open damper. The fireplace will be large enough and equipped for cooking, which will be useful during periods of power outage.

An air intake duct will parallel the fireplace flue with a heat exchanger between the two to preheat incoming air needed for proper combustion in the fireplace.

SOLAR CONTROL ON WINDOWS: Roof overhangs above the east- and south-facing windows and doors are designed to provide shade during the summer months to reduce the

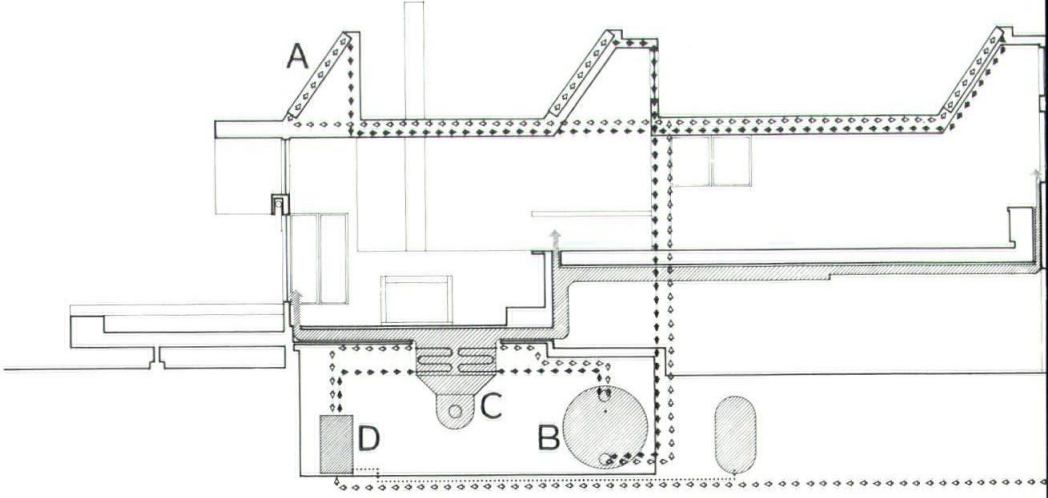


Figure 5. *A cross-section of the solar house which diagrams the solar heating system, composed of collectors (A), a 2000-gallon water thermal storage tank (B), and a fan-coil and forced hot-air distribution ducts (C). The auxiliary system is an oil-fired domestic water heater (D).*

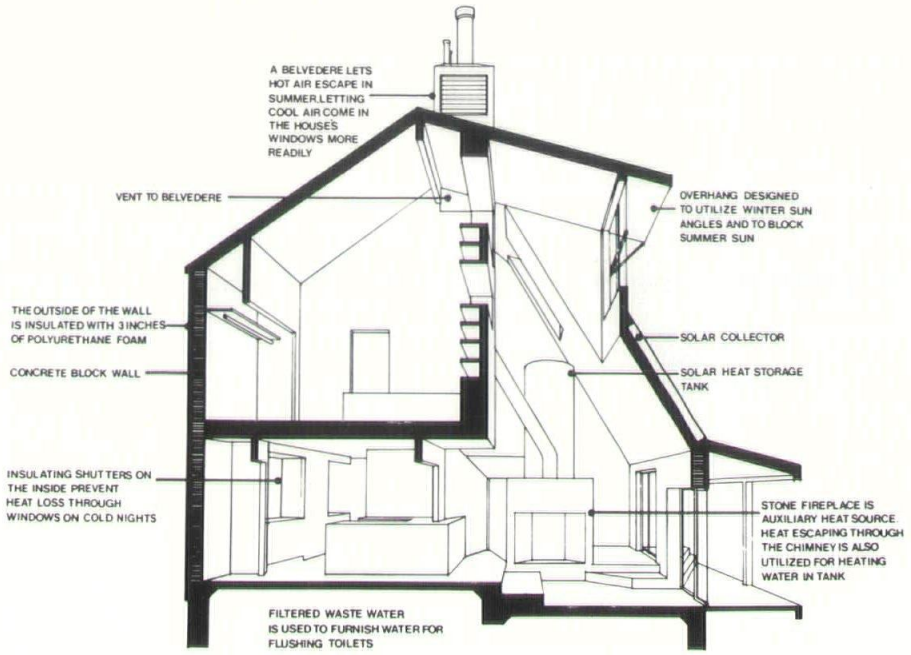


Figure 6. *The design of the Barber residence to be built in Guilford, Connecticut, incorporates several energy conservation features. Architect: Charles W. Moore Associates, of Essex, Connecticut.*

solar heat gain to the interior of the house and yet let in sun during the winter months to aid the heating system. Sliding shutters are provided on the exterior of the sliding glass door in the west wall to shut out summer sun during the afternoons.

GLASS AREAS: The house has less area than many contemporary homes, and all glass used is double thick, insulating glass. (The heat loss, even through insulating glass, is as much as ten times the heat loss through a well insulated wall). Most of the glass is located on the south side of the house, where the most solar heating and natural light can be gained. The north wall has few windows, because little solar radiation is gained from north light and a good deal of heat would be lost through the glass.

INSULATION: The outside of the concrete block walls are to be insulated with three inches of sprayed-on polyurethane foam. Insulation on the exterior of masonry construction has been shown to reduce the temperature extremes felt inside the house from those occurring outside, in comparison with similar construction having the same thickness insulation used inside. The insulation serves to buffer the comparatively large thermal mass of the masonry units from the outside temperature extremes.

On the interior, insulating shutters will be used instead of drapes. These will slide over large glass areas to provide extra insulation as needed, say on a cold winter night. The shutters will be made of 3" of rigid fibreglass insulation covered with cloth.

HEATING DOMESTIC WATER: Water heating accounts for a sizable percentage of any house's total energy requirements. Thus, the use of waste heat to boost incoming water temperature can be a significant energy-conserving measure. In this house, water temperature will be boosted in three ways. First, a heat exchanger will be used on the waste water line so that waste water leaving the house will pre-heat water going to the domestic water heater. Secondly, the condenser on the refrigerator will help to pre-heat water on its way to the domestic water heater. This will also enable the refrigerator to operate more efficiently at a lower condensing temperature. Thirdly, the solar heat storage tank will also pre-heat water going to the domestic water heater.

CLOTHES DRYER AND DISHWASHER: The heating elements in both electric clothes dryers and dishwashers consume significant amounts of household energy; therefore, as with domestic water heating, an effort will be made to conserve energy by pre-heating air entering both units.

Air entering both the clothes dryer and dishwasher will first pass through a coil containing solar heated water. This will pre-heat, to some extent, the air entering these units. Also, air leaving the dryer will be used to further pre-heat air entering the dryer.

HOUSE SIZE: The house is designed for a family of five, having a middle-income budget. An effort has been made to meet all of the necessary space requirements of one family within relatively compact space (1,300 square feet of occupied floor space). This effort was dictated both by a limited budget for the house and by a strong desire to conserve natural resources in the form of building materials.

WASTE WATER: A filtered grey water system will be used to furnish water for flushing toilets.

CREDITS AND REFERENCES

(1) R. Buckminster Fuller, "Universal Requirements of a Dwelling Advantage", *The Buckminster Fuller Reader:* J. Meller, 1970.

(2) *The Ecol Operation:* Minimum Cost Housing Group, McGill University; Publication List available from the Brace Research Institute, McGill University, Quebec, Canada.

(3) C. G. Golueke and W. J. Oswald, "An Algal Regenerative System for Single-Family Farms and Villages", *Compost Science-Journal of Waste Recycling:* May-June, 1973.

(4) Peter Clegg, 1974 Master Thesis, Environmental Design Program, Yale School of Architecture, Faculty Adviser: Donald Watson.

(5) William E. Heronemous and Jon E. McGowan, "Ocean Thermal Power and Windpower Systems: Natural Energy Conversion for Near-Term Impact on World Energy Markets", AAAS Conference, San Francisco, February, 1974.

(6) Publication List available from Chemical Engineering Department, Massachusetts Institute of Technology, Cambridge, Mass. 02139.

(7) General Introduction: Farrington Daniels, *The Direct Use of the Sun's Energy:* Ballantine Books (Paper); Technical Papers: *New Sources of Energy:* Proceedings of the United Nations Conference 1961, Volumes 4 through 6; *Journal of Solar Energy*, Smithsonian Laboratory, 12441 Parklawn Drive, Rockville, Maryland 20852.

(8) F. W. Hutchinson, "The Solar House: A Research Progress Report", *Heating and Ventilating:* March, 1946; also "The Solar House", ibid, March, 1947.

(9) Victor Olgyay, *Design With Climate:* Princeton University Press, 1962.

(10) J. Michel, "Chauffage Par Rayonnement Solaire", *Architecture d'Aujourd'hui:* May-June, 1973.

(11) "An Interview with Steve and Holly Baer" in Mother Earth News, *Handbook of Homemade Power:* Bantam Books, 1974.

(12) H. R. Hay and J. I. Yellott, "Naturally Air-Conditioned Building", *Mechanical Engineering:* 92, 1970.

(13) John I. Yellott, "Utilization of Sun and Sky Radiation for Heating and Cooling of Buildings", ASHRAE Journal, December, 1973.

(14) Everett Barber, Jr. and Donald Watson, "Preliminary Criteria for the Design of Solar Heated Buildings", *Sunworks* Technical Paper, available from Sunworks, 669 Boston Post Road, Guilford, Conn. 06437.

(15) H. L. Thomason, *Solar House Plans:* Edmund Scientific Company, Barrington, New Jersey, 1972.

(16) G. O. G. Lof, M. Wakel and J. P. Chiou, "Design and Performance of Domestic Heating System Employing Solar Heated Air: Colorado Solar House", *Space Heating* Journal, S/114.

(17) "Pyramidal Optics Solar Energy Collection System", Wormser Scientific Corporation, Stamford, Conn. 06903.

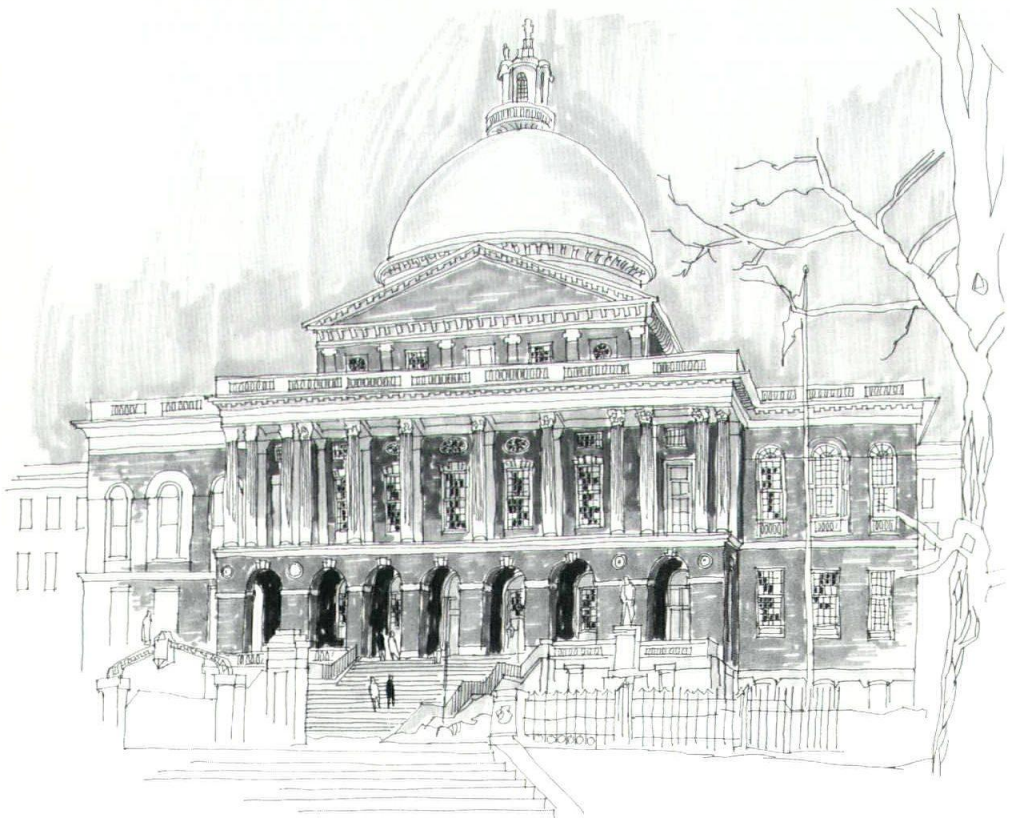
(18) Student Project, Yale School of Architecture, Doug Gardner, Bob Godshall, Dan Quinto, and Carl Pucci. Faculty Advisers: Kent Bloomer and Everett Barber, Jr.

(19) Henry Clews, *Electric Power from the Wind:* Available from Solar Wind Company, East Holden, Me. 04429. ■

The *Art* of Drawing the City

The Manhattan Skyline, viewed from Governor's Island

Profile of Richard Welling: "the *Architect*



The Massachusetts State House, Boston

You are an architect involved with the planning for the renewal of a number of sections of downtown Hartford. You need a view of the areas as they will look after the redevelopment program has been accomplished, because you must convince the city fathers, business leaders and potential developers that it would be best to leave standing those structures which have some architectural and/or historic interest and which have much to contribute to the fabric and ambiance of the area. You must also show them how new buildings can be created which will blend with the remaining ones after the renewal process is completed.

Aerial photographs and other straight-on photography simply won't work, not because they are inaccurate, but because they cannot capture the *feeling* of the scene now and as it will become.

If you are facing this problem as architect Jack Dollard of Hartford did, you call in Richard Welling. Welling sketches the area in detail, emphasising those elements of the scene which are to remain. His drawing is enlarged to massive proportions, and reproduced on mylar. The architect then begins his work, erasing those buildings scheduled for demolition and replacing them with penciled sketch-

by H. Evan Snyder, Editor

Illustrator"

es of new structures which are being proposed. The mylar print is returned to Welling, who completes the drawing in his own style.

The result is "just what I want," says Dollard. "Dick Welling is really the 'Architect's Illustrator'. He has tremendous sensitivity to buildings and the general environment, which is essential to what we are doing. I don't think there's anybody who spends more time *looking* at the city, and out of that he has developed this special sensitivity to the city, especially Hartford—what it really *feels* like."

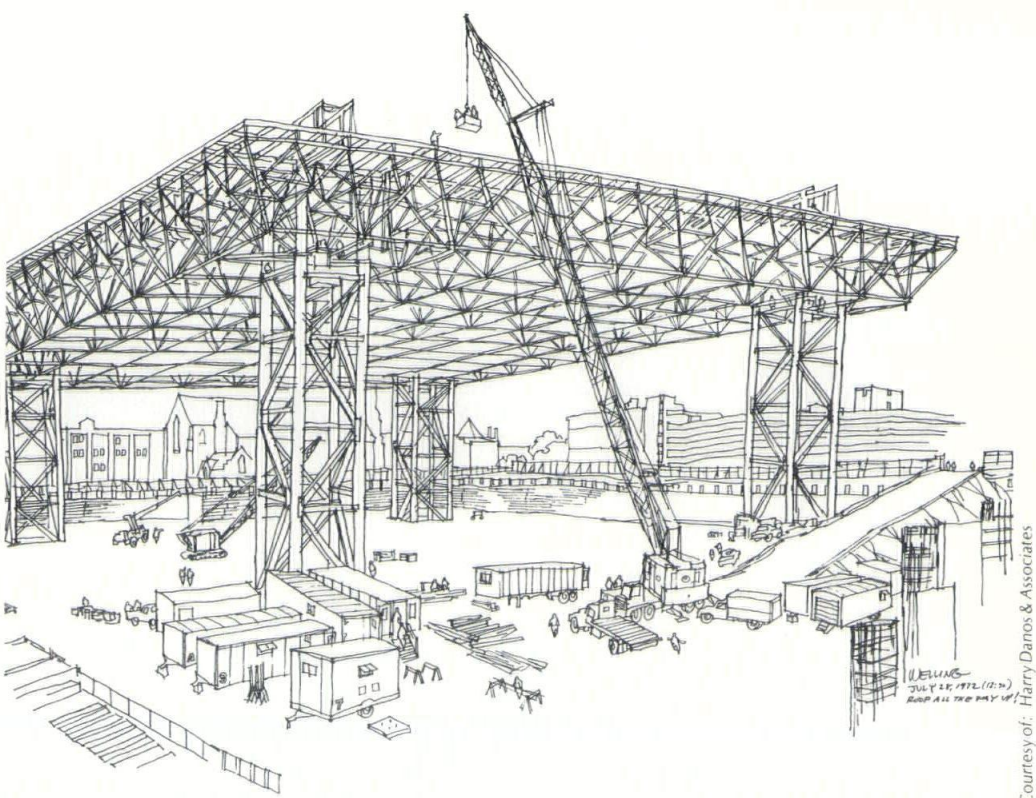
Welling's answer to the question of why he has chosen the city as his subject is an imminently practical one: "There are people who draw barns, and they sell their work. There are people who draw horses, and they sell. I'm just not turned on by barns and horses, so I draw buildings and cities. They sell, too." Facetiousness aside, his work has been selling, fortunately with an increasing amount of regularity. His sketches of Hartford and scenes of historic buildings in the surrounding vicinity have been used by Connecticut Bank and Trust for two of their annual calendars. He has recently completed a series of drawings which will be reproduced, framed, and used as the principal wall decorations in the new Sheraton Hotel, which is part of the soon-to-be-completed Hartford Civic Center. Under contract with Danos and Associates, the architect associated with Vincent Kling of Philadelphia on the Civic Center, Welling began drawing the project from its earliest stages of construction and has produced a remarkable artistic record of the structure's progress. One of these drawings provided a cover illustration for the September-October 1972 issue of *Connecticut Architect*.

Although Dick Welling's preoccupation with drawing buildings could lead to his being labeled a "frustrated architect," he is an artist through and through. Born in Hartford, he entered Yale to study fine arts, but his student days were interrupted by World War II. After the War, he enrolled at the Parsons School of Design in New York under the G.I. Bill. It was there that he received his training as a graphic artist, principally in advertising design, and also where he became fascinated with the challenge of capturing the dynamics of the city with pen and ink. His inspiration was the published work of photographer Bernice Abbott, who concentrated on scenes of New York.

"The city is a great subject," comments Welling. "There is such a wealth of material, and the real challenge is organizing it all on the page. It's tough to draw when you're overwhelmed with skyscrapers, people, traffic, changing light patterns, and the like, but once you get locked into what to look for, it's really great."

In recent years, a great many people in Hartford and elsewhere have gotten "locked into" looking at Dick Welling's work. As an outgrowth of two articles in *American Artist* magazine in the late 1960's, he was asked by the New York publishing firm of Watson Guptill to write a book. Although he undertook the project with some misgivings, the resulting volume, *The Technique of Drawing Buildings*, appeared in 1971 and is now in its second printing. His second book, *Drawing With Markers*, has just been published.

On any given day, you can see Dick Welling—armed with a box of fine-tipped pentels, a sketch book and a folding stool—pursuing his favorite subject. "Although buildings are considerate enough to stand still, there are many problems. People like to watch an artist at work, and city streets are usually full of them. They don't hassle you, but once in a while something happens. For instance, a policeman came up to me while I was sketching the Flat Iron Building in New York and asked if I had a license to draw. I admitted I didn't have one, and he remarked, 'O.K. Mac, but you better make a good picture.' I wasn't sure if he was serious or not."



Courtesy of: Harry Danos & Associates

Construction sketch of the Hartford Civic Center

If he has difficulty occasionally with a policeman for obstructing traffic, Dick Welling doesn't have any at all with construction workers. The "Artist in a Hard Hat" plowed into the depths of a major construction project in 1968 on a commission from Travelers Insurance to record the progress on the extension of the Company's Home Office complex at the southern end of Constitution Plaza in Hartford. Since all of his drawings are done in ink on the site—he never carries a pencil and doesn't own a camera—he had to get close to his subject and the men who were making it happen. "I have a soft spot in my heart for construction workers. One of the greatest compliments I ever got on the Travelers project was when one worker looked over my shoulder as I was drawing a piece of earth-moving equipment and said, 'Hey, Mac, that machine looks like it could really work!' Who could ask for anything more?"

One unfortunate aspect of Welling's work, however, is that he gets a tremendous kick out of drawing the complex architectural detail of Victorian buildings from the late 19th and early 20th centuries, and these seem to be disappearing from the urban scene at an increasingly rapid rate. "The more complicated a building is, the more pleasure I get from drawing it." He confesses, however, that when people see him sketching an old building such as Hartford's Y.M.C.A. or the Garde Hotel, they can be sure that it is scheduled for demolition. Even the locations he has chosen for his studio—he has had to move four times in the past six years—have fallen victim to the urban renewal process. "One begins to feel like the kiss of death," he quips.

Whatever the problems, Dick Welling is a man who has made a fine art out of what he enjoys doing best, namely drawing the city in all its complexity. And obviously, he doesn't look exclusively to the metropolis for all his subjects. "No matter if a town is large or small," he says, "there is always something interesting there—an old railroad station, a store front, a building under construction or one being torn down." So, before the wrecking ball has taken its toll on that turn-of-the-century Town Hall on Main Street, or before that 60-story glass skyscraper has had a chance to overwhelm completely that beautiful colonial church, maybe you had better place a call to Hartford's "Artist in a Hard Hat," Richard Welling. ■

Top right: Lewis Street, Hartford
Bottom right: Hartford's Garde Hotel, prior to its demolition

Dialog with a Developer

by Robert H. Mutrux, AIA

Following is a transcript of an interview with a well-known developer whose name is withheld for reasons of security (the interviewer's). Resemblances of any kind are purely intentional.

Q. You've been active in this field since way back. Could you tell us what inspired you to get into it?

A. In the beginning, I saw the need to create an ideal environment, one in which man and woman could live together in happiness, comfort, and safety with long-term leases and even on a permanent basis.

Q. What was your first project?

A. I started out in a small way with garden-type apartments, lots of landscaping, and all the amenities. I was very naive. I even offered free fruit and vegetables to my tenants.

Q. Did you have any difficulty finding suitable land?

A. Not at first, although I did have some bad soil conditions on my first job. Had to get rid of a lot of water before I hit bedrock. You can't build a house on sand, you know. Today it's something else. I'm having a devil of a time finding undeveloped acreage at a decent price. Wasn't it Will Rogers who said, "They're not making any more of it"?

Q. I think it was. Now how about labor problems?

A. Actually, none at all. You see, I did most of the work myself, but I did work a six-day week. Even acted as my own architect. Then, later on, my son came in with me. That made a big difference.

Q. To what do you attribute your early successes?

A. Hard work, man, and good working conditions. I found out early on that you can't accomplish anything in the dark, so I set up my own lighting plant. It was a super job, if I do say it myself. It has served me well 24 hours a day and all year round ever since, without a bit of trouble. But I want to make one thing perfectly clear. You don't just press a button and say, "Let there be light". It takes a lot of know-how. And experience, too.

I limited myself at first to small developments. Then I met a free-lance character named Imhotep, who showed me how to pyramid my investment. Worked out fine. Trouble with him, though, he thought he was a god, and that sort of interfered with our relationship. So, shortly after that, I took off by myself, and I was getting along fine until the flood hit me. Lost everything except my stock. I mean, my collection of livestock. Had to start over from scratch. Luckily an elderly chap with a degree in naval architecture came to my rescue. He had three strapping sons, one of them black, and he helped me get back on my feet. We had a fine integrated team going there until they split up.

My first big project was a full-scale temple for a fellow named Solomon. Turned out just fine. If there had been a fire code in those days, it would be still standing. I lost money on it, but I gained a lot of prestige. Then I went in big for new towns.

Q. I believe that was where you made architectural history with some of the first high-rise buildings?

A. Ah yes. In fact, they even used my name in some of the publicity. But all that is in the dim past. Shortly after that, the competition drove me out of business. The Black Plague and the Reformation didn't help either. Right now I'm semi-retired. I'm still available as a consultant, though you'd never guess it by reading the newspapers. I've got a great idea for a whole new city, by the way. Just as high and wide as it is deep. Perfectly modular in three dimensions, and all lit by indirect light. Like to see the plans?

Q. I would, sure, but I'm afraid the public isn't ready for it. On our last program, we had the same thing with a fellow named Soleri, and it was a total flop. Couldn't find anybody to finance it. But tell me, what advice would you give to someone just starting in?

A. First of all, don't rush in without doing a lot of research. And of course, hiring me. You've got to take a lot of time developing a master-plan. Believe me, I know.

And second, select your clients. This is the key to success. Now take my case. I like young people, so I selected a couple of innocent-looking teenagers for my first tenants, and first thing they did was to try to get into my private files. Had to ask them to leave. Then I started taking people just as they came, and that was near-disaster. First of all, they never paid the rent. All I asked them for was a tenth of whatever they made. They called it a tithe, and for that they got maintenance, insurance, and taxes. I understand now they're offering 25% of their income, and they can't find space. I don't mean to sound un-Christian, but I think it serves them right. And they're always fighting, although if God knows what they're fighting about, He's not saying. Remember that line from Sergeant York, where his younger brother asks his mother what the war is about, and she says, "I doan' rightly know, son, I doan' rightly know". Did you see the picture? Well, they even tried to blame some of their battles on me. I talk to them regularly, but they just don't listen. Even though I own the place, they act as if I didn't exist. It's very frustrating.

But worst of all, they're terrible housekeepers. They're too lazy to pick up anything, or just walk, even after I showed them how to walk upright. It wasn't so bad when they rode around on horses and elephants, because I could use the byproducts in some experiments on recycling I was doing. I hold the original patents on that process, by the way. But nowadays they careen around all day long in those new-fangled chariots, and although they always come back to where they started, they have to tear down some of my most beautiful forests and hills just to see how fast they can go. Then they try to rebuild those same hills with all their old junk. I just don't get it.

They pour all their week's refuse from their plastics factories into my lakes and streams; and, on the day of rest, they take out their expensive fibreglass rods and they're sore as Hell because there are no fish left. Personally, I think it's all for the fowl of the air, if you ask me.

Q. I know what you mean. Now, as you look back, are there any really rewarding aspects to the whole experience?

A. Well, I learned a lot about construction, and discovered some interesting new materials. But most of all, I found out a lot about human nature. I could write a book about it. I've already had two books published, by the way. They're doing fairly well, although the critics say I used too many quotations.

Q. Yes. I liked the one about lilies, "They toil not . . . . .". How does it go?. But I see we're running out of time.

A. That's one problem I never had, thank Heaven.

Q. One more question. If you had the chance, would you do the whole thing over again?

A. You gotta be kiddin'!

Q. Well, our time is up. Thank you very much.

A. Peace!

Q. Now, YOU gotta be kiddin'!

West Hartford Center
A Case Study in Process

by H. Evan Snyder, Editor

Like most expanding suburban areas, the Town of West Hartford, Connecticut, is facing two challenges: how to put the pedestrian back on a more equal footing with the automobile; and how to bring some organization to the problems of growth. Although the center of West Hartford has many elements—such as a lovely town green with graceful shade trees, beautiful churches, attractive shops—which hark back to an earlier, less hectic era in its development, the fact that it straddles Farmington Avenue, a major access route into Hartford, poses increasingly difficult problems in moving vehicular and pedestrian traffic in, around, and through the area.

The situation has been exacerbated in recent years by the tremendous growth in suburban areas to the west, north and south of the center, creating both greater competition and a greater influx of shoppers and others seeking the services of business and professional offices in West Hartford.

Characteristically, solutions to these problems of suburban growth have been sought on a piecemeal basis as crises have arisen. Roadways are widened to ease the flow of traffic while continuing to provide curb-side parking. New municipal parking areas are established on off-street sites. New commercial areas are developed individually in response to demand, with little or no relation to the over-all effect on the town.

Perhaps most important, however, is the fact that seldom if ever are design professionals—architects, engineers, landscape architects—asked to pool their individual expertise in a common effort to study such problems and recommend possible solutions, although a number of such professionals may live and work in the area or town. Recognizing this failure to use the design and other professional talent available within the town, the West Hartford Chamber of Commerce took the initiative this past March by inviting just such a group to work together on what has come to be known as the "Center Development Task Force." The West Hartford group included:

David N. LaBau, and Richard Hughes of Golden, Thornton and LaBau;
Dean A. Johnson of Johnson and Dee, Landscape Architects of Avon;
Robert C. Boyson, AIA, of West Hartford;
Henry Schadler, AIA, of Henry Schadler Associates; and
Charles T. Bellingrath, AIA, of Russell Gibson von Dohlen.

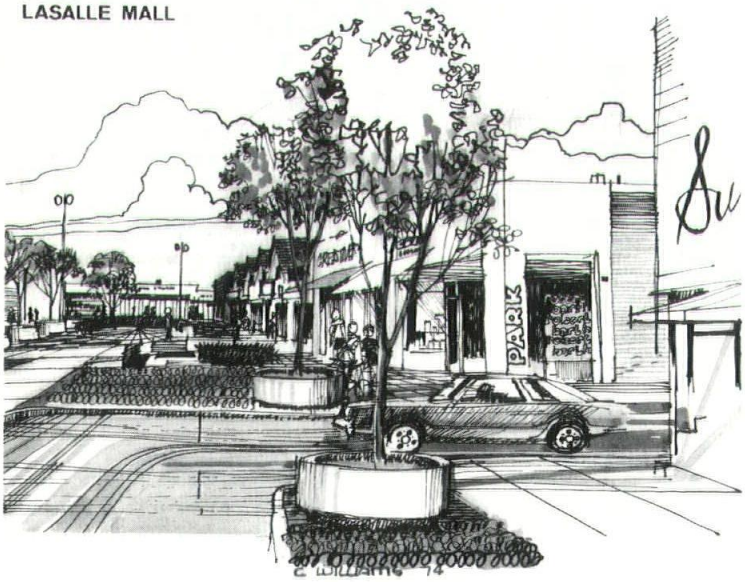
After studying several plans for West Hartford Center which had been developed over the past 20 years and abandoned or never completely realized, the task force focused its attention on four major problems: (1) traffic and pedestrian circulation; (2) site beautification; (3) buildings; and (4) future development of the old Hall High School site for other uses.

Program, Not Blueprint

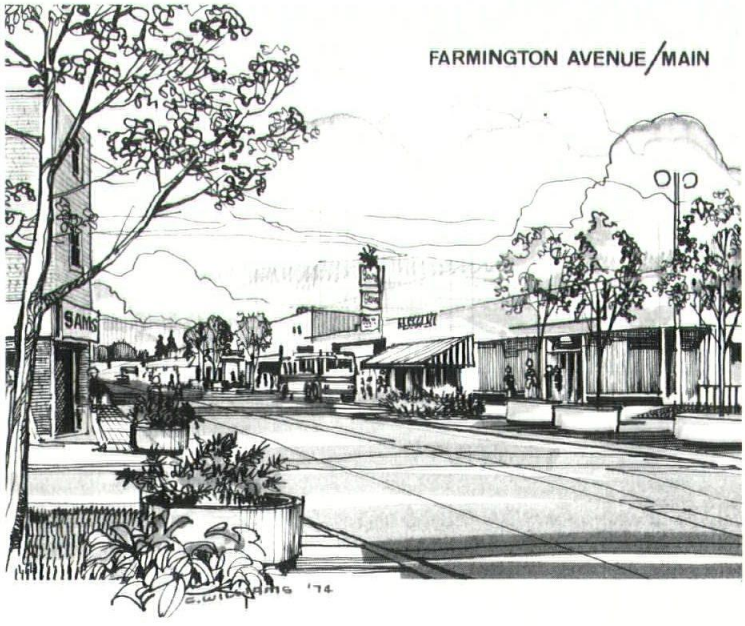
"We did not try to solve every problem of the Center," commented architect Robert Boyson. "We did not come up with specific detail planning, but rather tried to develop a planning program, a framework to help guide public and private development of the business center of the town." For example, traffic patterns were studied in an attempt to improve circulation and reduce vehicular bottlenecks in and through the Center, and to create a more pleasant and functional environment for the pedestrian and the merchant. A traffic loop was proposed by the extension of several streets and the closing of others to eliminate dangerous areas and points of congestion. A multi-level parking garage was suggested to eliminate a substantial amount of parking on the major streets (Farmington Avenue, LaSalle Road, and South Main). Pedestrian malls would be created to allow for a safe and attractive environment in which people could shop, relax, and simply enjoy the area.

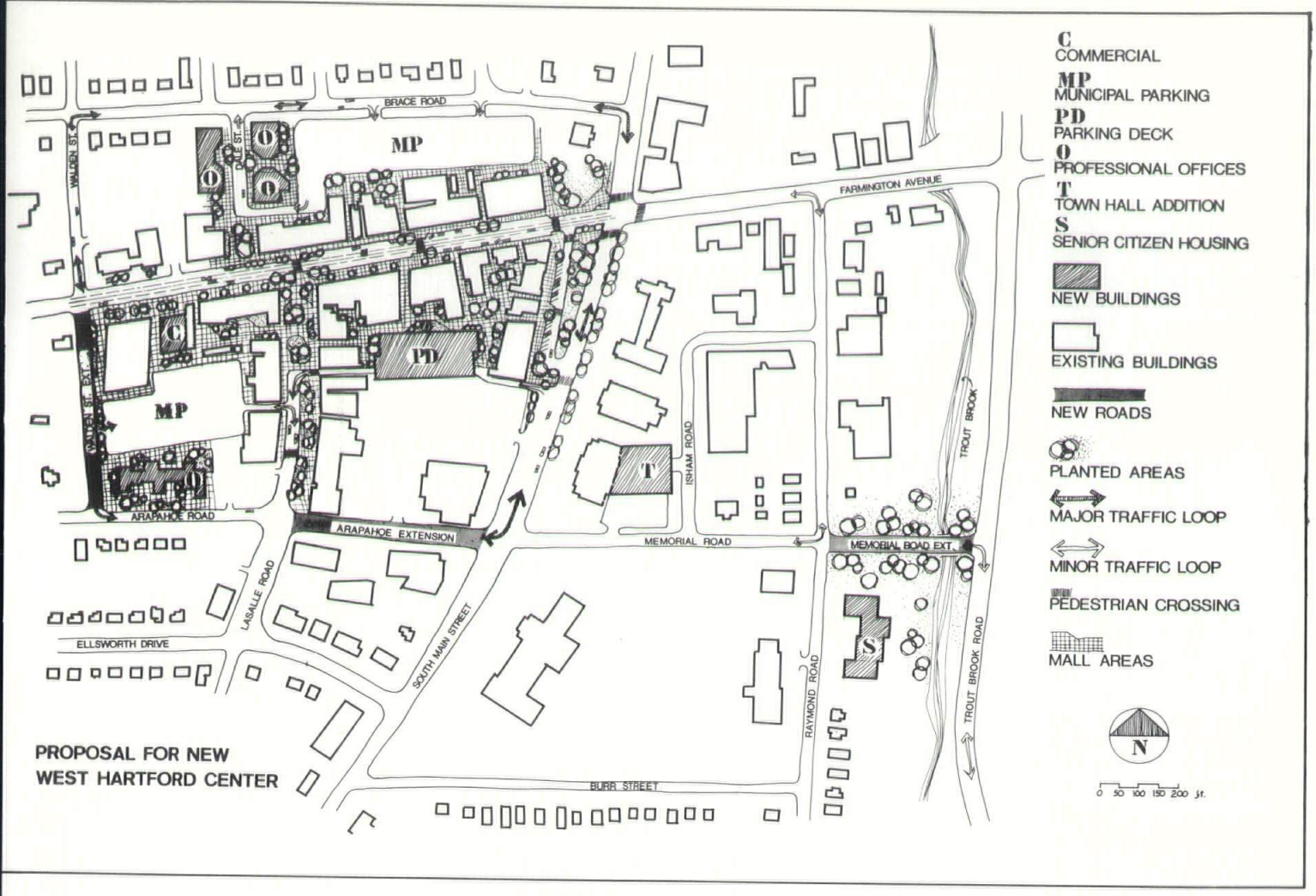
The site beautification recommendations centered on efforts to expand the permanent planting in the Center, to introduce seating and gathering areas, and to create more varied spaces other than the usual streets and sidewalks. With much of the parking on Farmington Avenue eliminated, the group was so bold as to suggest that the street be narrowed and that sidewalks be enlarged, allowing for

LASALLE MALL



FARMINGTON AVENUE/MAIN





nore attractive planting and seating areas. Among materials and ideas suggested to mprove the visual quality of the area vere building graphics, lighting fixtures, ountains, and site furniture.

While the existing buildings were con-idered to be sound, attractive and of an nteresting variety, several new structures vere introduced through the program to uggest the type of development appro-riate to the area. One of these is the entrally located parking structure men-oned earler. Another is a multi-level ddition to the present Town Hall, pro-iding adequate space for city offices hile continuing their important function the center of town.

lthough a number of alternatives were resented for the development of the rmer Hall High School site, a one-day mposium could hardly provide suffi-ent time for the necessary study re-uired in the development of such a rge and centrally located parcel. mong possibilities under consideration e an office complex, an elderly hous-g complex, and an indoor recreation enter and theater.

One of the most important aspects of e work session," commented architect

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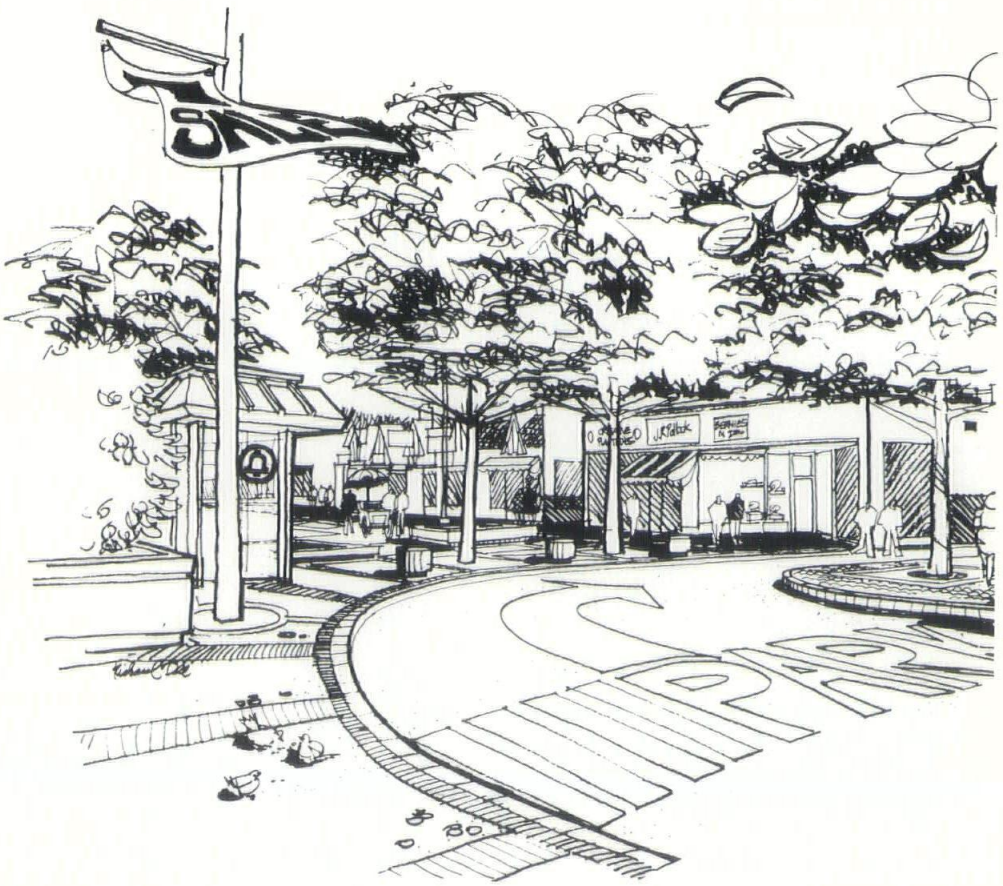
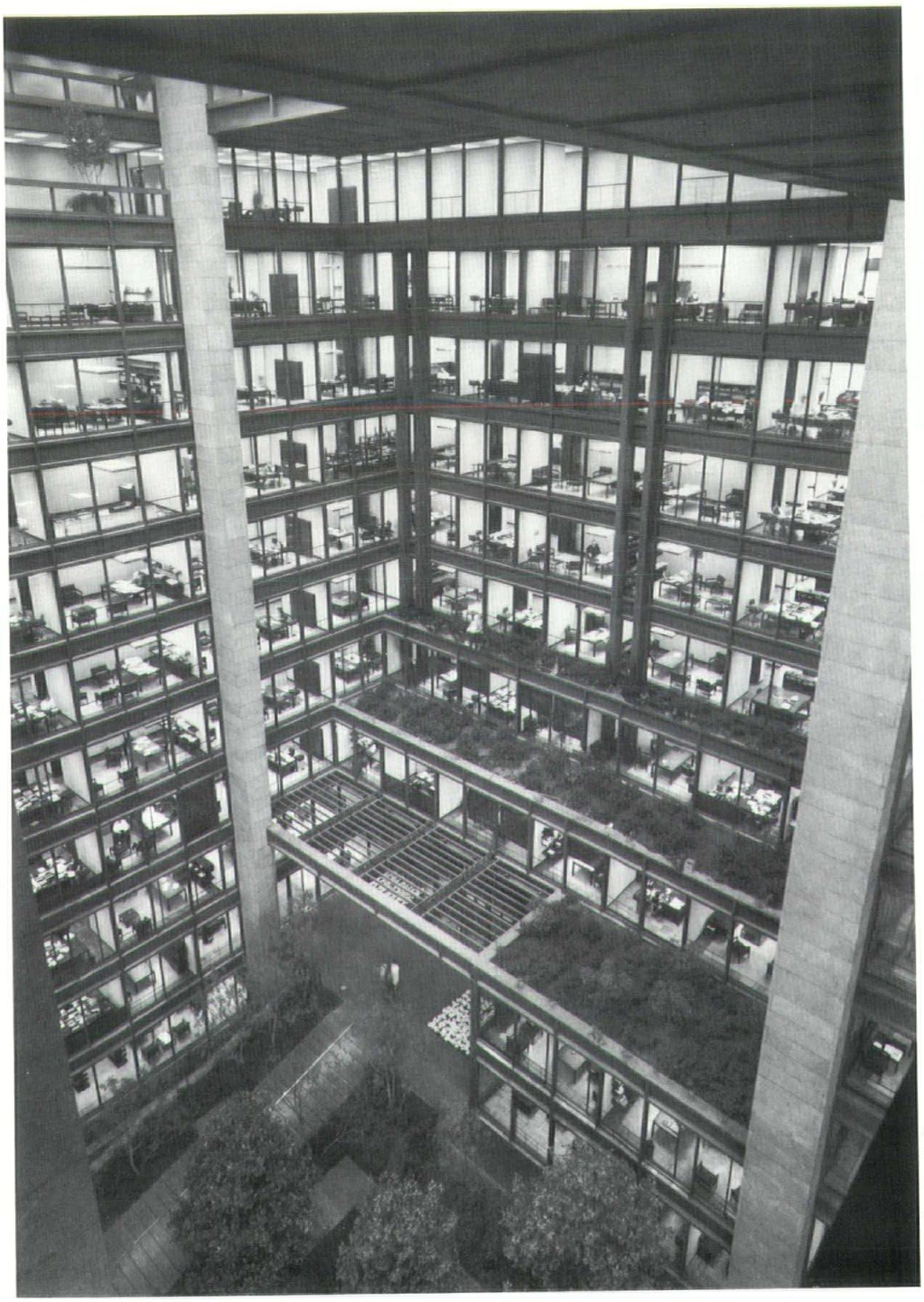


Pragmatism in Architecture

ROCHE DINKELOO RECEIVES AIA *AWARD*

by Natalie Korsheniuk, Assistant Editor



Photography: Ezra Stoller

Ford Foundation Headquarters, New York, New York, 1963.

The startling sight of a German castle rises above the Whitneyville reservoir in Hamden. Rather than hiding an eccentric millionaire, this stately mansion serves as the headquarters of Kevin Roche John Dinkeloo and Associates, the 1974 winner of the Architectural Firm Award, presented by the American Institute of Architects.

Despite the romantic setting, the firm's approach to architecture remains pragmatic. Insulated against outside interference, the staff of more than 60 people is able to concentrate on meeting the functional demands of a particular project, instead of agonizing over the stylistic impact of their designs. This uncomplicated philosophy is reflected in the bold simplicity and the imposing stature of their end-products.

The total disregard for "artistry" has been fostered by Kevin Roche, one of the firm's two partners. Roche accepts responsibility for the design of all projects. A native of Ireland, he arrived in the United States during the second World War, with a Bachelor of Architecture degree from the National University of Ireland in his hand, and some work experience in the architectural offices of Dublin and London to introduce him.

In 1950, after brief stints in Chicago and New York, he joined the firm of Eero Saarinen and Associates, where he met his present partner, John Dinkeloo. Dinkeloo is a 1942 graduate of the College of Architecture at the University of Michigan, who had worked with the U.S. Corps of Engineers. Prior to accepting his position in Saarinen's firm, he had served as chief of production in charge of working drawings in the Chicago office of Skidmore, Owings and Merrill.

After four years with the firm, Roche became Saarinen's principal associate in design. In 1961, the office relocated to the former estate of a German cigar manufacturer, who had always dreamed of owning a castle on the Rhine. Following Saarinen's death later that year, Roche and Dinkeloo reorganized the dedicated staff their successor had so carefully assembled, and formed a partnership supported by a team of 90 people.

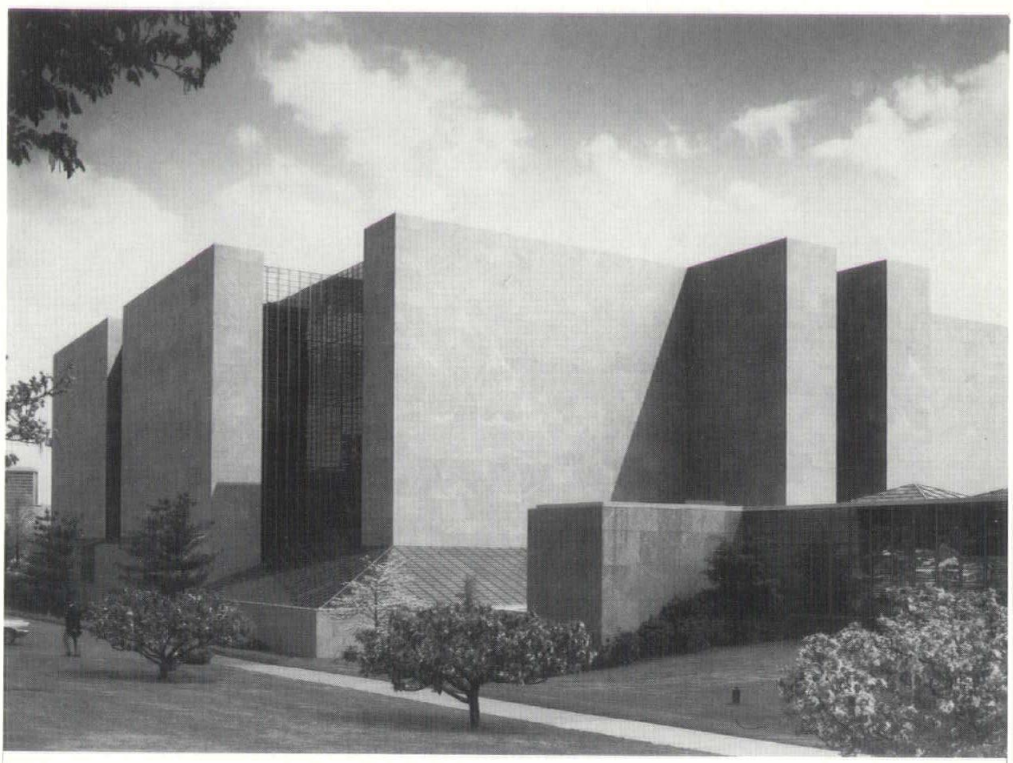
During the past eleven years, the number of staff members has decreased to a little over 60, which, according to the architects themselves, has facilitated the exchange of ideas and has increased the sense of closeness in this team effort. One important aspect of the firm has not been altered with time – the heavy reliance on scale models. An obvious advantage of working with three-dimensional models is that this process allows the architect to visualize his design realistically, as a three-dimensional structure. Thus, he is readily able to see the effect of a simple rearrangement of forms or the addition or subtraction of a structural detail.

Obviously, the results of the Roche Dinkeloo philosophy and techniques are attractive to many customers, for the firm's list of architectural achievements is lengthy and international in scope. The following are merely a few examples: Oakland Museum, California; Neiman-Marcus, Texas; University of Massachusetts Fine Arts Center, Massachusetts; U.S. Post Office, Indiana; National Fisheries Center and Aquarium, Washington, D.C.; Federal Reserve Bank, New York; Fort Wayne Complex, Indiana; and Fiat Headquarters, Italy.

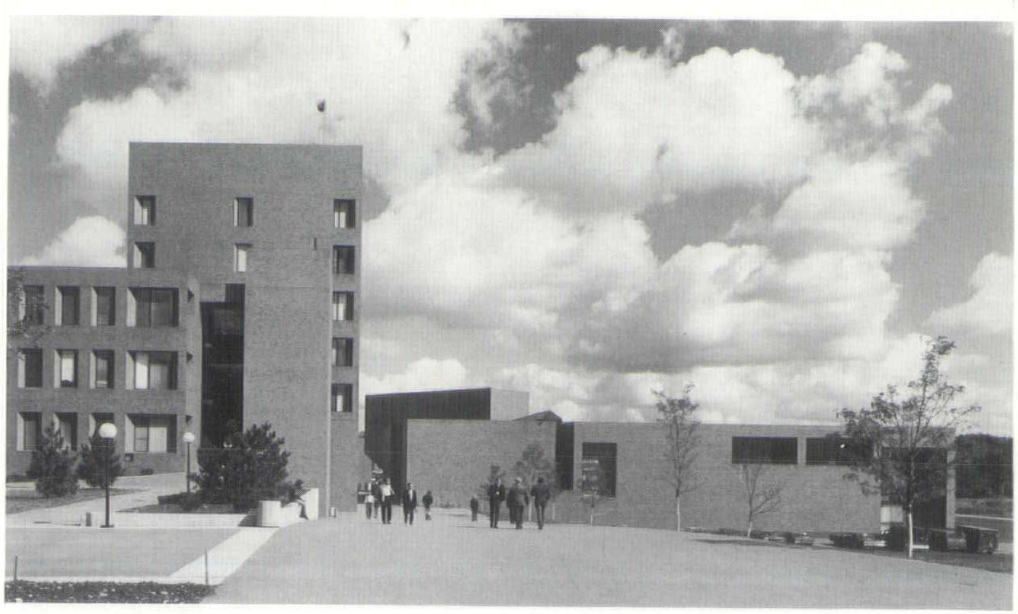
In addition, both partners have several personal and professional awards to their credit. Roche has received, among others, the Brandeis University Creative Arts Award in Architecture (1967), the City Club of New York Albert S. Bard First Honor Award for Excellence in Architecture and Urban Design (1968), and the California Governor's Award for Excellence in Design. His memberships include the National Institute of Arts and Letters, the National Academy of Design (associate), and the Fine Arts Commission in Washington, D.C.

Dinkeloo, on the other hand, has won acclaim for various major technical innovations in the field of architecture, such as the development of structural neoprene gaskets for curtain walls; the use of laminated metalized glass for reducing heat load in buildings; and the use of weathered exposed steel. A registered engineer as well as an architect who is licensed to practice in many states, he has delivered many technical papers before professional societies both in the United States and in Europe.

In bestowing the AIA Architectural Firm Award at the annual convention in May, the judges paid tribute to the firm's roots in the Saarinen group, while noting that it "has extended and matured with its own identity and has made vast contributions to the architectural worth of the world." The Institute's highest honor, this award is given annually to a firm in which "the continuing collaboration among individuals has been the principal force in consistently producing distinguished architecture." ■



Aetna Life Computer Building, Hartford, Connecticut, 1966.



Rochester Institute of Technology, Rochester, New York, 1962.

CSA | PROFESSIONAL SERIES | EDUCATION

MICRO-MANAGING: MOTIVATION NOT MANIPULATION

While running the Environmental Design Forum at MIT in 1971, I invited Edgar Schien from MIT's Sloan School of Management to address the School of Architecture and Urban Studies. Professor Schien is a behavioral scientist and industrial management consultant of national repute.

Realizing the distrust and skepticism of most people for applied psychology and the behavioral sciences, I was nonetheless profoundly surprised by the hostile reaction of both architects and planners, who saw Schien as a manipulator, seeking to impose a despotic control over unwilling subjects with psychological techniques. True to his own discipline, the Professor out-waited and outwitted the fury of his critics, convincing them to listen objectively.

It was refreshing to discover a totally opposite reaction here in Connecticut, three years later. At the recent CSA Senior Management Seminar, 12 design professionals gathered to explore the concepts and application of *Micro-Management*, which deals with the identification of individual human needs for purposeful organizational motivation.

Led by James Cashel Brown, president of the Lyman Group, the participants spent an active nine-hour session analyzing the dynamics of motivation. Some of the concepts introduced by Brown and observations by group participants in the session included:

- Technical skills characterize the design professional—a firm's obvious asset is the *collective enterprise* and application of those skills.
- The *payroll* is the biggest single investment for design professionals, and the biggest risk. Concerted and purposeful change which creates a positive employment environment can be measured in real-dollar-profit performance.
- The "committed employee" *can be created*: personal relationships can be structured to expand one's sense of self-worth and contribution.
- *People skills* are as important as technical skills—a creative, responsive design principal will be alert to his own "exchange system"–the profile of his personal transactions with his staff.
- Let "them" *in on the secret* of your firm's goals—the usual work-place employee sees to next Friday, but the effective design professional can create a work environment where the firm's goals are *clear* and *desirable*.
- Most people have a *tendency to withhold recognition*—clear identification of achievement builds belief in the worth and purpose of individual contributions.
- On communications: people listening make decisions *historically*—every transaction contributes to an *aggregate image* felt by the listener over time.
- Self-consistency in interpersonal transactions is critical—most opinions are formed not at first exposure, but over a relatively protracted period of time; hence, effective organizational change is *a long-term process*—responsive to both peaks and valleys of human performance.
- The *self-discovery* system allows the fullest development of personal skills —recognizing that people are different and different paths must be encouraged—to remove "paper walls", the strongly held negative *self-image* that has, in fact, no validity.
- New marketing freedoms available to design professionals, combined with marketplace pressures, will require a substantial *change in sales behavior* —to assess strengths, establish marketing goals for specific services; to assign people for promotional elements according to their native skills; to realize that successful promotion efforts exhibit a high capacity for rejection and continuous, sincere performance evaluation.
- There are "informal leaders" in every group who exercise strong influences, and these latent chieftans constitute the *swing vote* for achieving consensus on any issue.

Brown concluded the seminar with four key elements that characterize any change process: *information*: our needs and resources must be cross-viewed with "their" needs and resources; *attitudes*: remember what's in it for "them"—insufficient belief can doom even reasonable goals; *procedures*: establish a format which encompasses the psychological obstacles; and *feedback*: predetermine checkpoints by date and guarantee recognition of achievements.

Goals fail for several reasons, such as: they are not specific, there are no real deadlines, there is no clear definition of benefits or obstacles, or they are assigned to the wrong people. One final note, if people are really different, then what are *you* doing *now* about their unique differences?

Michael P. Buckley, AIA

Letters

To the Editor

In 1976, the United States will celebrate a birthday. The 200th year is an important milestone in the American industrial revolution. Has the country reached maturity? Now our society is facing serious problems growing out of our very successes, and maturity is evidenced by the wisdom to recognize and the will to face those problems: diminishing natural resources, environmental deterioration, major threats to the economy, and the potential permanent disruption of the industrial state. We are now engaged in a growing effort to use our resources more wisely, to change our directions from headlong waste to conservation, and to preserve our society for ourselves and for future generations.

There are many energy conservation projects in existence, and some 20 to 30 solar energy projects for major buildings are in design and will be operating in 1976. We have something positive to say to the world—to those countries just entering their own industrial revolutions. We have examples of many conservation projects for them to follow so that they can reap the good and avoid the fallout that we have experienced.

Let's invite them to our birthday party in a major international effort and demonstrate their progress, too, in this field. Let's display the evidences of progress in the better utilization of resources. Let's bring the millions of visitors to our installations, all of them instrumented and presented to show what they really are. Let's have a major exhibition in Washington, D.C. (at the Smithsonian?) to show our new directions. Each state, too, can feature similar works.

It would be appropriate for the Energy Committee of the American Consulting Engineers Council to sponsor this celebration, to stimulate the appropriate government agencies to grab the ball, finance the program and promote it. I'm sure that our fellow professionals in the American Institute of Architects (AIA) will want to join in.

Time is short. Let's show that we can parlay our progressive energy conservative programs on top of our great heritage into real progress. Comments invited—action required.

Fred S. Dubin, P.E.
President, Dubin-Mindell-Bloome Associates, P.C., New York

From the CSA
(Continued from page 4)

From the Executive Director

The AIA National Convention, held in Washington D.C. last month, was well attended, and it passed Bylaw changes and Resolutions that will have important effects on its members.

First, two matters of particular importance to The Connecticut Society of Architects: Andrew S. Cohen, AIA, of Waterbury, was elected to the Institute's College of Fellows, an honor limited to about 3% of the AIA's members.

Secondly, Robert L. Wilson, AIA, of Stamford, who is the current vice president of CSA, ran for vice president of the Institute and lost by a narrow margin. Three vice presidents were to be chosen from six candidates, and Bob came in fourth.

A Bylaw change on dues, recommended by a Dues Structure Committee that was formed in 1973 and approved by the Institute's Board of Directors, was passed at the Convention. The Bylaw change limits Institute expenditures, commencing with the 1976 fiscal year, to the amount of dues actually collected from September 1, 1973 to August 30, 1974, plus a percentage increase or decrease based on the Consumer Price Index and on the increase or decrease in membership.

The Bylaw change will also shift the major source of the Institute's dues income from personal to supplemental dues. Personal dues for Corporate members of the Institute will start at $30 per year and increase to $96 in four annual increments of $15 and a final increment of $21. The intent of the lower starting level is to encourage young practitioners to join.

The methods of determining a firm's obligation for supplemental dues were revised to plug loopholes and to assure that supplemental dues provide a larger share of the Institute's dues income.

A resolution calling for revision of the Institute's advertising campaign was passed. This resolution directed the campaign to educate the general public on the diversity of services offered by the architect in shaping the man-built environment.

Peter H. Borgemeister

The Man-Hour Data Bank, inaugurated on the West Coast, was made a national program by a resolution passed. The Institute was directed to provide appropriate financial and staff support to the work presently being done on the Coast.

It was also resolved that every architect making a political contribution shall do so publicly in his own name, and the Standards of Ethical Practice shall be revised in accordance with a resolution passed on political contributions.

The Institute Board was directed to insure that the interest of the minority community, both professionally and in public issues, be emphasized throughout all AIA programs.

A resolution calling on the Institute to proclaim the urgent need for a high priority national program for energy conservation in the built environment was passed. This resolution also directed the Institute to provide leadership in the formulation of this program.

The CSA delegation was led by Robert Wilson and included Richard Schoenhardt, Walter Greene, Anthony Masciarelli, Audrey Greenwald, Richard Bergmann, Charles DuBose, Hugh Jones, Nancy Jackson, Milton Howard, Raymond Drouin, Howard Patterson, and Andrew Cohen.

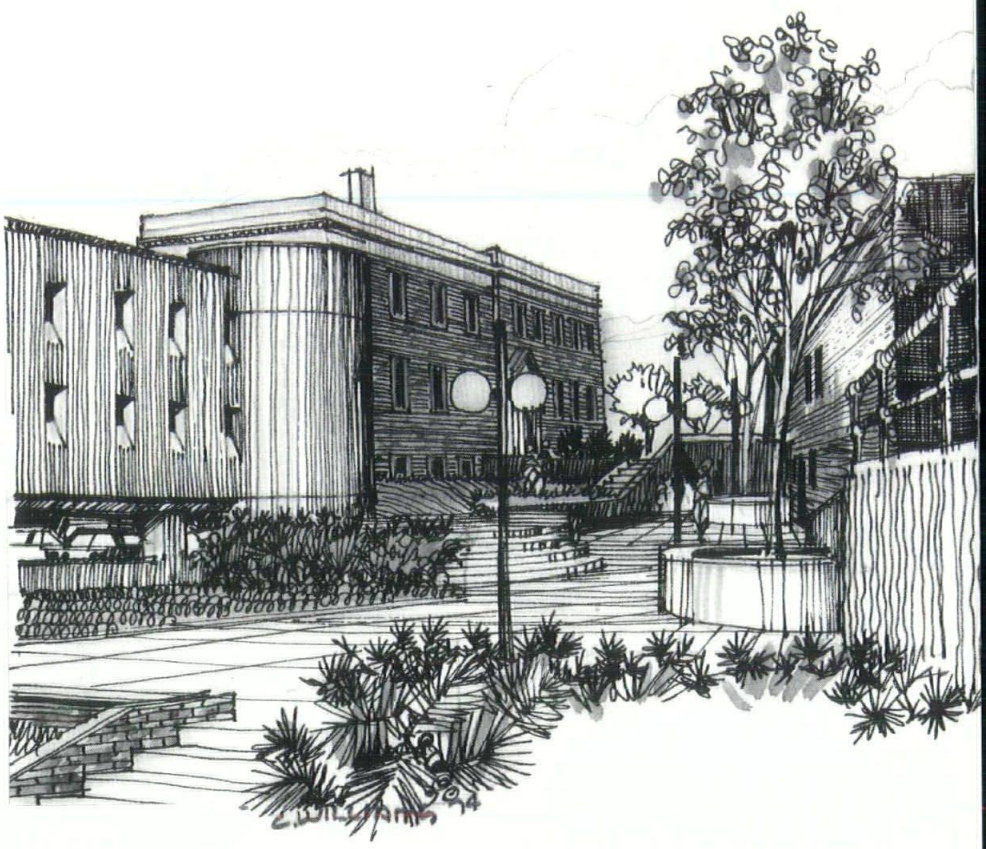
Peter H. Borgemeister

West Hartford Center
(Continued from page 17)

Richard Hughes, "is that most of us who participated have close ties to the Center and a first-hand knowledge of both its strengths and its weaknesses. Each of us had inevitably formed our own ideas over the years on what the Center could and should be like. This workshop was an opportunity to compare notes, discuss our ideas and, hopefully, to arrive at some realistic proposals. Despite a potential diversity of opinion, there was a surprising degree of agreement on what we felt should be done."

Because much work remains to be done, the West Hartford Center program remains very much a "Case Study in Process." As with the efforts to plan for the development of the Center which have been made in the past, this program could die without the enthusiastic support of the merchants of the town, the Mayor and members of the City Council. The basic problem is to establish an organization or some mechanism through which design studies can be translated into concrete achievements. Such viable mechanisms have been created elsewhere — for example, in New London — and perhaps West Hartford can learn from their experience. ■

TOWN HALL ADDITION



News

News

Mellon Center Awarded by AIA

The Paul Mellon Center for the Arts on the grounds of the Choate School in Wallingford, Connecticut, has received one of the nation's highest awards for architectural excellence from the American Institute of Architects.

Designed by the firm of I. M. Pei & Partners of New York, the Honor Award recipient was assessed by the jury as "an elegantly detailed assemblage of volumes" which responded directly to the requirements of an art center "while acting as a gateway between the two preparatory school campuses" of Choate and Rosemary Hall.

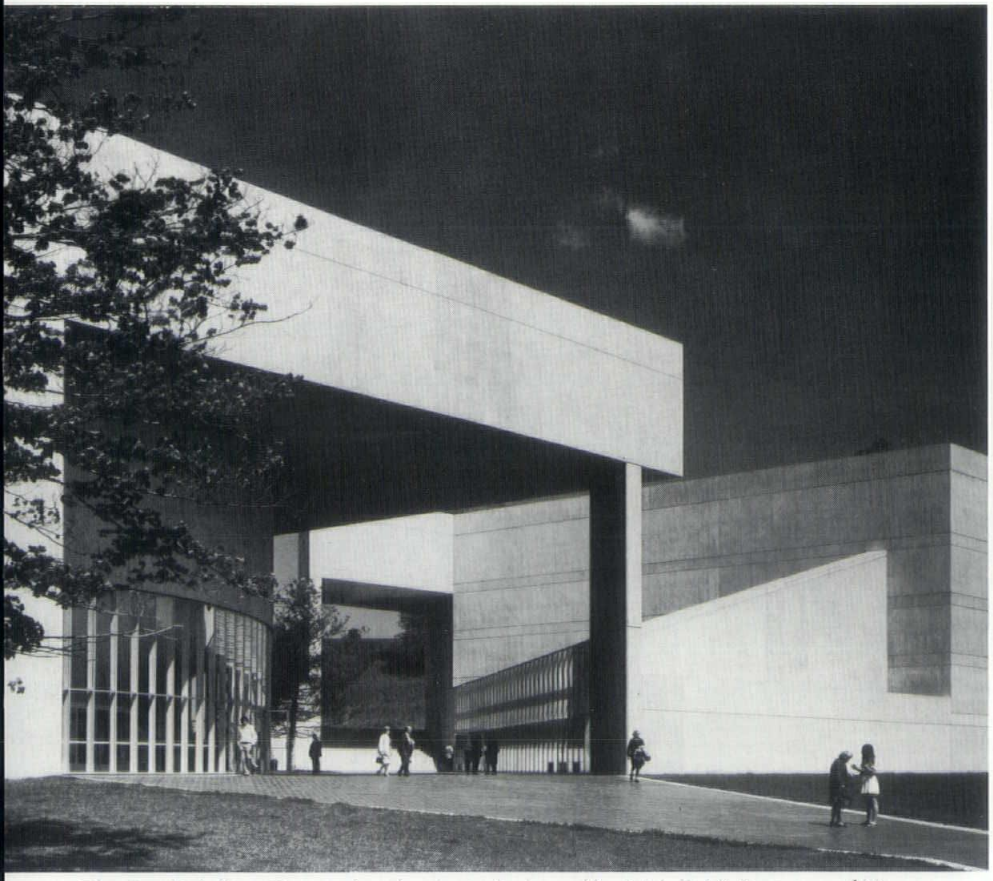
The center is surrounded by wide meadows and bisected into two self-contained units by a broad diagonal walk. The two sides are linked visually by two transparent glass walls.

One side is a quarter-circular structure containing lobbies, an auditorium which seats from 400 to 840 people, a fully equipped stage, and scene shop.

The other side is a triangular teaching wing containing a large skylit space as an organizing element. Two stepped mezzanines overlook the lounge and are extensions of adjacent studios for painting, weaving, and sculpture. Music classrooms and practice rooms are above these spaces.

The two wings are connected at basement level by dressing rooms serving both the auditorium and the experimental theater in the teaching wing. This level also houses a recital room, library, office and storage.

The Mellon Center was one of eight projects presented with a 1974 Honor Award at the AIA Convention in Washington, D.C. during May.



The Paul Mellon Center for the Arts, designed by I. M. Pei & Partners of New York, and awarded by the AIA, connects the two campuses of Choate School and Rosemary Hall in Wallingford. Project architect: Ralph A. Heisel, AIA

AIA Inquiry Committee Chairman Appointed

F. Carter Williams, FAIA, of Raleigh, North Carolina, has been appointed chairman of the newly formed National Inquiry Committee of the American Institute of Architects, according to President Archibald C. Rogers, FAIA.

The committee, whose task will be to investigate allegations of misconduct by architects, was established through a vote of the Institute's board of directors on May 18. The recent allegations of illegal political contributions and kickbacks by architects seeking state and federal contracts precipitated this unprecedented action by the board. It is hoped by the directors that by transferring the responsibility of instituting charges from an individual, which has been the procedure, to an impartial committee, they will encourage a more diligent pursuit of offenders.

The 10 to 50 members of the inquiry committee will provide a pool from which a panel of three to five members will be selected to hear specific charges on an *ad hoc* basis. If investigation is warranted, then the committee will bring charges of unprofessional conduct before the AIA's National Judicial Board, the appropriate state registration board, and/or appropriate legal authorities. Insofar as possible, the panel will be drawn from AIA members who live and practice outside the geographical area of the accused, to insure impartiality.

In addition to examining allegations of graft in obtaining contracts, cases involving failure to conform to registration laws or violations of criminal statutes committed in the practice of architecture will be handled by the committee.

Williams, the newly appointed chairman, is a partner in F. Carter Williams, Architects, and a former member (1965 to 1969) and chairman (1969) of the Judicial Board. A graduate of North Carolina State University (B.S., Architectural Engineering, 1935) and the University of Illinois (B.S., Architectural Design, 1939), he established his own practice in 1946, earning several design citations since then. He has also taken an active role in professional affairs within his home state, serving as secretary-treasurer, secretary, board member, and president of the North Carolina AIA Chapter.

GSA Selection Study Reports

Administrator Arthur F. Sampson of the General Services Administration has accepted the recommendations of a special committee assigned to review selection procedures of architects and engineers for governmental projects.

The 19-member study panel, which Sampson appointed to the task late last year, made two major suggestions. The first concerns the membership of the GSA advisory panel. The committee recommends that members should serve a term of only one year, during which time they will not be eligible for consideration for GSA work. Also, the number of panel members should be reduced.

The second recommendation provides for the establishment of an in-house evaluation board whose responsibility will be to select the top firm from the three presented for consideration by the advisory panel. The power of final decision will be retained by the administrator. However, if his decision does not coincide with that of the evaluation board, he will be asked to document his objections.

In a statement to the press, Sampson also endorsed the committee's opposition to competitive bidding. In the words of the panel's report: "No evidence was presented that competitive pricing would improve the GSA process . . . [or that it] would reduce the potential for impropriety, provide a practical or effective tool for selecting the most qualified A-E's, or give young firms a better chance at federal work."

In addition, Sampson announced that beginning in January, 1975, interested design firms will be required to submit information about their qualifications and a proposal addressing specific project requirements. The GSA administrator hopes that eventually this method will glean valuable data on the firm's technical and professional distinction, its projected estimates for construction and life-cycle costs, its planning and design concepts, and estimated fees. However, implementation of this method will be deferred until the implications are fully explored and explained to design professionals.

Owens-Corning Honors Energy-Saving Designs

Owens-Corning Fiberglas Corporation has announced its third annual awards program to recognize architects, engineers and owners of buildings specifically designed or equipped to save energy.

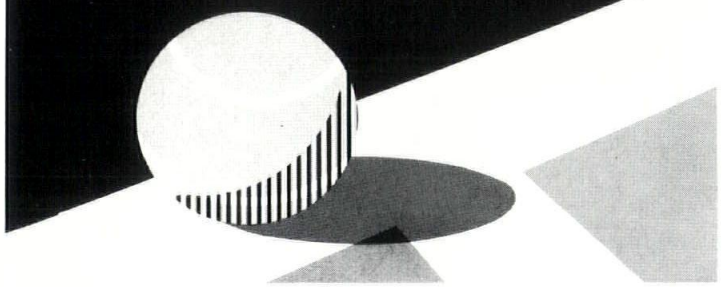
The competition is open to all registered architects and licensed engineers practicing in the United States; and any industrial, commercial, governmental or institutional building completed, under construction, or commissioned and being designed on the date of entry is eligible.

Entries will be judged principally on the scope and creativity of the energy-conserving concept and on the actual energy savings achieved or anticipated. Size of project and use of Fiberglas products will not bear on the judging.

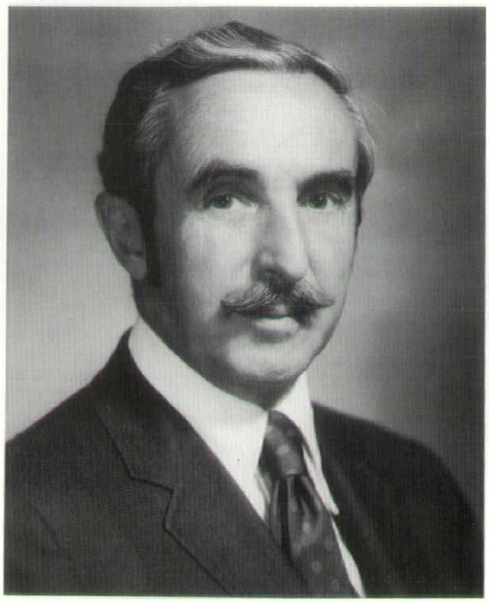
The jury consists of eight professionals in the fields of architecture and engineering, who will assign the entries to one of four categories—industrial, commercial, governmental, or institutional—with an award of a Steuben crystal sculpture to the winner in each category. Owners and clients associated with the winning buildings will receive other appropriate Steuben crystal awards.

A letter indicating intent to enter the 1974 competition must be received by Owens-Corning not later than July 1, and entries must be submitted and postmarked by August 31. Awards will be presented in New York City on November 8, 1974.

For additional information, write to Energy Conservation Awards Program, Architectural Products Division, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.



Anthony J. Calini



Peter Flagg

Photography: Fabian Bachrach

CBC Elections

Anthony J. Calini of Pfisterer, Tor & Associates, P.C., New Haven, was elected president of the Connecticut Building Congress on June 13. He succeeds Robert W. Kallinich of J. H. Hogan, Inc., New Haven.

Peter Flagg of C. N. Flagg & Co., Inc., Meriden, was voted in as first vice president, with Oscar H. Hobbes of the Southern New England Telephone Co., New Haven, as second vice president. Other newly elected officers include: Kenneth C. Streeter of Berlin Steel Construction Co., Berlin, secretary; and John E. Plantinga of Meyer, Strong & Jones, P.C., New York, treasurer.

Elected to the board of directors for three-year terms were John E. Bush of the Southern New England Telephone Co., New Haven; Robert J. Elia of the Dwight Building Co., Hamden; and David E. Woodard of DEW Architects, Hartford.

The following members will continue to serve on the board of directors: (for two years) William Dwyer of W. J. Megin, Inc., Naugatuck; Charles J. Monahan of Earl R. Smith, Inc., Bridgeport; and Paul S. Strubell of Northeastern Ventilating, New Britain; (for one year) Robert A. Sapack of Stein, Sapack & Ames, Waterbury; Roscoe D. Smith of W. J. Megin, Inc., Naugatuck; and Clifton J. Cotter of M.J. Daly and Sons, Inc., Waterbury.

CBC is a statewide organization whose aim is to provide a forum for the exchange of ideas among the top professionals in the construction industry by sponsoring such programs as seminars, scholarships, competitions and expositions. Its membership is comprised of architects, engineers, general contractors, subcontractors and suppliers.

The elections took place at the group's annual meeting and outing at Restland Farm, Northford.

Plywood Projects to Compete

The American Plywood Association and the *Professional Builder* magazine are co-sponsoring a design awards program for licensed architects, with cash prizes and national recognition for the winners in each of four categories.

Projects which reflect structurally sound and aesthetically pleasing uses of softwood plywood, and which were completed between August 23, 1972 and August 23, 1974, are eligible for $1,000 awards in the following categories: residential/single-family, residential/multi-family, commercial/industrial, and vacation homes. Award-winners will be featured in the *Builder* and other national publications.

For an official entry form and complete rules, write to Plywood Design Awards, American Plywood Association, 1119 A Street, Tacoma, Washington 98401. The entry deadline has been set for August 23.

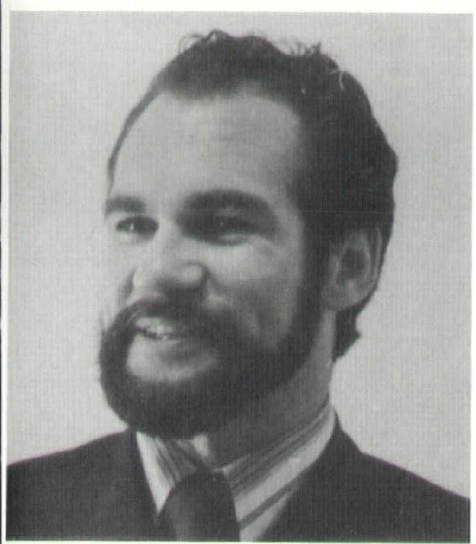
AISC Contest

The president of the American Institute of Steel Construction has announced the fifteenth annual AISC architectural competition for structural steel buildings of all classifications.

According to President Van W. Coddington, "This program recognizes and salutes the professionals who design the nation's buildings . . . and focuses on designs that are outstanding in their aesthetic appeal."

Following the September 10 selection process, which will be conducted by a five-man panel of professionals from the field of architecture, the winning architects will receive stainless steel plaques at local ceremonies throughout the country. In addition, the structural steel designer, general contractor, steel fabricator, steel erector and owner of each award-winning building will be presented with certificates. A plaque suitable for mounting on the building will also be provided.

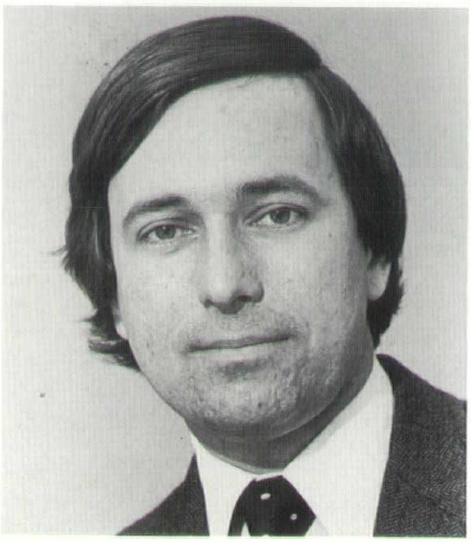
The competition will close on August 31. For further details, contact the American Institute of Steel Construction, 1221 Avenue of the Americas, New York, New York 10020.



Ed. W. Campbell

Campbell Opens Office

Ed W. Campbell announces the establishment of a private practice. His new office is located at 733 Summer Street in Stamford. Campbell is a member of the Connecticut Society of Architects.



Davis A. Buckley

Buckley Joins Russell Gibson von Dohlen

Davis A. Buckley, of New Haven, has joined the architectural firm of Russell Gibson von Dohlen Inc., as a project architect.

A Yale graduate, Buckley holds degrees in architecture and environmental design, and serves as chairman of New Haven's Community Sailing Program, which benefits inner city children.

Russell Gibson von Dohlen was established in 1954 and has since had design responsibility for over 200 buildings in the New England region. The firm maintains offices in West Hartford, Connecticut, and Pittsfield, Massachusetts.

Buckley and his wife, the former Jean Smith of Phoenix, Arizona, have one daughter.

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Concrete Construction Handbook, edited by Joseph J. Waddell, McGraw-Hill, New York, 978 pp., $32.50.

A practical text which contains a wealth of concrete methods, materials, standards, and modifications, this second edition has been revised to include the latest advances in the concrete construction industry. Enhanced by tables, charts, drawings, and case histories, the **Handbook** presents all data and techniques in the language of the layman, with discussions on such topics as geophysical and aerial surveying methods, concrete toughness and creep, and the use of plastics in formwork. Waddell, the book's editor and author of *Practical Quality Control for Concrete*, is employed as consulting engineer of construction materials and methods in Riverside, California.

Fairchild's Dictionary of Home Furnishings, by Emanuel Hoffman, Fairchild Publications, New York, 384 pps., $25.00.

Emanuel Hoffman began researching the home furnishings industry to satisfy a personal need for a reference manual on the subject. The results of his five-year study are now available in a soft-cover book which discusses the changes in materials and machinery. The editor of *Home Furnishings Daily* examines such areas as furniture, accessories, draperies, fabrics and fibers, and floor coverings. In addition to the more than 300 illustrations, the text contains a retailing appendix which lists merchandizing and operational terms of importance to all home furnishings personnel.

A Guide to the Architecture of Washington, D.C., by Warren J. Cox, Hugh N. Jacobsen, Francis D. Lethbridge, and David R. Rosenthal; McGraw-Hill, New York; $7.95.

Twenty walking and motoring tours, illustrated by four prestigious architects, are presented in this expanded and revised edition of the original 1965 publication. A pictorial history which contains descriptions of both demolished and existing buildings, the **Guide** is designed to aid the professional architect, as well as the tourist.

Time-Saver Standards for Architectural Design Data, edited by John Hancock Callender, McGraw-Hill, New York, 1040 pp., $32.50.

A Pratt Institute professor of architecture has assembled extensive information on structural design techniques, building materials, and environmental control. The topics covered include modular coordination, waterproofing, roof drainage, heating and cooling systems, and solid waste handling systems. Callender bases his writing on consulting and research experience in such areas as artic shelters, veterans' and low-cost housing, and school construction.

Design for Human Affairs, by C. M. Deasy, Halstead Press, New York, 250 pp., $12.50.

With the conviction that architectural planning and design can be more responsive to the realities of human behavior, Deasy, a practicing architect, examines such issues as how modern architecture influences our lives, and whether urban structures can be designed to satisfy our social and psychological needs. Using examples of actual projects to demonstrate the relationship between architectural design and human behavior, the author strives to tear down the wall between the two disciplines. In the past, according to Deasy, behavioral scientists and architects developed their theories and methods with little regard to what they could learn from each other, but today they can and should combine their knowledge and skills toward the creation of a more satisfactory living environment.

Office Space Administration, by Kenneth H. Ripnen, McGraw-Hill, New York, $14.95.

A comprehensive reference manual for the office space administrator, this book studies such problems as the practicality of "open office" layout *versus* "modularity" and liberal *versus* economical space allotment. Enhanced by numerous illustrations and photography, the work focuses on the latest recommended concepts of integrated modularity of air conditioning, lighting, sound conditioning, decor and furniture. In describing layout planning techniques and space assignment standards, the author emphasizes combining functional efficiency with limitations imposed by architectural, engineering, structural, and mechanical elements, and keeping in mind the possibility of future alteration or expansion. A well-known speaker and author, Ripnen is chief executive director of Ripnen Architect, Prof. Corp., and director of The Ripnen Company, a management consulting firm specializing in office space administration.

The next 6 months wiped those smiles off their faces.

Ground was broken.

Flashbulbs popped. Wives clapped.

And the last happy moment at the site of The Mudville Plant passed into history.

With relentless precision, the project fell behind schedule. The ballooning cost of materials turned the initial cost estimate into a bad joke. Environmentalists' law suits hammered the company to its knees, and there was no more joy in Mudville.

What an architect could have done.

Actually, these unsuspecting groundbreakers (and The Mudville Plant itself) are fictional. But the problems they encountered are all too real.

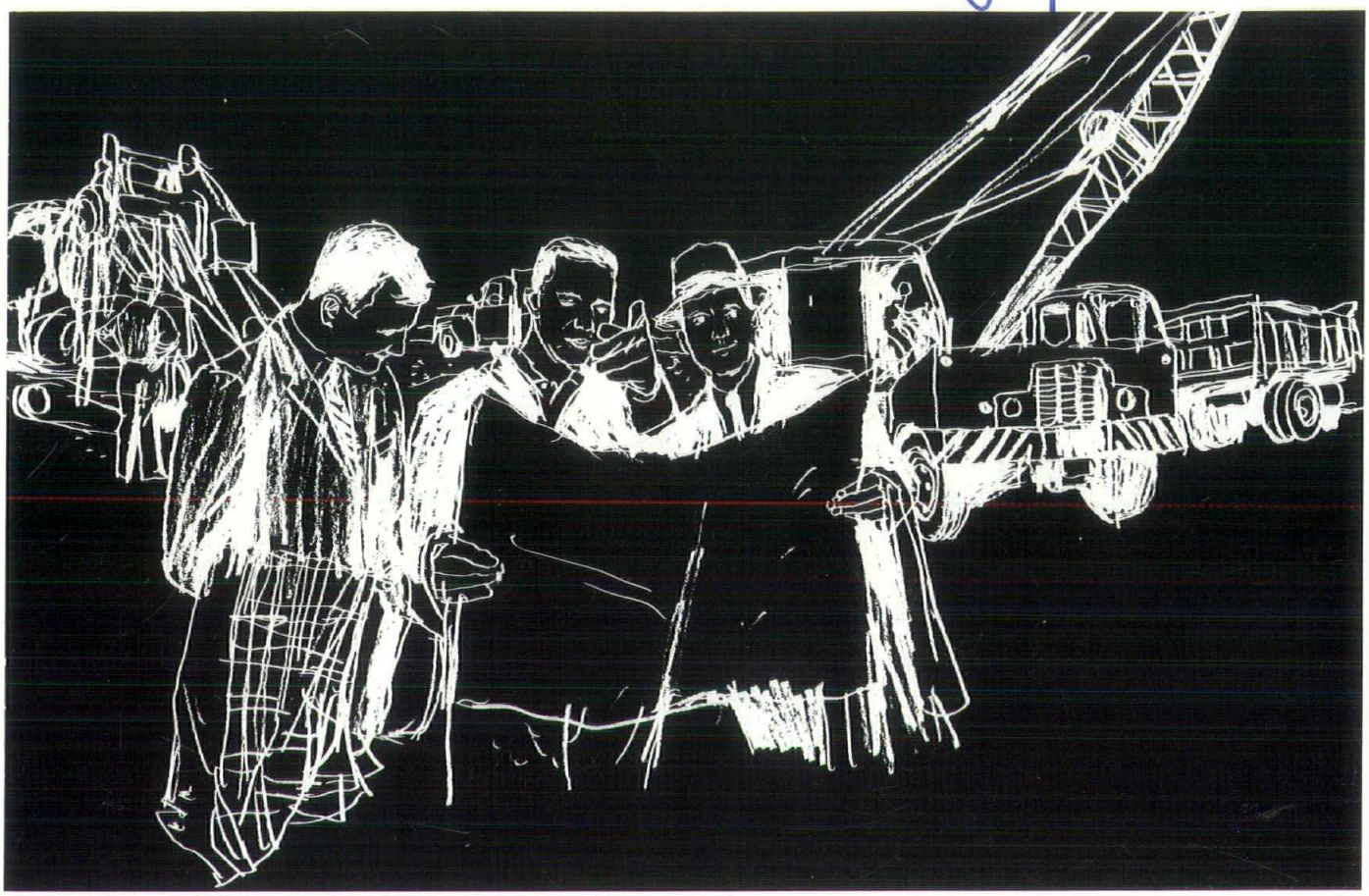
And lest you find yourself in their muddy shoes some day, the American Institute of Architects urges these precautions:

Get your architect in early. A construction project is like any other phase of business: Find one that ran smoothly and you've found one that was master-planned long before. So as soon as a subject like "Proposed plant — Mudville" starts cropping up in management memos, ask the architect to sit in. His assumption-busting questions may jolt you out of some costly errors. Example: A Kentucky company's architect woke his client up to the realization that the two buildings he had planned should in fact be one!

Get the architect's help in choosing your site. That cheap (but steep) site you're sold on may turn out to be expensive indeed when you start digging. Or perhaps you're paying a premium for a flat site when the functions of your building might "stack up" perfectly on a hillside. Getting the architect's input before you commit to your site protects you from groundbreaking's most heart-breaking discovery: realizing that you broke the wrong ground.

If you're about to sign up for a pre-designed, packaged building, wait. First read a book. It's "10 BUSINESSMEN TALK ABOUT THEIR ARCHITECTS," and it's written not by architects but by company presidents, general managers, etc. They describe how architects produced buildings that made money for them in ways they would never have guessed at. Drop a card to American Institute of Architects, 1735 New York Ave., N.W., Washington, D.C. 20006.

Do You Have the Answer to This Big Question?



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