

Northwest Architect

September/October 1973

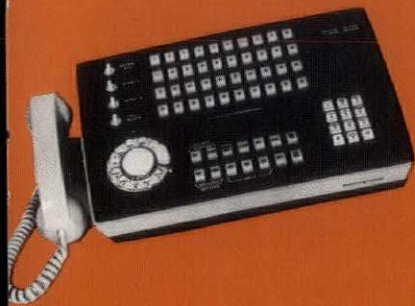
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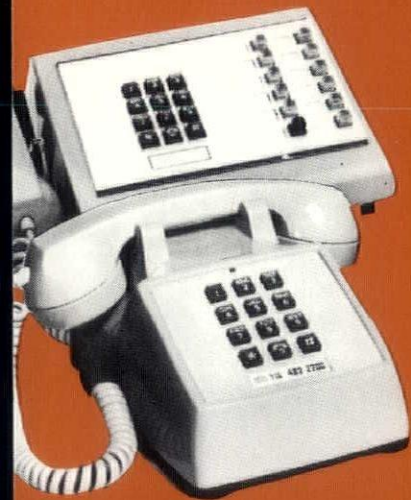
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Northwest Architect

September-October, 1973
Volume XXXVII Number 6

Limited Quantity Available

In this issue . . .

LIMITED QUANTITY AVAILABLE is the Minnesota Society of Architects' convention theme this year. A theme gives focus to architects meeting to share common concerns and expectations. This issue, the convention issue, of the Northwest Architect utilizes the same theme to present a number of papers pertaining to the ecological crisis, the conservation of materials, energy and resources.

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Northwest Architect is an official publication of the Minnesota Society of Architects.

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Published by Craftsman Press

2117 W. River Road, No.
Minneapolis, Minnesota 55411

Advertising Director

Gregory C. Johnson 529-9105

West Coast Representative
Jay Eisenberg, J. E. Publishers
Representative Co.,
8380 Melrose Ave.,
Los Angeles, 90069

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ments made by authors in contributed
articles and by suppliers and others in
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Northwest Architect is published
bi-monthly. Controlled circulation postage
paid at Minneapolis, Minnesota.
Subscription: one year, \$5.00.

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Limited Quantity Available

The quantities of natural resources are limited. They are limited on a world basis, on a national basis and at the state level. Yet the momentum of our life style is continuing unimpeded — ever so slightly affected by the high interest rates, Watergate and the gas shortage. Advertisement and sales of snowmobiles are now at their seasonal peak.

Even though the flags have been raised, even though an ecological crisis is upon us, even though catastrophe has been graphically predicted, it remains comfortable, acceptable to our morality to gratify our every wish and to demand more leisure, more pleasure, more conveniences, indeed more goods.

On the other hand it is not unusual for entire groups to vilify themselves ("we have met the enemy and he is us") — as well as they might. Architects do that only too often, for one reason or another. In this instance, however, the architect has a very particular responsibility. Architects are environmental designers. Their work affects the micro environment of the home owner and the macro environment of a city and thus it is incumbent upon the architect to lead with the ideals of conservation but by focusing on the conservation of man in harmony with his environment. The history of architecture is a history of adaption and its excesses have been specific and circumstantial. The few real monuments that do exist represent expressions of a needed community (or environmental) symbol.

To conserve the environment, to bring man into harmony with his environment will ultimately require new values, altered values — a new morality, an ecological morality.

However, the conservation of the natural resources of our environment should not lead us into spiritual obstipation. The vigor and vitality of our environment must be appreciated and preserved but in creative balance and harmony with mankind.

Although the architect alone may not be able — in Toynbee's sense — to save our civilization, he will most certainly remain one of its chief guardians. ■

Bernard Jacob



Ecolibrium

By Athelstan Spilhaus

Ecolibrium is a word I coined from the obvious roots Greek "oikos" (home) and Latin "libra" (balance)—balance in our earthly home.

The wished-for ecology, which is a harmonious pattern of relations between organisms and their environment, often runs counter to peoples' desires in economy, which is management of affairs with a view to maintenance of productivity. How do we reconcile these desires toward an "ecolibrum"? . . .

Choice as a Basic Guide in Planning

When people live scattered and far apart, what they choose to do does not impinge on others but what they have to choose from is limited. Cities increase the number of choices, but when people overcrowd into too few cities and these grow too big (as they are doing all over the world today), we reach a point of diminishing returns and choices become more and more restricted once again. This is why I have suggested elsewhere that we attempt to find and build cities of optimal size. Vague phrases such as the quality of life, progress, standard of living and so forth are ill-defined; one measure, however, is the kind

and number of choices that individuals may make. . . .

The solution is not to limit the choices of things and services that people want to ease their lives, but to rebuild the industries and works of man that provide these things and change them so that they are saving and clean. Similarly, increasing mobility and communications increase choices for people but we must find ways to provide these without decreasing other choices, as we do by gobbling up land for concrete highways or by cluttering up the radio spectrum with radiation communications. The great challenge is how to continue providing for people's needs and wants and yet, at the same time, to manage the environment by containing wastes in the manufacturing plants—by recycling, reprocessing and reuse—and by rebuilding industry to be saving of both materials and energy.

It is the mature industries—those that are thought of as "old-fashioned" industries—that particularly need scientific and technological attention. Steel manufacture, aluminum, wood, paper, cement, the basic bulk industries, have been forgotten in the excitement over the newer glamour industries. Finally, all the efforts to maintain and increase choices use energy. Hence, if we are to continue to provide choice, or increase choices, we must expect and plan to increase energy per capita in saving and clean ways. . . .

Human labor can be reduced for the same productivity by the use of science, as in the green revolution, by increasing each human being's tool kit, as in the use of tractors and farm machinery, and by the use of power. Strong, healthy nations will develop from those which properly limit the numbers of

their populations while realizing the fullest potential of their populations through education to ensure full and proper use of science and technology. With an increasing population without the multiplying power of science, machines and energy, any humanitarian measures to reduce inhumane labor and conditions must necessarily decrease productivity and hence decrease the realization of available resources and thus be self-defeating.

Just as technological invention cannot remove the need for social invention, neither should our slowness in changing outmoded social practices, institutions and traditions be allowed to slow technological realizations of potential benefits to all.

A case in point where societal stresses exist because we have not applied available modern technology to their solution is found in the housing "crisis" in the United States. . . . We are still in the medieval age of house building—brick on brick, board on board—and need desperately to have step jumps through use of the most modern technology and science to provide better housing for all. . . .

Can we not switch to dimensional materials that hold their size and form and can be fashioned by largely unskilled labor and erected easily on the site? We think of walls extruded as a sandwich of various materials to provide an outside with an absorptive or reflective coating, with a filling forming a thermal, vapor and noise barrier and containing built-in telephone lines, television lines, water pipes and electric conduits and perhaps having an inside finish designed for minimum care with, possibly, electrophoretic means for coping with dust and giving an entirely new dimen-

The author, who recently completed his term as retiring president and chairman of the board of directors of the AAAS, is a fellow of the Woodrow Wilson International Center for Scholars, Smithsonian Institution, Washington, D.C.

sion to the chore of house-keeping. Such walls may come off the manufacturing lines as a continuous sheet and be sliced into many different modular sizes for easy assembly into buildings.

Only by mass production can the application of modern science and technology be afforded in the design of the most important thing that people use, namely, their homes. Mass-produced housing will not be low-cost housing for low-income people—it will be lower cost, higher quality housing for all people. . . .

The mass production of well-engineered housing components would increase choice by reducing costs and by allowing the assembly of components to meet individual needs and desires. That the basic quality of man's shelters be raised is an important goal. . . .

The Proper Use of Water Is to Dirty It

The very use of air and water in our bodies or in the industrial organisms we engineer entails dirtying them. Nature has ways of cleaning air and water but can no longer keep up with the rate at which we in our multiplied numbers get them dirty. This means that, just as we grow, use and regrow food, we must continually clean, use and reclean our air and water. To the culture of our renewable plant and fiber crops which we call agriculture, we must now add "atmoculture" and "hydroculture"—a continuing job of renewing used air and water to good quality for reuse.

Air and Water as Commodities

Air and water then become essential commodities which, after use, have to be reprocessed by "manufacture" for further use. Containment and separation of pollutants is probably easiest at the source of the

pollution, right at the factory that dirtied the air and water. The cost of the reprocessing to clean the air and water can then be properly added to the cost of the product of that factory.

In comparison with factories, where pollutants are simpler to contain, we have a more difficult problem with individual users. The real costs of man's basic need for a decent outdoors are obscured when people gain the impression that a clean environment can be a political gift. . . .

When costs of water, garbage collection and sewer usage are hidden in inclusive taxes, the result is waste of water, over-elaborate expense of packaging and overburdened sewers. Should we not internalize the externalities by paying the real cost per gallon of water we use and the real cost of the collection and reconversion of our wastes by the amount we generate? . . .

The same thing applies to energy. Air and water are as essential as the fuels in the manufacture of energy. And to internalize these costs, the price of power must be allowed to go up to a reasonable point. This not only provides a way to finance the renewal of our new commodities—air and water—but acts in the direction to promote thrift in energy. When energy is kept to an artificially low price, then not only are individual users wasteful of it, but industries using cheap power will produce things at less than real cost and people are encouraged to use more than they otherwise might. . . .

What Is Meant by a Steady-State World

In environment, steady state does not mean and cannot mean conservation of nature as it was 100 or 1000 years ago. Ecologies will continue to be

"engineered" as they have been since the beginning of agriculture. We must learn to change them in accord with the changing needs of people, but maintain steadily the desired qualities.

Steady state does not mean that things for living would not continually be improved or changed as people's choices dictate. Neither does it mean a static number of choices. There can be exciting change, continual improvement, without escalation of the amount of things. A steady-state world should not inhibit experimentation. On the contrary, it should open up a great new field of scientific and technological experimentation and discovery to develop the "saving" industries to produce things to satisfy new wants with less materials, using energy more efficiently. In a steady state, there must be continual invention to increase choices and give variety to life.

Ideally, the steady-state world should remove the day-by-day crises of human physical needs. Then we will more clearly recognize that welfare is not merely the provision of these needs, but that to fare well is to have rewarding work and continual learning and, relieved of the chore of keeping physically alive, time for the important business of being human.

All this requires the wisest, broadest, long-term planning with its continuity ensured.

Long-Range Planning

More recently we have heard much about technological assessment. . . .

Examples of the kinds of long-range plans needed spring to everyone's mind: housing involving new technology, as we have mentioned, including the long-term plans to couple cities to the open land, and

(Continued on page 227)

The Corporate Vice-presidents of the Environment

By John Weidt



The first law of ecology states that everything is interrelated and therefore any action upon one part of our global network will affect everything in the entire system. This is becoming painfully obvious to us with the increasing impact that modern civilization is having on our world: pollution of air and water, deterioration of our landscape and shortages of our material resources. Shortages of fuel supplies have drawn particular attention in the last few months *but the real problem is not the shortage of supply, it is the gross misuse and waste of our resources.* Virtually all our energy is derived from fossil fuel. When we convert fuels into energy we lose nearly 50% of their potential in the process.¹ Accounting for the efficiency of the machines that use the remaining energy there are even greater energy losses — Buckminster Fuller estimates that we waste 95% of our energy and 97% of our other material resources.

The by-products of these inefficiencies are waste heat, waste material and wasted land. The debris of our industrial and urban processes are accumulating at an ever increasing rate. If we assume that we dumped all our waste in the city of Minneapolis, we could have covered it to a depth of 77 feet in the last 10 years. Moreover, we could smother it in 404 feet of garbage by the year 2000.² The disruption of our land is progressing at an even more rapid rate. It took us more than 100 years to strip mine an area the size of Connecticut. In the last eight years we have doubled that figure.³ Most of that min-

John Weidt is a graduate of the University of Minnesota and has done extensive research in the uses of energy by the construction industry. He is completing his master's degree in the School of Architecture and is presently employed by Inter-Design, Inc., of Minneapolis.



ing was for coal. More than half the coal mined went to produce electricity. Disturbingly, electricity is so inefficient that nearly 70% of the energy available in the coal is wasted before it reaches the point of consumption.¹

The AIA recently defined architects as "The Corporate Vice-presidents of Environment" and the architect is in a uniquely advantageous position

to fulfill that role. He is, in effect, responsible-through-design for the balancing of man with his environment. In the past the architect has been most concerned with the inter-relationship between man and his built environment. With the increased awareness of the effects we humans and our industries have on all that surrounds us, the architect can ensure that the environment —

the total environment — becomes as strong a consideration as any other factor, social, mechanical or economic, influencing his design decisions. To do this he needs to know much about how man interacts with his world.

More energy passes through the architectural and allied professions, the designers of the built environment, than passes through any other field. Con-



RESOURCES

	TIME TO PRODUCE 1 TON millions of years	MAN'S REMOVAL RATE millions of tons per year
PETROLEUM	250	600
COAL	1,000	2,000
IRON	2,000	200

source: John Mc Hade

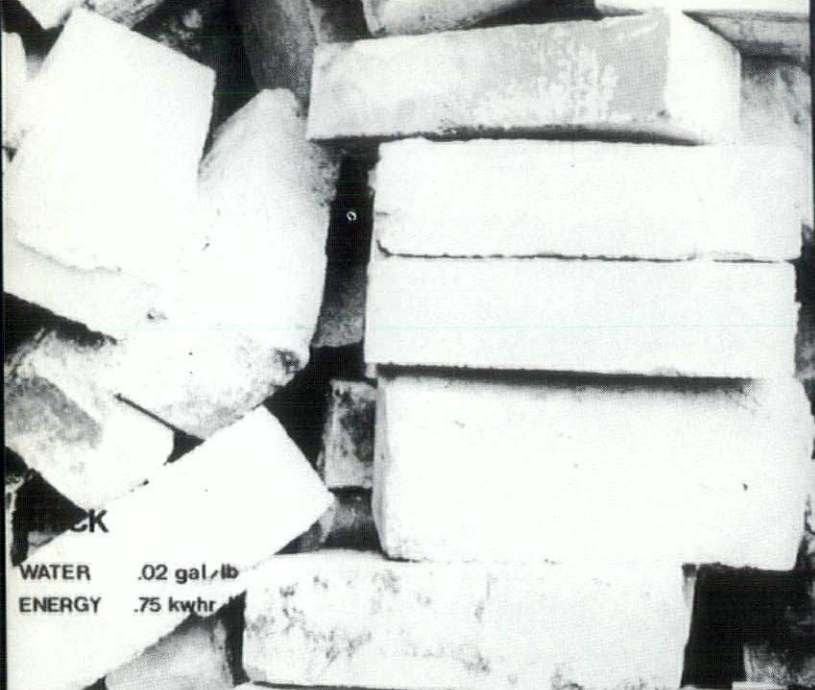
Photo by Mark Beckman/John Weidt

sidering everything, construction and operation of structures accounts for up to 68% of all the energy consumed in this country.⁴ The construction industry is also the major user of other material resources, consuming more steel and aluminum than transportation and the vast majority of all gypsum, stone, sand, gravel, vermiculite and perlite produced. The ways in which we use these

materials are as wasteful as the ways the rest of our resources are consumed. Structural systems, for instance, are usually over-designed by a factor ranging from three to many times the amount of actual material needed to perform the function of the structure.⁶ Tremendous amounts of materials are similarly used up in lighting that is often provided at eye-dazzling levels, day and night.⁶ The

"Corporate Vice-president of Environment," the architect, will be mindful that his profession affects broad areas of the environment and will be sure that these effects are positive ones.

Construction begins with materials but currently little information is available to help determine which material is best to use in each different situation. The charts shown



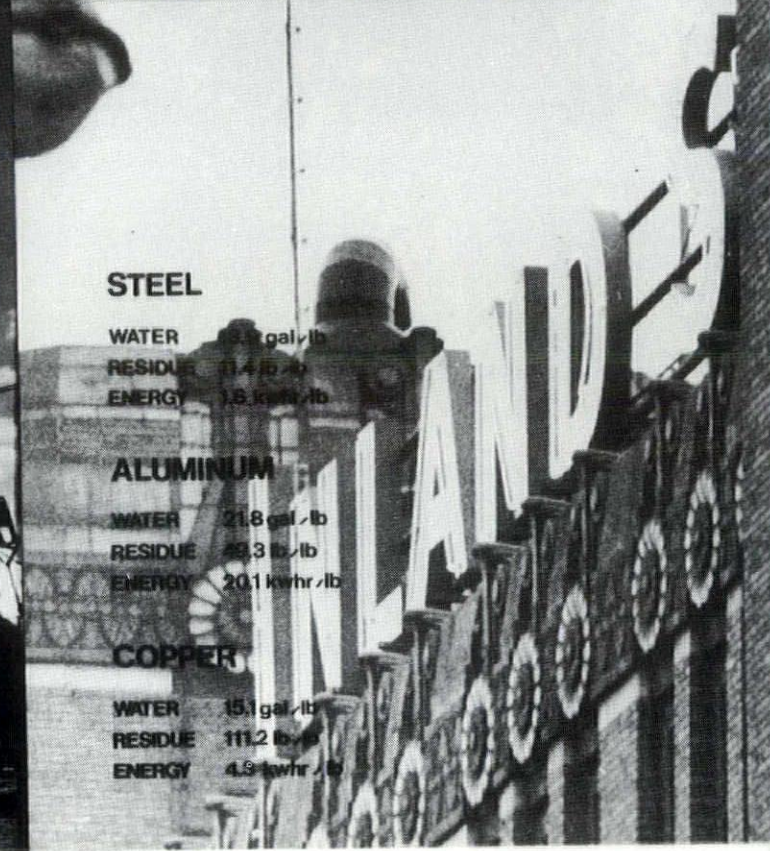
CONCRETE
WATER .02 gal/lb
ENERGY .75 kwhr/lb



WOOD
WATER 2.3 gal/bd ft
RESIDUE .03 cu ft/bd ft
ENERGY .80 kwhr/bd ft



CONCRETE
WATER 8.7 gal/lb
ENERGY 130.5 kwhr/yd



STEEL
WATER 3.1 gal/lb
RESIDUE 11.4 lb/lb
ENERGY 1.6 kwhr/lb

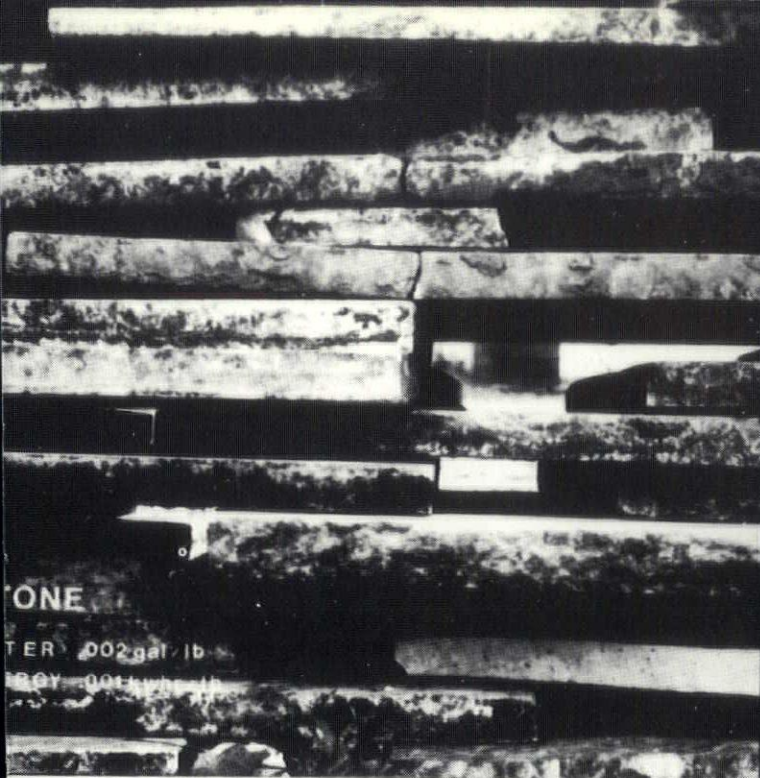
ALUMINUM
WATER 21.8 gal/lb
RESIDUE 43.3 lb/lb
ENERGY 20.1 kwhr/lb

COPPER
WATER 15.1 gal/lb
RESIDUE 111.2 lb/lb
ENERGY 4.9 kwhr/lb

The charts here illustrate certain areas of environmental costs associated with the processing of raw materials into structural products. "Residue" is the amount of unusable waste (tailings, stumpage, etc.) generated by the processing of the material. "Water" is the amount of water put into the process. "Energy" is the amount of work expended in processing the product and has been corrected for type of fuel consumed in the process. These figures are not complete but they do serve as an indication of relative environmental costs of materials.

here are an attempt to provide some of that information.⁷ These charts can be used to estimate the environmental costs of different ways to structure a building so the most economical system of materials can be determined. As one example, a variety of conventional structural systems were designed to enclose a small (1000 sq. ft.) residential space. These systems were then mea-

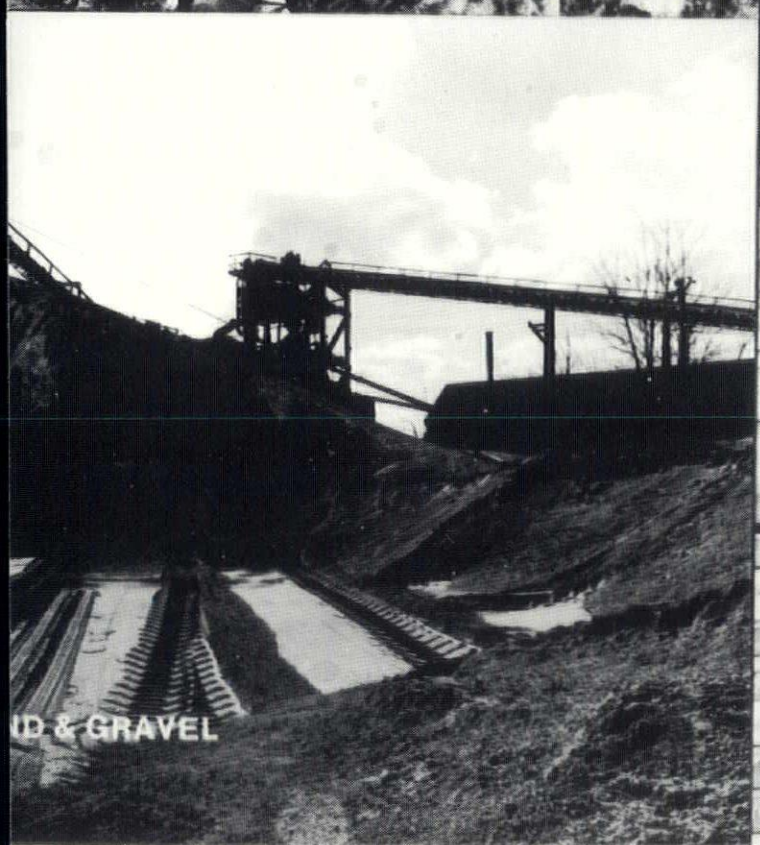
sured and costed in terms of the amount of energy spent in the processing of the materials, the amount of water used, the amount of waste that was generated during their manufacture and the amount of fuel required to move them a given number of miles to their erection site. An aluminum framing system was found to require 2-1/2 times more energy to generate than steel and 6 1/2



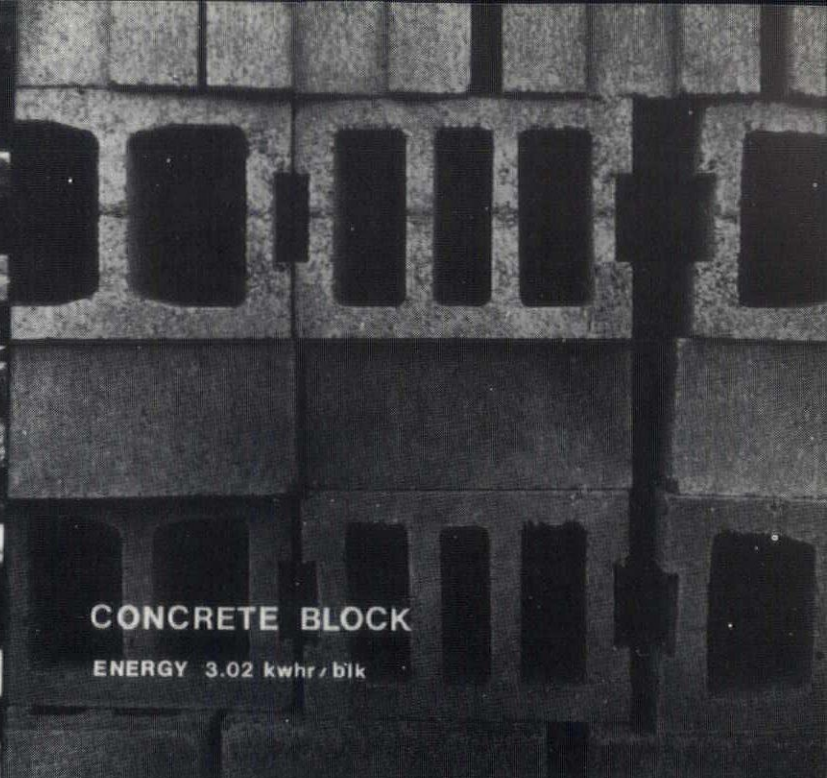
ONE

TER 002 gal/lb

BOY 001 kwhr/lb



ID & GRAVEL



CONCRETE BLOCK

ENERGY 3.02 kwhr/bik



GYPSUM

WATER 0.1 gal/lb

RESIDUE 1.6 lb/lb

ENERGY 0.27 kwhr/lb

GLASS

WATER 8.7 gal/lb

ENERGY 4.0 kwhr/lb

Photo by Mark Beckman/John Weidt

times more than wood. Steel left behind 84,690 pounds of unusable waste, 8,700 pounds more than aluminum, 14 times more than wood and 43 times that of stone. Steel used more than twice as much water as aluminum and six times as much as the wood structure.⁷ Depending on goals, this exercise can facilitate the selection of an optimum material for a structure of this scale and func-

tion. If transport cost were the overriding factor, for instance, aluminum would be the clear choice for framing material. It would have to be moved a considerable distance, however, before its transportation energy cost saving could nullify its manufacturing energy cost. A similar type of analysis can be performed to scrutinize the thermal performance of a building and results can then be

weighed against other economic and mechanical parameters of the design program to arrive at an optimum result.

The public is beginning to realize the importance of conscientious design in alleviating environmental problems. It is starting to turn toward the environmental designer for counsel regarding ways in which our negative impact on the environment can be alleviated. More



and more architects, landscape architects, designers, engineers, and professions concerned with the study of the physical environment will be called upon to measure, evaluate and optimize the impact of the man-made world on the world surrounding it.

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Photo by John Weidt

"You have destroyed all that which you held to be evil and achieved all that which you held to be good. Why, then, do you shrink in horror from the sight of the world around you?"

Ayn Rand

Northwest Architect



Minnesota's Response to the Energy Crisis

By A. Edward Hunter



Webster defines crisis as "a decisive or vitally important stage in the course of anything; a turning point; a critical time or occasion." Minnesota, like most other states, faces a critical situation, a turning point, in its use of energy.

The winter of 1972-73 saw some fuel oil shortages. The summer of 1973 saw shortages of gasoline and closing of service stations. The fall of 1973 has seen shortages of propane for agricultural production, crop drying and poultry brooding. In the winter of 1973-74 Minnesotans can expect an inadequate supply of heating oil and potentially severe shortages.

What Is the Energy Crisis?

The energy crisis is a failure of our supply system to keep pace with a dramatic increase in the demand for energy.

With slightly less than 1/17th of the world's population, the United States is currently utilizing almost 1/3 of the annual consumption of energy. The average family in the United States consumes as much energy in one week as families in most of the rest of the world consume in a year. The annual rate of growth in energy demand is 4 to 5 times greater than our population growth. In several of the western European countries and Japan the rates of increase in the demand for energy have shown equally alarming increases.

The net result of these conditions is a demand for energy, particularly oil and natural gas, which is seriously taxing the capabilities of our supply sys-

tem. For some fuels and in some parts of the country there is already an imbalance.

On the supply side conditions are characterized by declining available reserves of crude oil and natural gas, inadequate refinery capacity, a growing dependence on imported oil and gas and a failure of nuclear power to reach its projected potential to supply electric power.

The United States' reserves of oil and gas continue to decline. At the present rate of consumption known reserves of natural gas could last 30 years, available known oil reserves 15 years. The supply situation for coal is more promising. The known reserves of coal could last in excess of 300 years or less than 200 years if coal is significantly used to produce synthetic oil and gas. However, coal presents problems of air quality and has declined significantly as a popular fuel. There is little agreement on these reserves. However, they do demonstrate the limits of our energy supply.

New fuels, such as oil and gas from coal or oil from tar sands or shale, cannot be expected to contribute significantly to supplies before the late 1970's. Similarly the oil from the Alaskan Slope, which could add as much as 2,000,000 barrels a day of crude oil, depends on resolution of important environmental considerations about the building of a trans-Alaska pipeline. Off-shore or continental shelf oil will not be available for five to six years. Significant quantities of solar or thermal energy are 10 to 20 years away.

Increasingly this country has depended on ever larger amounts of imported oil and gas. Energy imports in 1970 were about 12% of the U.S. energy supply. By 1975 oil imports are expected to almost

Mr. Hunter is deputy director of the State Planning Agency and is coordinating Minnesota's response to the energy situation, particularly the long-term response, for the State Planning Agency.

double the current rate. By 1985 it is expected that imports of natural gas may increase more than seven-fold. These increased imports are necessary even under the most optimistically low demand or growth pattern. Considering the unstable nature of the export policies of major oil exporting countries, especially in the Middle East, a growing reliance on imported oil and gas is dangerous indeed.

A second contributing factor to the inability of our energy supply system to meet demand is the lack of recent investment in refining capacity. New investment in refinery capacity during the last five years has been minimal. It was not until oil import quotas were lifted in the spring of 1973 that major oil producers announced plans to substantially expand existing refineries or construct new refineries. Refining capacity in the U.S. will not increase significantly through the end of 1975.

Cited reasons for the failure to expand refinery capacity include the uncertainties of price and volume for foreign crude oil supplies, an inability to correctly foresee the increase in domestic demand and contentions that construction would adversely affect the environment.

Currently refineries are operating at almost 95% of their capacity. This rate cannot be maintained indefinitely because refineries must provide for maintenance and at such rates the possibilities of severe breakdowns increase.

Finally, a major cause of our current situation is the failure of nuclear power to reach its anticipated potential. In the late 40's and early 50's nuclear energy was recognized as the power of the future. However, it has failed to overcome engineering difficulties and has further failed to adequately satisfy the

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questions raised by those concerned with environmental consequences and public safety.

Presently nuclear energy accounts for less than 1% of the total energy consumed. Even if all of the nuclear plants existing, under construction or planned were operating at full capacity they would provide only 29% of our present electrical needs. In 1985 they would supply only 15% of our projected demand for electric power.

It does not now appear possible for nuclear energy to provide significant increases of electrical energy before the 1980's. In the long run nuclear energy, particularly the breeder reactor and ultimately the fusion reactor, will meet more of our energy needs. For the foreseeable future it cannot help.

Energy Uses in Minnesota

Although Minnesota is not an energy intensive state, with per capita use of energy substantially below the U.S. average, its annual rate of growth in energy demand has exceeded population growth by many times. In Minnesota our use of energy does differ in several important ways. Because of the climate the demand for oil and gas for space heating is very high. Propane is used extensively for

agricultural production and crop drying. Industrial demand for energy is significantly lower than in other states.

Tables I and II compare Minnesota's current consumption pattern and fuels utilized with the United States as a whole. Table I indicates Minnesota's greater reliance on oil, gas and nuclear power and a lesser dependence on coal.

Table II identifies the uses for which energy is consumed in Minnesota.

The relatively greater use of energy by the commercial sector can be partially attributed to the importance of agriculture in Minnesota.

Outlook for 1973-74

The outlook for this winter is one of shortages in fuel oil in a range of 10-15% and potentially critical shortages in a range of 15-25%. Considering Minnesota's reliance on oil the impact in Minnesota may be critical.

If imports of crude and refined oil and natural gas are maintained at the projected level, if U.S. refineries can continue at the current rate of utilization and if we experience a relatively mild winter, we should have only periodic shortages, particularly in the

more rural areas of the state. However, if any of these components of the supply system should fail, or if we should experience a severe winter, severe shortages must be expected and actions taken to alleviate their effects.

In the winter of '72-73 it is estimated that Minnesota used 660.0 million gallons of distillate fuel oil; for the winter of '73-74, a current estimate of demand is 720.0 million gallons. Even with mandatory allocations Minnesota should expect supplies of fuel oil to fall short of demand by 10-15% or 72.0 to 109.0 million gallons. Further, we should be prepared for potentially severe shortages in the range of 15 to 25%, or 108.0 to 180.0 million gallons.

This outlook for fuel oil will require immediate conservation measures by home owners, business men and public officials. Lower thermostat settings, furnace maintenance and added insulation are measures which home owners can take now. Commercial buildings can do the same. In addition lighting levels can be reduced and non-essential lights turned off. In the event of severe shortages more drastic steps may be necessary. These actions might in-

Table I. Sources of Energy Supply — 1970

	(Percent of Total)	
Minnesota		
U.S.		
Oil	46.8	44.5
Coal	17.1	19.6
Natural Gas	33.9	31.5
Nuclear	1.3	0.3
Hydroelectric	0.9	3.8

Source: *Energy Use in Minnesota*. State Planning Agency, St. Paul, 1972. *Outlook for Energy in the U.S. to 1985*, Chase Manhattan Bank, New York, 1972.

Table II. Energy Consumption by Sector — 1970

	(Percent of Total)	
Consuming Minnesota		
U.S.		
Residential	27.4	21.9
Commercial	17.8	11.4
Industrial	27.3	42.0
Transportation	27.4	24.3
	100.0	100.0

Source: *Energy Use in Minnesota*, State Planning Agency, St. Paul, 1972.



clude curtailing the use of public buildings, closing the schools in the afternoons, eliminating all non-essential lighting and limiting hours for large shopping centers.

In a recent survey of Minnesota school districts, conducted by the Department of Education and the Division of Civil Defense, only 62 of the districts (of the 238 districts responding) reported an adequate supply of fuel for this winter. Only one-half of private schools reported have firm supply commitments. Data from the survey indicate that school districts expect to pay at least 50% more this year for fuel oil than last year.

In a similar survey of municipalities the results were equally discouraging. Few municipalities have firm supplies or commitments for fuel oil or gasoline. Inadequate fuel supplies may jeopardize the ability of local government to deliver essential public services— police and fire protection, snow removal and solid waste collection and treatment.

A characteristic of our energy system is the interrelatedness of the use of various fuels. Large users of natural gas are provided that gas by their suppliers on an "interruptible" basis.

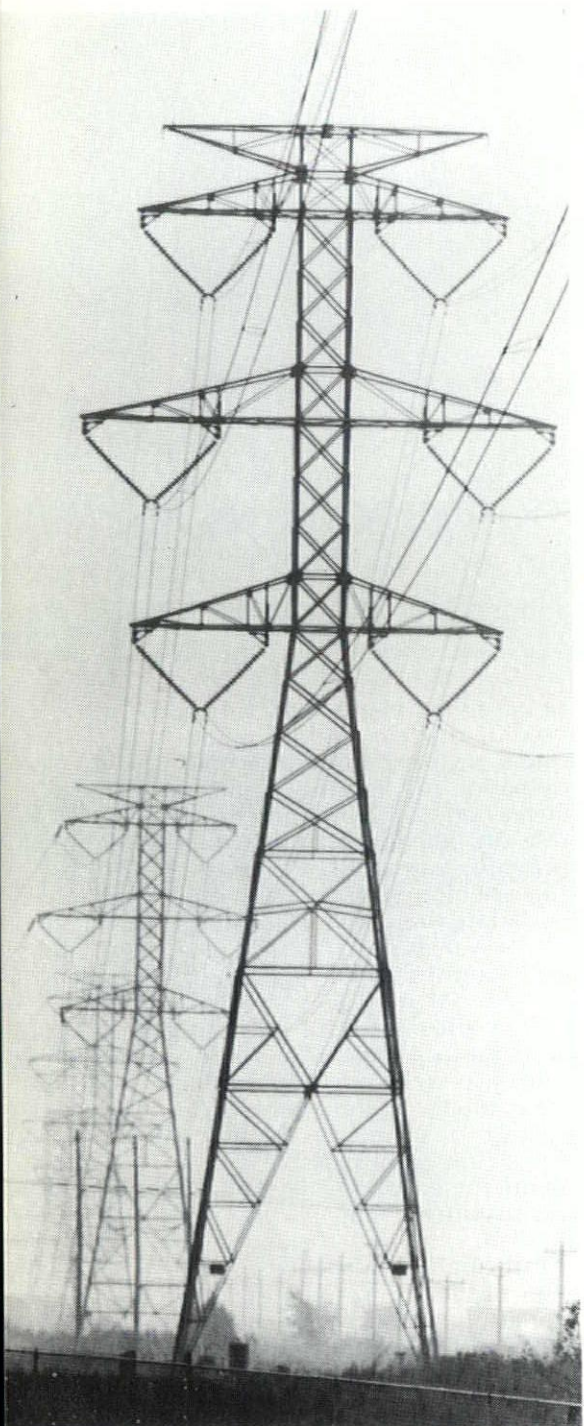
When the demand on the supplier's natural gas system reaches a certain point, usually during cold weather, the supply of natural gas to these large customers is interrupted and those customers are forced to fall back on some alternative form of fuel, usually oil. Thus the supply of natural gas has a significant influence on the supply of oil. For this winter it is anticipated that the supplies of natural gas will barely meet anticipated demands, with interruptible customers warned to expect more days of interrupted service than in years past.

In Minnesota many utilities use fuel oil to generate electricity. This is particularly true for electric power generated during the peak period. During the winter the peak period is approximately from 4 to 8 p.m. During this period the output

of base load plants, which burn coal or nuclear fuel, is inadequate to meet the additional demands for lighting, appliances, etc., and utilities must rely on peaking plants, which primarily burn oil. Any measures which would result in curtailing the demand for electric power during this peak period would also conserve our supplies of fuel oil.

Refineries produce and store both fuel oils and gasoline. During certain periods efforts are made to maximize the production of gasoline, at other times fuel oil. Excessive demand for gasoline may delay the producing and storing of fuel oil.

Anticipated shortages in supplies of fuel oil this winter, particularly if we experience severely cold weather, will delay the refining and storage of gasoline. On September 30 John Love, energy adviser to the president, indicated that we could expect no significant increase in the annual supply of gasoline during the next three



to four years. In addition, we should expect a price increase of 10-15% over the next 6 to 10 months. On the basis of evidence available to date we can expect the gasoline supply situation during the summer of 1974 to be very similar to that experienced during the summer of 1973—some service stations closing, shorter hours and in some areas limiting of supplies to customers.

It is important to understand this interrelationship of fuels when one proposes measures to conserve energy. **All forms of energy—electric power, natural gas, fuel oil, gasoline—must be conserved.**

The Energy Crisis: What Is Being Done?

National Policies and Actions

Recognizing the national nature of the energy shortage, several actions have been proposed by the president and the Congress to resolve the current shortage. Import quotas on crude oil have been removed. Price ceilings are being lifted. Proposals are before the Congress which would stimulate further utilization of nuclear power, provide for controlled use of strip mining for coal, encourage development of deep water ports for oil tankers, finance research and development in new fuel sources (such as solar and geothermal power) and deregulate the price of natural gas at the well head to stimulate further exploration for supplies of gas.

However, the most important action for the short term is a system of mandatory allocations of petroleum products. The objective of mandatory allocations is to ensure that limited quantities of heating oil, diesel fuel, kerosene, jet fuel and propane are fairly distributed among the states and to independent suppliers and distributors.

The severe shortage of propane this fall has placed much pressure on both the president and the Congress to take such action. The current outlook for potentially severe shortages of heating oil this coming winter has reinforced those pressures. Mandatory allocations for propane were announced on October 2. That same announcement indicated that allocations for heating oil, diesel fuel, kerosene and jet fuel would be released within two weeks. Legislation to require mandatory allocations has passed the U.S. Senate and is close to passage in the House.

Since Minnesota, with no oil or gas supplies of its own, is very much at the end of the "supply line," public officials in Minnesota have strongly urged the president and the Congress to enact such mandatory allocations. On September 20 Gov. Wendell Anderson appeared before the Joint Sub-Committee on Consumer Affairs to strongly urge congressional action on mandatory allocations.

Although these allocations will not result in an increase in supply, they will ensure that those areas of the country not blessed with resources of their own will share equally in available supplies and that independent suppliers and distributors will have an opportunity to obtain a fair quantity of propane and oil.

The mandatory allocation system for propane is designed to operate at the wholesale level, requiring fuel distribution to past customers in proportion to what they received last year. The allocations will also assign priority to residential use, agricultural production, food processing, mass transit vehicles, buildings housing medical and nursing patients, vehicles and equipment used in enclosed spaces where exhaust from other fuels would endanger

workers, essential government services, petroleum production, transportation and commercial requirements under 15,000 gallons per year.

For heating oil it is expected that the states will be given the opportunity to redistribute 10% of the supplies to their state each month to high priority uses. Suggested priority users include residential heating, farming, food processing or distribution, oil, gas and coal processing, health and sanitation services, police and fire-fighting, public transportation, including school buses, public utilities and telecommunications.

State Actions

In addition to the efforts of Minnesota public officials to advocate and prepare for mandatory allocations of petroleum products other important decisions are being made and actions contemplated to prevent a fuel crisis in Minnesota.

The Minnesota Division of Civil Defense and its regional network of civil defense officials have accepted the responsibility for resolving the day-to-day shortages of fuels. They maintain close and continuous contact with the situation in all areas of the state. Where consumers have difficulty in obtaining supplies of fuel, Civil Defense has been most successful in placing them in contact with a potential supplier. They have also worked with suppliers and distributors to obtain further supplies and identify new sources. In the event of severe shortages during this winter the role of Civil Defense in alleviating such shortages will be even more important.

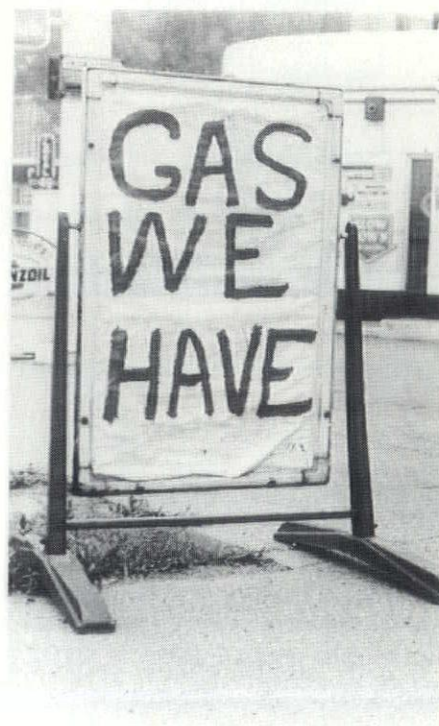
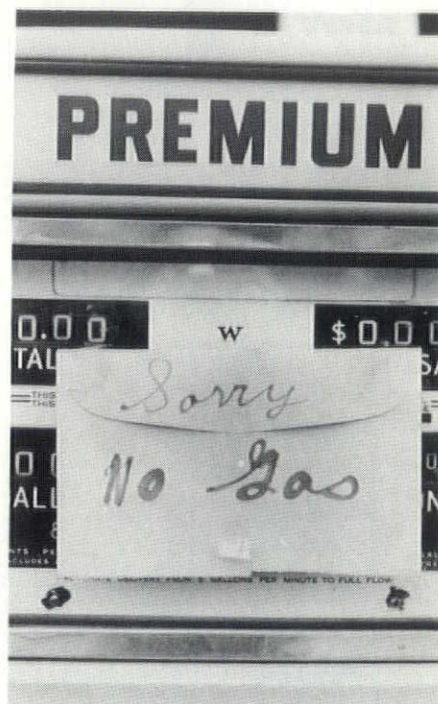
The office of the attorney general of Minnesota has assigned several staff attorneys to carefully examine the marketing and pricing policies and actions

of petroleum suppliers, distributors and dealers in Minnesota.

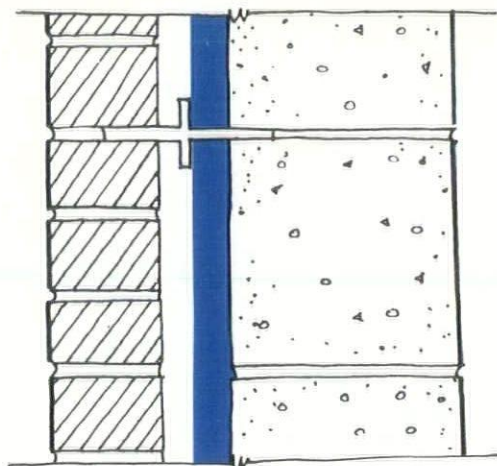
The Minnesota State Planning Agency has accepted the task of developing information about Minnesota's energy utilization patterns and about the supply and distribution system of electric power and fuels, evaluating methods for preparing demand forecasts and detailing the outlook for energy supplies over the next four to six years. The agency will also assess the energy requirements for essential public services—transportation, health care, water and waste treatment, public safety and education.

Early last year the Minnesota Environmental Quality Council established a Task Force on Energy Policy. Over the past year this task force has been actively examining the energy issue and drafting its recommendations. The primary concern of the task force has been measures to conserve our use of fuels and electric power. The task force will report its recommendations to the Environmental Quality Council in early November. The report of the task force is expected to note that without steps being taken to significantly reduce our demands for energy Minnesota will continue to experience shortages, perhaps critical shortages, during the remainder of the decade. Its recommendations will demonstrate what actions can be taken.

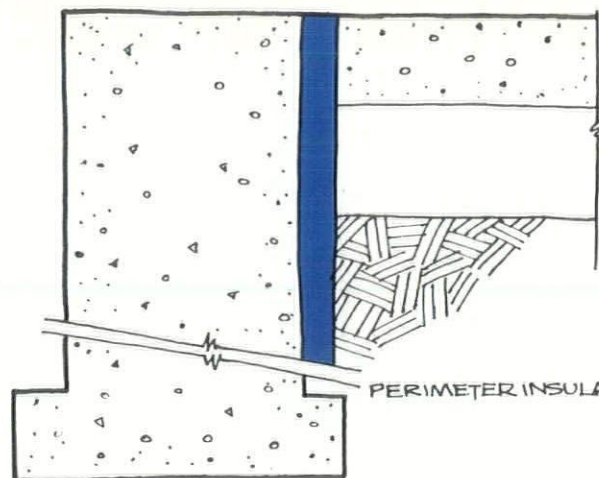
A task force of citizens working with the State Building Code Division is considering amendments to the State Building Code which would reduce heat loss through inadequate insulation. Later appropriate public hearings will be held to consider formal amendments to the State Building Code. Although prevention of heat loss



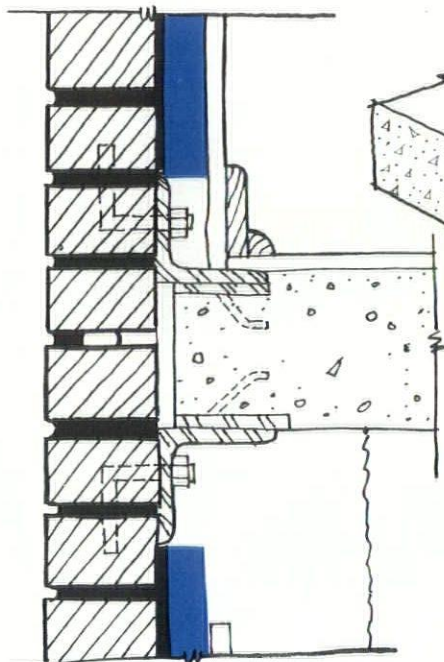
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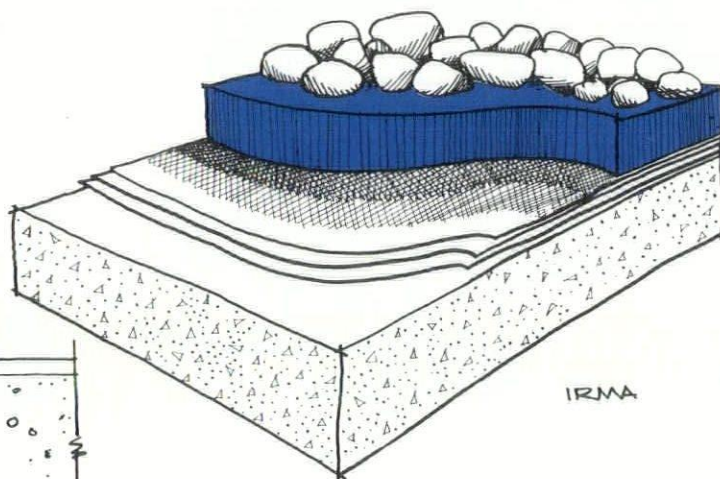
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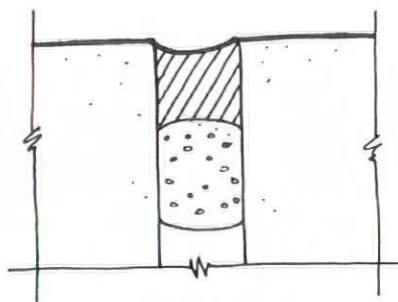
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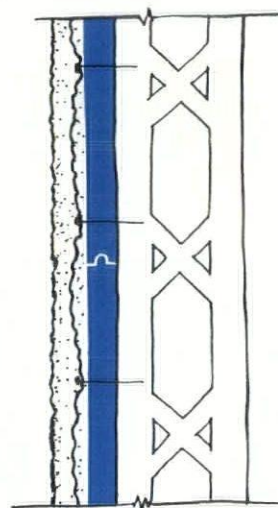
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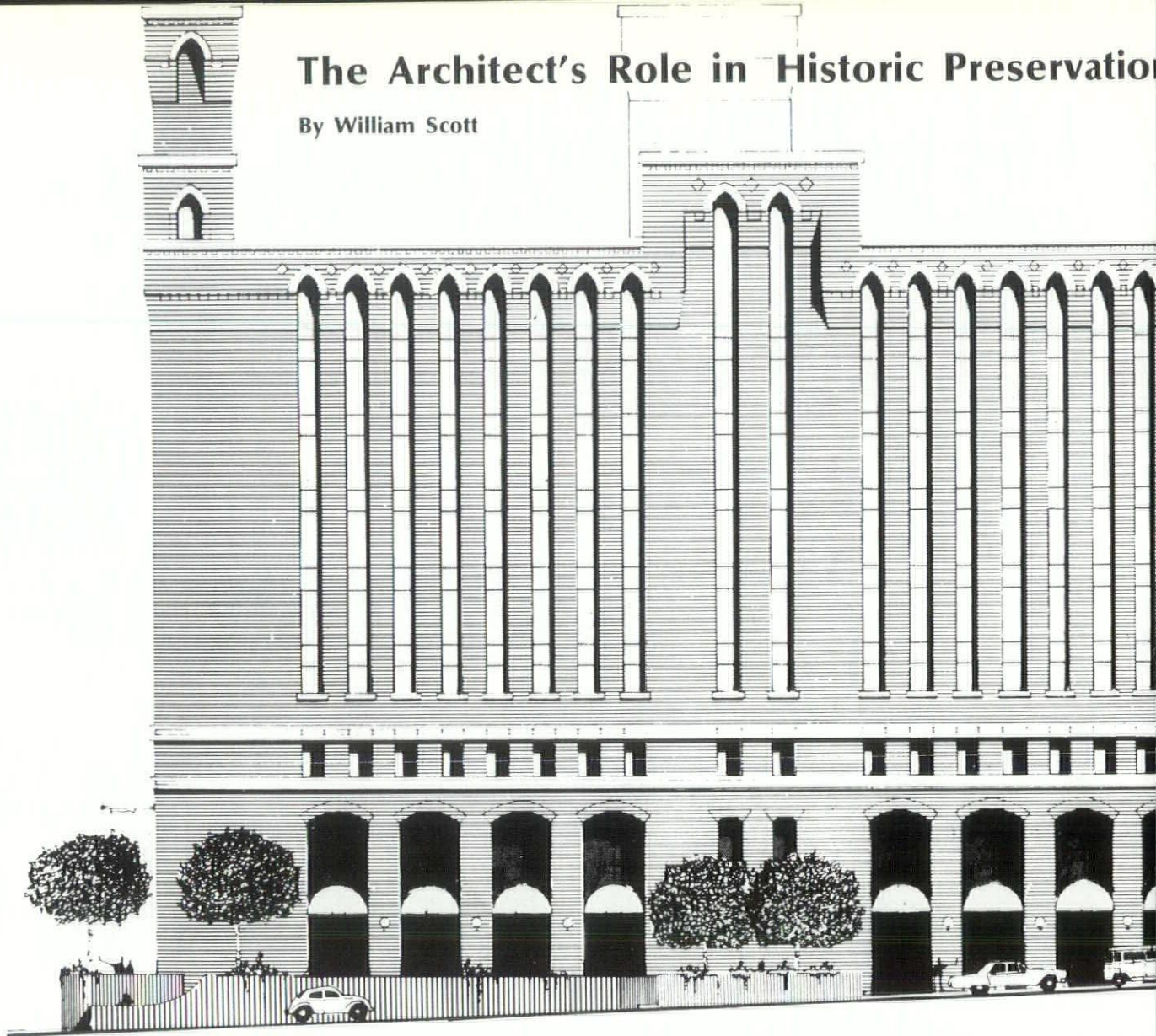
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The Architect's Role in Historic Preservation

By William Scott



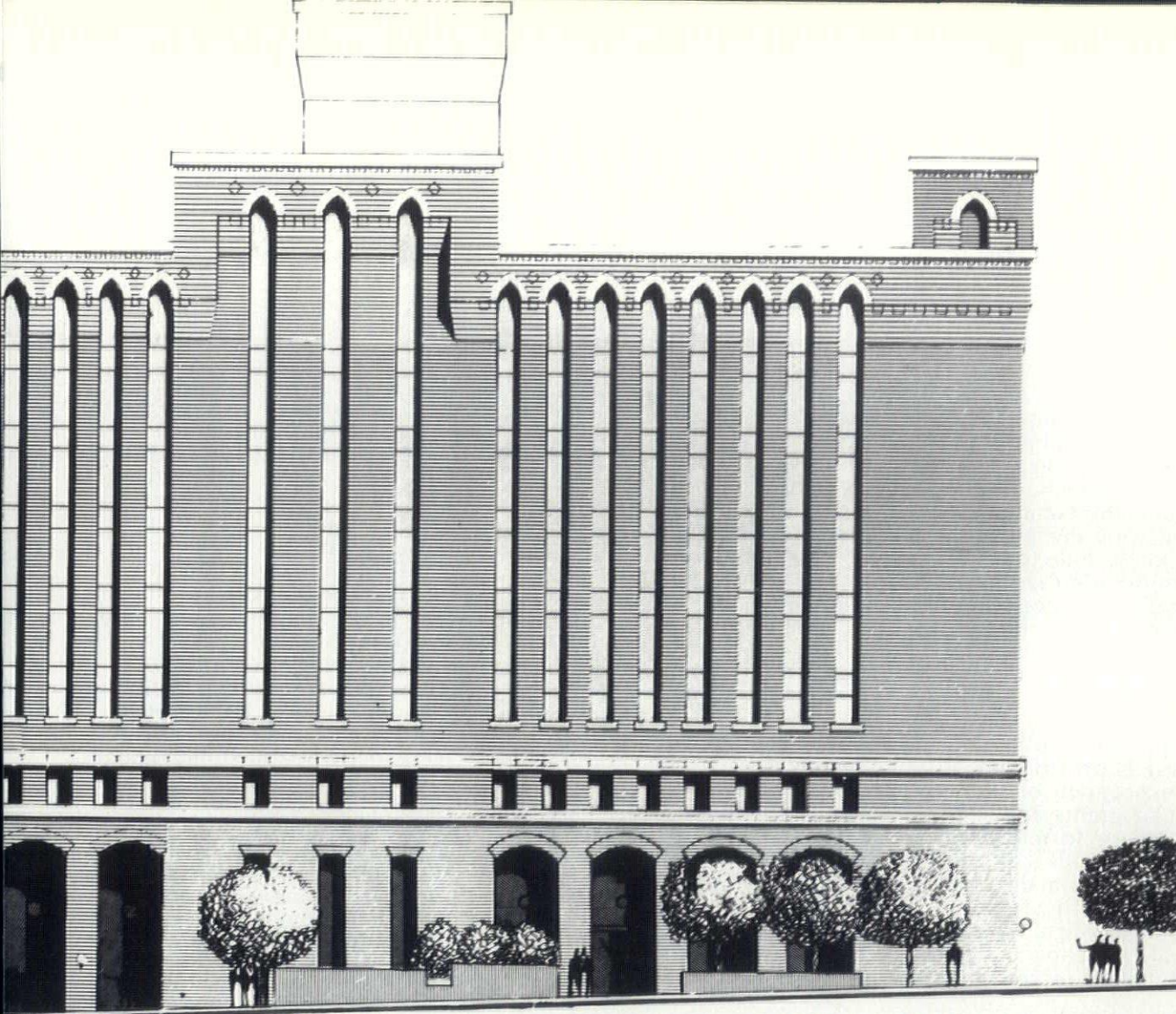
The national interest in ecology, particularly as it concerns man and his environment, has strongly stimulated an awareness of the need for the preservation, not only of nature, but of the best of those contributions man himself has made to the land. Historic preservation of buildings is now a vital part of that ecological movement. That the interest in our historic resources is deep, and that it no longer confines itself in this country to the older eastern and southern coastal areas, is clearly evident in the increasingly frequent notices I receive of seminars and workshops pertaining to preservation being conducted all over the country. Recently, in one day's mail, I received brochures describing a forthcoming seminar on historic home restoration in Pleasant Hill, Kentucky, an ar-

chitectural preservation conference in Madison, Wisconsin, dealing with six upper midwest states, and what was billed as a "Preservation for the Prairie" conference/workshop concerned with historic preservation "as it may apply to the Great Plains," to be held in Fargo, North Dakota. Last May in Saint Paul a similar, quite successful effort, entitled "Minnesota Heritage Encounter #1," was, as its name suggests, the first of what is hoped will be annual conferences bringing together individuals and organizations of the region to discuss preservation and eventually to coordinate preservation efforts.

The objectives of historic preservation are still unfamiliar enough to warrant definition. David N. Poinsett, the State Supervisor of Historic Sites in New Jersey, in an article repro-

duced in the July, 1973, issue of the National Trust's *Preservation News* finds it easier to define preservation by describing what it is not. He says that historic preservation "is not shrines or pilgrimages to 'hallowed ground.' Shrines should be left to religion, where matters of faith and subjectivity belong." It is not . . . "guides in period costumes leading people through dusty, musty rooms pointing out odds and ends of memorabilia that are more interesting to the guide than to the viewer." It is not . . . "new structures that are 'colonial in style' . . . at best these are bad copies; at worst they are an admission that we cannot create anything good or new ourselves" and, certainly, "historic preservation is not saving everything."

Well maintained, older build-



The Butler Building

ings and neighborhoods having historic or architectural significance give the community a sense of stability and continuity and proclaim a pride in community achievement. They are a rich counterfoil to the monotony of the fabric, however well planned and designed and diverse in form, of an otherwise totally contemporary environment. They are a three-dimensional educational tool. For people who enjoy historic sites they are a source of recreation and, when rehabilitated, they are a potential resource either for the purpose for which they were designed or for imaginative adaptive use.

Until the very recent past preservation has, at best, been a haphazard effort, usually conducted by individuals or small powerless organizations with no preservation experience and often armed with only a last minute warning of the impending

threat of the wrecking ball. Preservation was usually backed with little money and no plans for the utilization of the structure, even were the miracle to occur that it be spared. Preservationists were viewed either as diehards terrified of change and progress or hopeless romantics longing for a life style from the past they could never know.

The turning point was the passage of the National Historic Preservation Act of 1966 establishing a National Register of Historic Sites and Buildings and providing some safeguards and financial aid. An increasing amount of federal legislation has since been passed or is currently under consideration. It covers such diverse subjects as tax credit for maintenance of historic structures, land use policy and planning assistance, folk-life preservation, preservation of historical and archeological data, use of railroad sta-

tions for cultural activities, etc. In the states and in local government more and more meaningful tools for preservation also are being created. Minnesota has established a State Register of Historic Sites and Districts and has passed an enabling act allowing communities to establish historic preservation commissions. Minneapolis has created such an organization and other cities such as New Ulm and Stillwater have formed commissions or are considering such action.

In addition to the National Register and the Historic American Building Survey (HABS), both of which are under the

William Scott, vice-president of Setter, Leach, Lindstrom, Inc., Minneapolis, is chairman of the Minnesota Society of Architects' Preservation of Historic Resources Committee.

jurisdiction of the National Park Service, there are a number of strong national organizations guiding the preservation effort. These include the National Trust for Historic Preservation, the Society of Architectural Historians, the Victorian Society of America and the Historic Resources Committee of the AIA. It is interesting to note that the National Trust, which for years appeared to limit its concerns to the 18th Century and earlier, has now opened an office in Chicago and is providing a most active program of service in location of grants and legal and other advice to midwest preservationists.

Among the most active preservation agencies in Minnesota are the State Historical Society, the National Park Service's local representative in screening

nominations to the National Register as well as the guardian of many of the most historic sites in the state, the county historical societies of which those in Winona, Brown, Ramsey, Scott and Olmstead Counties are among the most effective, the Planning Commissions of Minneapolis, Saint Paul and Duluth, the Minneapolis Heritage Commission, the Minneapolis Institute of Arts and the Historic Resources Committee of the Minnesota Society of Architects.

The Minnesota State Arts Council in July, 1973, began a new architectural program funded by the Minnesota Resources Commission and the National Endowment for the Arts, aimed at assisting "statewide efforts that enhance the physical quality of the environment and stim-

ulate awareness of Minnesota's architectural heritage."

There are many roles that the architect can fill in historic preservation. He can function as a restorationist as does Brooks Cavin in his work on the Federal Courts Building in St. Paul or on Fort Snelling, and as did Hammel, Green and Abrahamson on Mattocks School, which was moved to the Highland Junior High School site in St. Paul. The architect may, with somewhat less constraint, adapt a building to a new use without losing the quality and character of the original, as Miller-Melby are doing in adapting the Butler Brothers' warehouse in Minneapolis to a multi-use complex similar to Canal Square in Washington, D.C. He will be especially challenged when



endeavoring to expand a small "unexpandable" jewel-box bank as Harwell, Hamilton, Harris did so successfully with Louis Sullivan's Security National Bank in Owatonna and Dykins and Handford did with Purcell, Feick and Elmslie's Merchant National Bank in Winona.

The architect also is an educator in this context. He seeks out and acquaints his community with the presence of buildings and neighborhoods which either have or potentially can have qualities which will enhance the community and therefore deserve preservation. He can be an advisor, lending the prestige, the design skill and the technical know-how of his profession to organizations actively engaged in historic preservation, particularly to those which do not have the

in-house capability of judging design and construction. He will sometimes have to put aside his own design preferences when judging the merit of a style he may not like. This particularly applies to styles of the more recent past (e.g., Art Deco) which are difficult to judge objectively. If remaining examples of these styles are destroyed future generations will condemn us as we are now beginning to condemn those who demolished the best of Victorian.

The architect is a collector of resource material. By preserving the documents of past and present architects and their work a valuable source of information is made available for research and restoration. He is a coordinator. With the increasing number of persons involved

in preservation there is inevitably much unnecessary duplication of effort. The architect is in the best position for a broad overview of preservation activities. The AIA has recognized this and appointed a Preservation Coordinator in each of the states.

He can assist in emergencies when demolition threatens. While listing a building on the various federal, state and historic commission rosters will entitle it to some protection and eligibility for financial aid, there will probably always be situations where a notable structure is threatened. The architect/preservationist will pitch in with such last ditch actions as conferring with the owner and his architect to dissuade them from

(Continued on page 231)

Photo Courtesy of Minnesota Historical Society.



Conservation as Collecting — American Antique Furniture

By R. K. Klapmeier

As Americans become increasingly aware of the importance of our Eighteenth Century cultural achievements, the chance acquisition of a piece or two of old furniture is frequently becoming the basis for the formation of a collection. Recognition of a unique American theme and the realization that Eighteenth Century furniture is indeed adaptable to today's life styles have intensified interest in an already highly significant area of collecting. With a sound philosophy behind the formation of a collection and a minimal amount of care and respect for the objects themselves, the collector may realize a lifetime's benefit while preserving a heritage for yet another generation's enjoyment.

The formation of a collecting philosophy is as important as the formation of the collection itself. Too many persons approach antique furniture asking simply, "How old is it?" "What's it made of?" "What's it worth?" A well formed collection becomes an extension of the creator's personality. Individual taste will dictate what he collects; the fundamental question is *why* does he collect.

He must first establish his goals. Is he seeking aesthetic pleasure, the perfection of form and proportion? Is it the craftsmanship inherent in an object created at a time when a slower pace of life elevated quality above time expended? Is he seeking to build an equity? (While collecting for dollar ap-

preciation somehow vitiates the nobility of great art, no collector is blind to the potential of a field that has acquitted itself so well in the past.)

Once the collector has established his primary goal, he must determine his standards of acceptability. The formation of a significant collection requires that each object satisfy three prerequisites.

Age

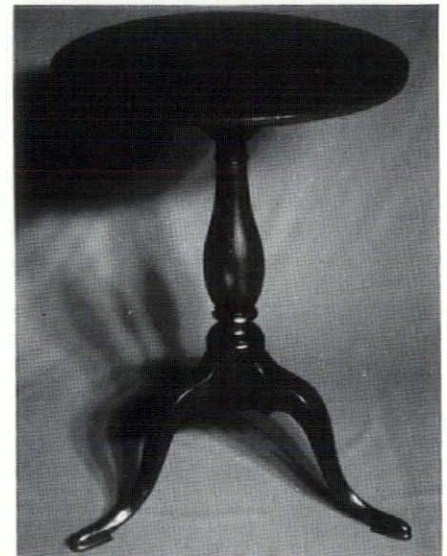
Only a craftsman can create an individual piece. To be an antique an object must be a handcrafted article made prior to the machine age, approximately 1830. Age itself does not necessarily denote value. Market value is determined by a combination of age, rarity and quality of craftsmanship.

Condition

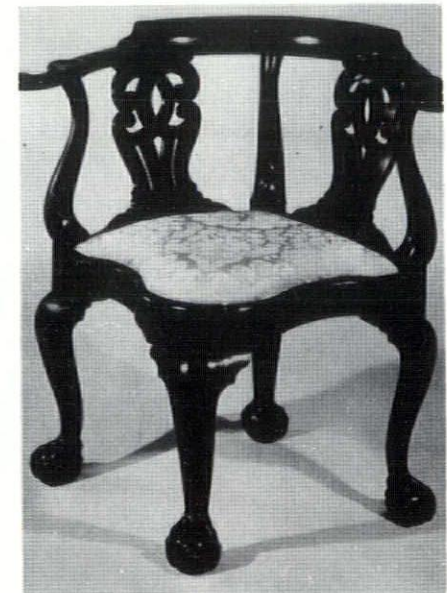
Unless an object is of a sufficient caliber of rarity to admit to minor repairs as acceptable, the collector should insist on complete originality, including finish. Israel Sack, founder of the leading New York firm dealing in American furniture, was once asked by a girl, "What is this 'patina' which people talk about in antique shops?" Sack pointed to the polished coloring of the colonial tables, then said, "Today you are a beautiful young lady. 'Patina' is the difference between what you are today and what you'll be at 75 with a rich, full life of love and happiness behind you." The patina of an original finish is a priceless ingredient inherent in a genuine piece.

Quality

Quality is the most important characteristic sought by the collector. More than skilled craftsmanship and fine design, quality represents the perfection of form, proportion and integration. Like the collector of



The delicacy, grace and refinement so characteristic of the best examples of the Queen Anne period is well represented in this Connecticut cherry candlestand, c. 1770.



The dignified simplicity of the Quaker influence can be seen in this formal Rhode Island corner chair constructed of the best San Domingo mahogany. American, Chippendale period, c. 1770. Attributed to the Goddard-Townsend school of cabinet-makers.

R. K. Klapmeier of Saint Paul, a graduate of Macalester College with a major in art history, is a private collector and dealer in Eighteenth Century American decorative and folk arts. He has lectured extensively to private groups on both the decorative arts and American furniture.

fine art, the furniture collector is concerned above all with quality, judging each piece on the individual merits of the object itself.

With simple preventive care the Eighteenth Century furniture in use today is likely to remain in use. As an organic material wood requires a controlled environment of proper temperature, humidity and dryness. It swells under moist, humid conditions and contracts when it dries.

Excess humidity causes wood to warp, veneers to loosen and drawers to swell and stick. An air conditioning unit will reduce the extremes of humidity changes and keep temperature levels even. Conditions of extreme dryness can cause wood to split and buckle. Installation of humidifiers in each room or a central humidifying system will reduce these dangers.

Dust on furniture surfaces in combination with high humidity causes an acid reaction which can affect the finish. Dusting on a regular basis or the installation of an electrostatic air cleaner will forestall this problem.

Avoid placing fine furniture where it will come into direct contact with the sun's rays. Matching consoles or tables should be rotated to avoid color bleaching. Turn dining room tables several times a year and put the table leaves in place every few months. Open folding tables to expose the inner surfaces to the light.

Judicious waxing with a good quality wax (Partridge's Antiquax, Goddard's or Butcher's paste wax are recommended) will protect the surfaces from dust and humidity. Avoid "one-step" liquid commercial products as well as aerosol dusting compounds. ■



The table reduced to its simplest form, this American Shaker candlestand dates c. 1820 and illustrates American country cabinetry at its best.



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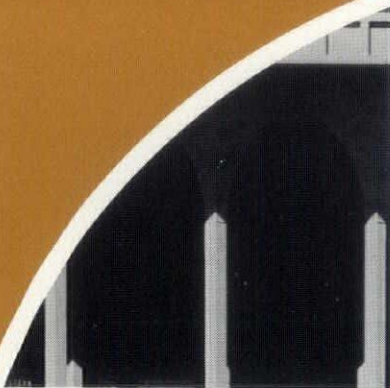
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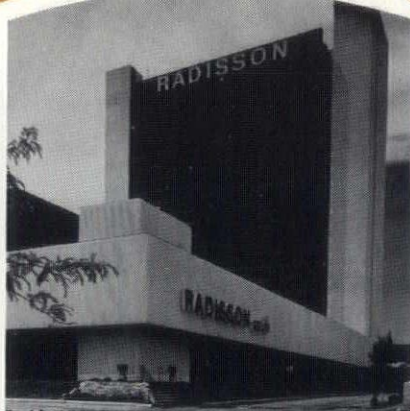
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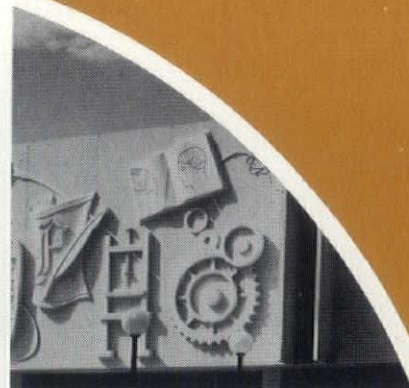
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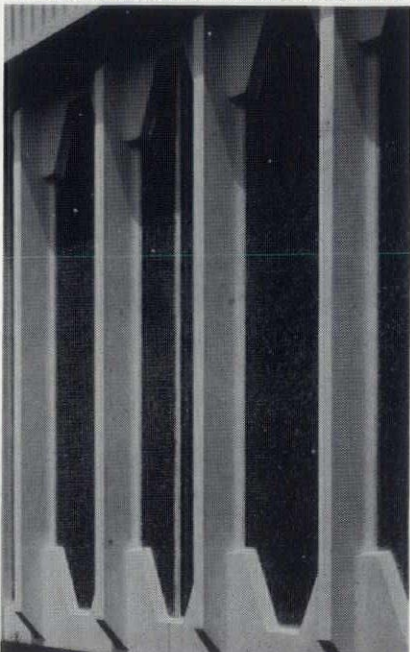
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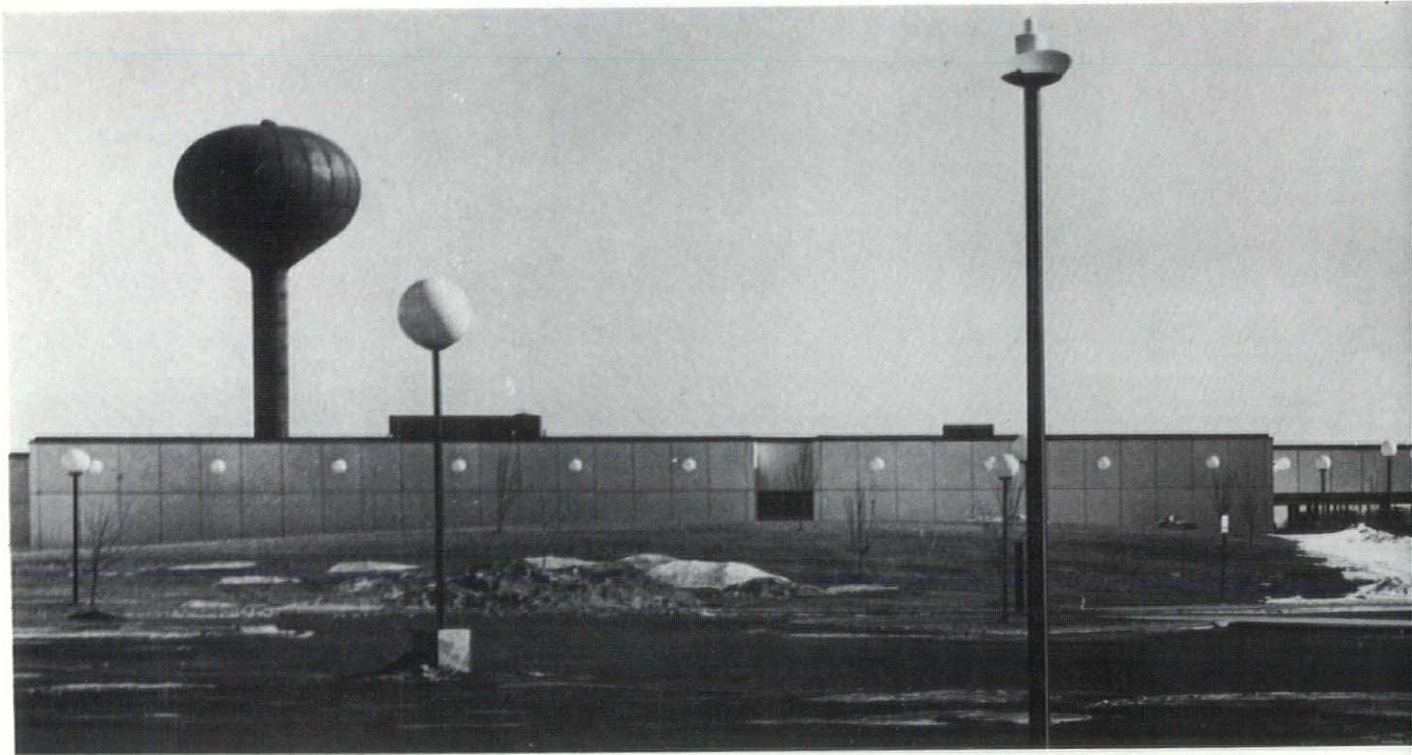
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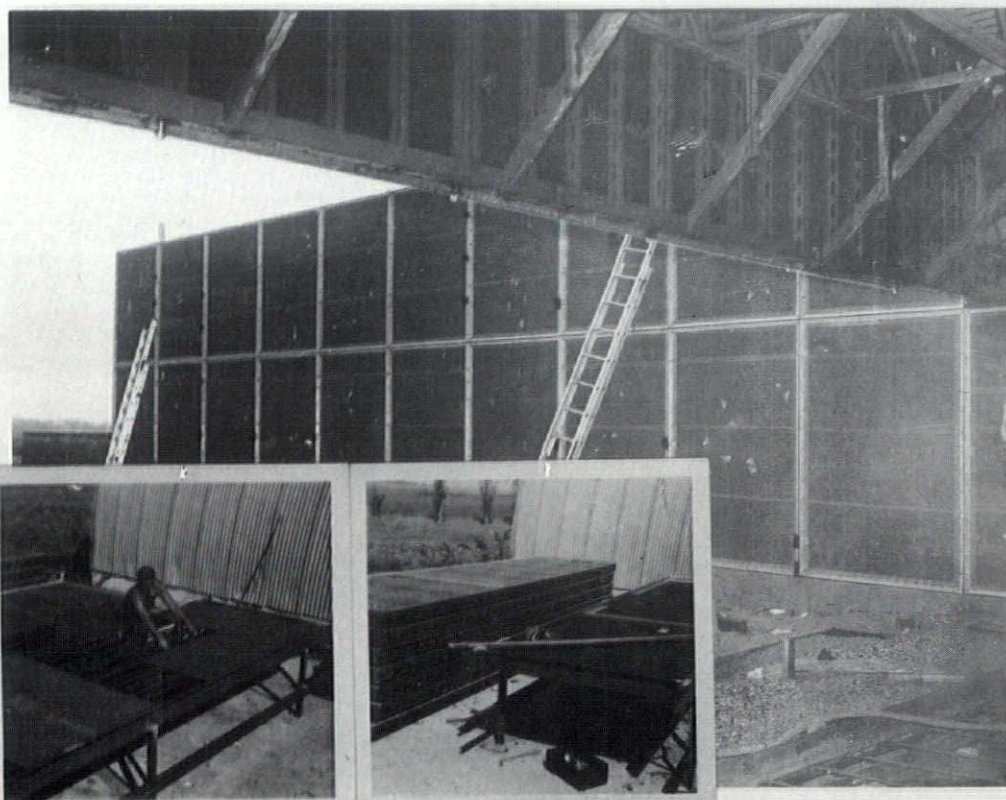
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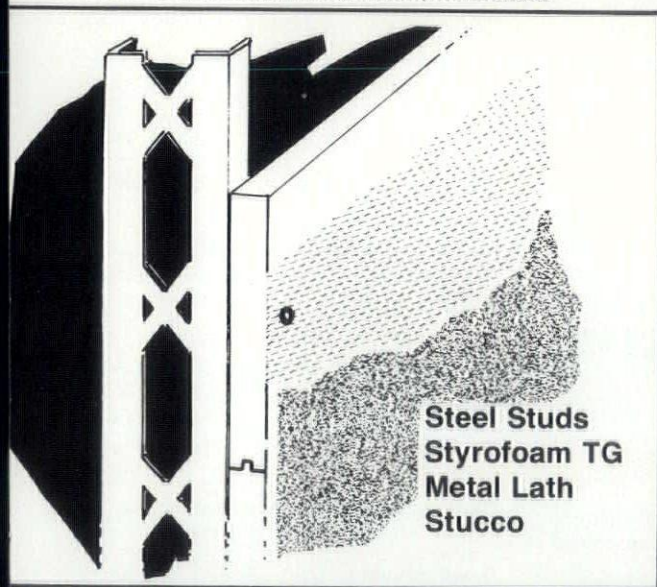


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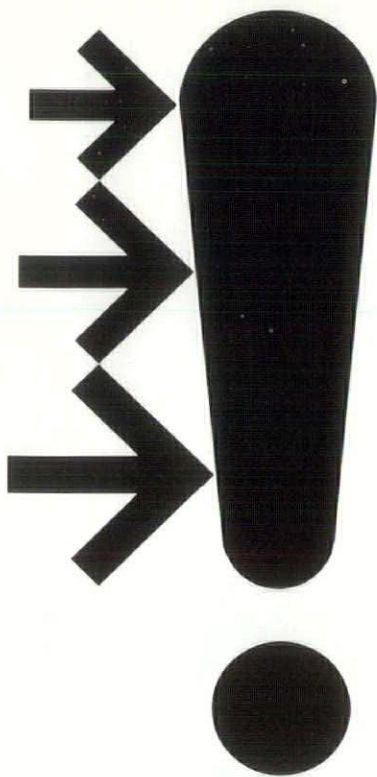
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A convention is a convention when all architects get together to talk over common concerns, common objectives, common hopes and visions.

As environmental designers, the ecological crisis and its implications with regard to construction materials and methods, energy uses, mass transit, etc., are foremost among our concerns.

The architects of today are more than the traditional architects of the past. The design professions are indeed in a position of great responsibility and therefore great leadership. By meeting in convention we will again redefine our objectives and with vigor and enthusiasm direct our work to the environmental setting it is to serve.

Saul C. Smiley
President, Minnesota Society of Architects

Tentative Program

November 28 - 30, 1973

The 1973 convention will feature the Architect as Environmental Designer.

The major issues to be discussed are Energy Resources and their Implications to the Design of Buildings; Land Use; the Environmental Impact of Buildings; the Implications of Limited Space, Increased Density and Confinement upon Human Behavior.

NOVEMBER 28 — Afternoon

THE IMPLICATIONS OF DIMINISHING RESOURCES TO THE DESIGN PROFESSION

Richard Stein, FAIA — New York City Architect.

William Mahlum — St. Paul Attorney; representing CAPUR - environmentalist, consumer activist.

Evening

SPECIAL GUEST NIGHT

Educational Products Exhibit — 146 Exhibitors. Built Environment Film Festival. CDC Workshop.

NOVEMBER 29 — Morning

ENVIRONMENTAL IMPACT STATEMENTS AND THE DESIGN PROFESSIONS

Grant Merritt — Director of Minnesota Pollution Control Agency.

Ted Shields — Director of Environment, Minnesota Association of Commerce and Industry.

Gerald Christenson — Director of State Planning Agency.

Luncheon —

Ian McHarg — Dean, School of Landscape Architecture, University of Pennsylvania.

Afternoon

LIMITED SPACE AVAILABLE

Implications of Increased Density Upon Human Behavior.

Nat Owings, FAIA — San Francisco, Chairman, Skidmore, Owings and Merrill.

Dr. Chas. La Pinta — Medical Director, N.A.S.A. Manned Spacecraft Center.

Dr. Lee Rainwater — Sociologist, Harvard University, did research resulting in decision to demolish Pruitt-Igloe, author 'Behind Ghetto Walls.'

Evening

TOWARD BECOMING A STRONGER VOICE

Annual Meeting.

NOVEMBER 30 — Morning

HOW TO MAKE BETTER USE OF YOUR TIME

WORKSHOP — **Prof. V. Van der Brink**

Luncheon —

Paul Rudolph, FAIA — Architect, Former Chairman, School of Architecture, Yale.

Afternoon

LIMITED QUANTITY AVAILABLE: THE IMPACT OF THE FORCES OF DIMINISHING RESOURCES

Dr. John Eberhardt, AIA — Former Dean, University of New York, Buffalo, Director of AIA Research Corp.

Clinton Hewitt — Assistant Vice-president for Planning, University of Minnesota.

David Meeker, FAIA — Assistant Secretary of HUD (highest ranking architect in government).

Robert Depin — Energy Conservation Consultant, Pennsylvania, Power and Light (Sponsored by Producers Council).

Evening

AWARDS DINNER DANCE

Charlie Boone WCCO RADIO — Master of Ceremonies.

Ian L. McHarg

Ian McHarg, speaker at the November 29 luncheon, is a native of Scotland. He was educated at Harvard University and is now chairman of the Department of Landscape Architecture and Regional Planning at the University of Pennsylvania. In 1969 he undertook an ecological study for the Twin Cities Metropolitan region. The following excerpt is from "Prospect," the concluding chapter in his book, "Design with Nature." It is reprinted here by permission.

"Does the process of creation involve the employment of energy and matter in raising levels of order? Matter is not destroyed but order can be reduced; is then destruction better termed reduction—anticreation? Is it accurate and useful to consider the earth as a single superorganism, the oceans and the atmosphere as organic? Do the processes of creation and reduction each exhibit characteristics and can these be subsumed under negentropy and entropy? Are fitness and fitting measures of creation in ecosystems? If form and process are merely aspects of the single phenomenon of being, can there be a concep-

(Continued on page 214)

Paul Rudolph

Paul Rudolph, who will speak Friday noon, November 30, is not one to mince words when casting blame for the devastation of the environment and the subsequent waste of resources.

"The notion of urban design was largely omitted from the educational process and planning substituted. The whole relationship of the new to the old, the small to the large, was not really very clear. It was felt that the planners would take care of the overall environment while the responsibility of the architect was to make individual buildings . . . The planners from a legal and popular point of view have the power now but it is noteworthy that no matter how many two-dimensional maps and reports are made the physical environment does not really improve very much."

Although Rudolph is a nationally known figure he consistently avoids the spokesman role, letting his work speak for him.

An early disciple of Frank Lloyd Wright, Rudolph was once castigated by the premier architect as a prostitute for accepting the position as chairman of the School of Architecture at Yale University, which found him teaching rather than practicing. Appointed in 1957, Rudolph served for seven years before resigning to return to practice. Following his resignation, the controversial designer stated, "I suppose the Yale chairmanship made me a member of the Establishment, being accepted or something. I now understand that I can never belong to these things and that I'll always be attacked as an outsider."

Rudolph made his architectural mark in the South, particularly Florida. Following World War

Richard Stein

"The simplest way to avoid unnecessary energy use in buildings is not to build," says Richard Stein, New York based architect and teacher who will be speaking Wednesday afternoon, November 28.

Stein, somewhat of a cross between Buckminster Fuller and Frank Lloyd Wright, has done intensive research recently into the field of energy utilization and conservation and what the architect can do to help preserve the limited quantity available.

"Even if there were an abundant supply of fuel to be converted," said Stein, "I feel it would be important to question every energy use to see whether the energy was being efficiently provided and used. More than a third of all energy used today results from previous architectural and building decisions." He further believes that our current commitment to fossil fuels for the next three decades demands that shortages be countered by changes in every energy consumption field. He feels we have become a wasteful culture because "it has been profitable to be wasteful."

"Even assuming that all the projections, assumptions and statistical bases are excessively pessimistic, the underlying message requires some decisive shifts in our customary design philosophy. The decisions made by architects and engineers can reduce energy expenditures in our buildings by at least 50% with no penalty to the quality of life in our buildings."

The era of the isolated environment is apparently over. It will become necessary to learn again to live with the natural world outside. Such old, outmoded ideas as opening windows on buildings, lighting that is not central but which can be directed to appropriate areas

(Continued on page 214)

(Continued on page 214)



Stein

and use of the heat of the sun are a few of the methods Stein believes will save our energy.

Stein also advocates a re-examination of the current methods of determining building cost. Not only should current methods of cost estimating be revalued but energy cost, both long and short range, should be a part of the bidding package. What is the value of saving \$250,000 in elaborate construction when the building will lose that amount annually through energy loss?

"The architectural mission can no longer be looked at as one that thoughtlessly fills every maximum desire, nor can it be considered as purely responsive to the economic pressures that lead to building for profit," Stein pointed out "It must be looked at as an activity that consumes energy and material, a consumption that further reduces the irreplaceable reservoir of resources.

"Based simply on the anticipated cost of maintaining the building, it is in the best interest of the client as well as in the best interest of the public for us to redefine our criteria, becoming more specific and more exacting in the performance we require from our buildings themselves . . . The first immediate adjustment in design is to conserve energy by designing the building as an object affected by sun, wind, rain, snow, lightness and darkness, determining when and where each is to be admitted or excluded.

"Energy use is a means to accomplish certain tasks which are related to human survival and comfort. It cannot be considered as having an existence apart from what it permits us to do . . ."

(Quotations by permission of Architectural Forum.) ■

Rudolph

II and the completion of his master's work at Harvard his experience in ship building was transferred to the private sector, producing such fine buildings as the Sarasota Senior High School and the Eugene Knott residence, Yankeetown, Fla., to name several. Although he originally formed a partnership with Ralph Twitchell, Rudolph soon struck out on his own, saying, "Let's face it, architects were never meant to design together . . . Architecture is a personal effort and the fewer people coming between you and your work the better . . . If an architect cares

enough and practices architecture as an art, then he must initiate design — he must create rather than make judgments."

One resource Rudolph feels should not be limited is the resource of imagination. Discussing his numerous high school and college designs he stated, "A school building that does not provide for its students conceptual images unknown to the human majority sells the future society short of its environmental aspirations."

(Quotations are from *The Architecture of Paul Rudolph*, introduction by Sybil Moholy-Nagy, published in 1970 by Praeger Publishers, Inc., reprinted with permission.) ■

McHarg

tion of intrinsic form? And finally, are health and pathology the most synoptic criteria for creation and reduction, fitting and unfitting? If so, we have a model. Moreover, we have criteria. The first is negentropy, the increase in levels of order.

The second is apperception, the capacity to transmute energy into information and thence to meaning—and to respond to this. The third is symbiosis, the cooperative arrangement that permits increase in levels of order and requires apperception. The fourth is fitness and fitting—the selection of a fit environment and the adaptation of that environment, and of the organism, to accomplish a better fitting. The final criterion is the presence of health or pathology—the evidence of creative fitting, requiring negentropy, apperception and symbiosis.

This model contains the possibility of an inventory of all ecosystems to determine their relative creativity in the biosphere. This same conception can be applied to human processes. Agriculture and forestry merely exploit the negentropic product of photosynthesis; hydroelectric power utilizes the negentropy provided by the hydrologic cycle, but certain manufacturing—the transmutation of iron ore, limestone and coal into computers—constitutes an increase in the levels of order and can thus be considered negentropic. All living processes require perception, but education in general and art and science in particular are the most developed human expressions of this. Commerce, politics, law and government are mainly symbiotic while architecture, landscape architecture, engineering and construction are adaptive processes engaged in fitting of organisms and environment.

This suggests an ecological value system in which the cur-

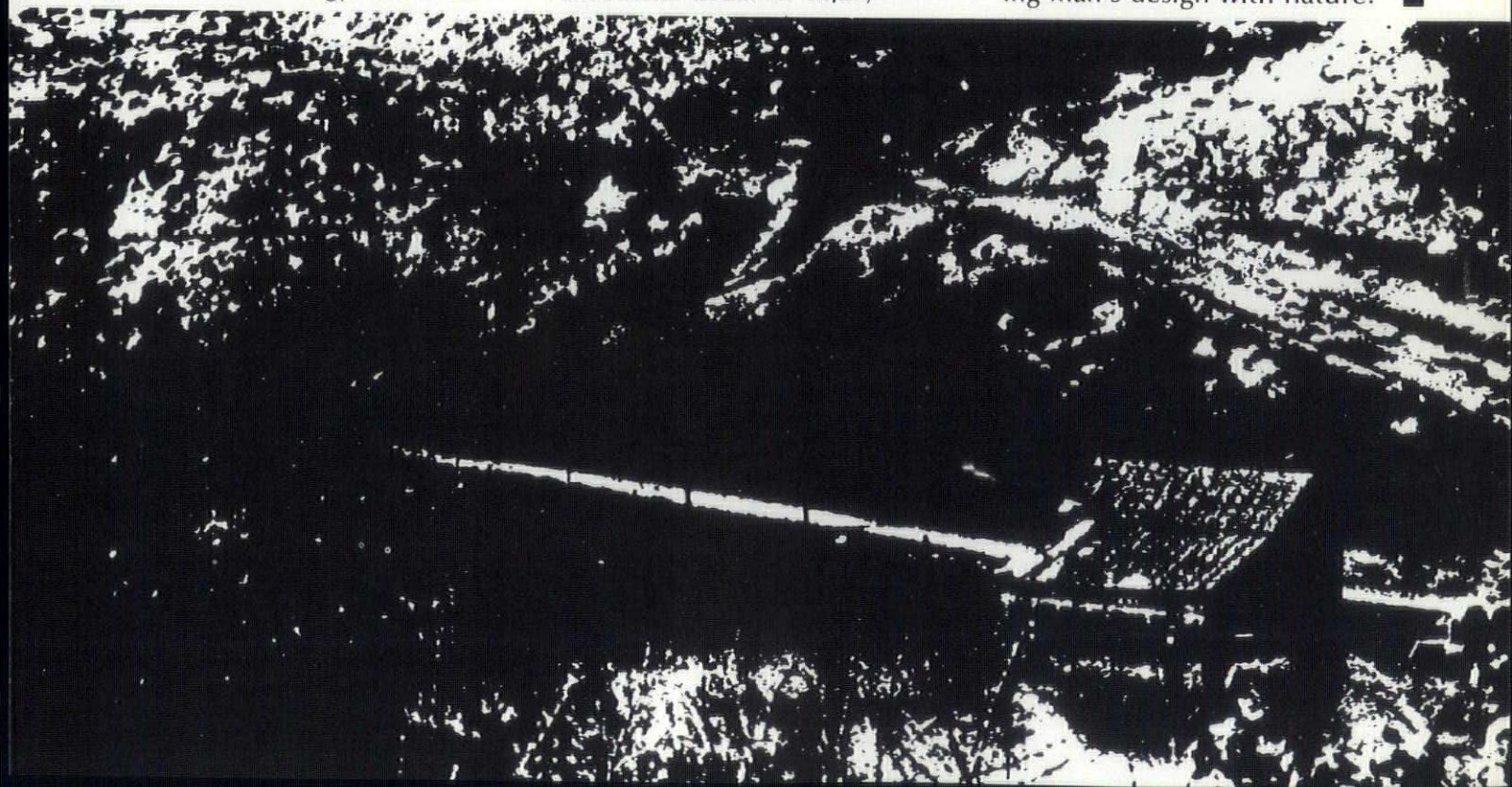
rency is energy. There is an inventory of matter, life forms, apperceptive powers, roles, fitness, adaptations, symbioses and genetic potential. Consumption optimally involves the employment of energy in the raising of levels of matter. Matter is not consumed but merely cycled. When not employed in the cycle, it assumes the role of a reserve. Given a uniform source of energy, the period of entrapment is essential for the increase in creativity—coal represents long-term entrapment, fresh vegetables only short-term. Moreover, the entrapped energy must be transferred through successive levels of organisms, each level sustaining higher levels. The biosphere does not consist of a pyramid of organisms but of ecosystems in which many different creatures coexist in interdependence, each with its own process, apperception, roles, fitness, adaptations and symbioses. This system has an energy source as

its currency, an inventory of matter, life forms and ecosystems, and reserves in the inventory—the cycles of matter, genetic and cultural potential. Energy is degraded but is replaced; some energy is arrested on its path to entropy and this increases the inventory and enhances the creative capacity of the biosphere . . ."

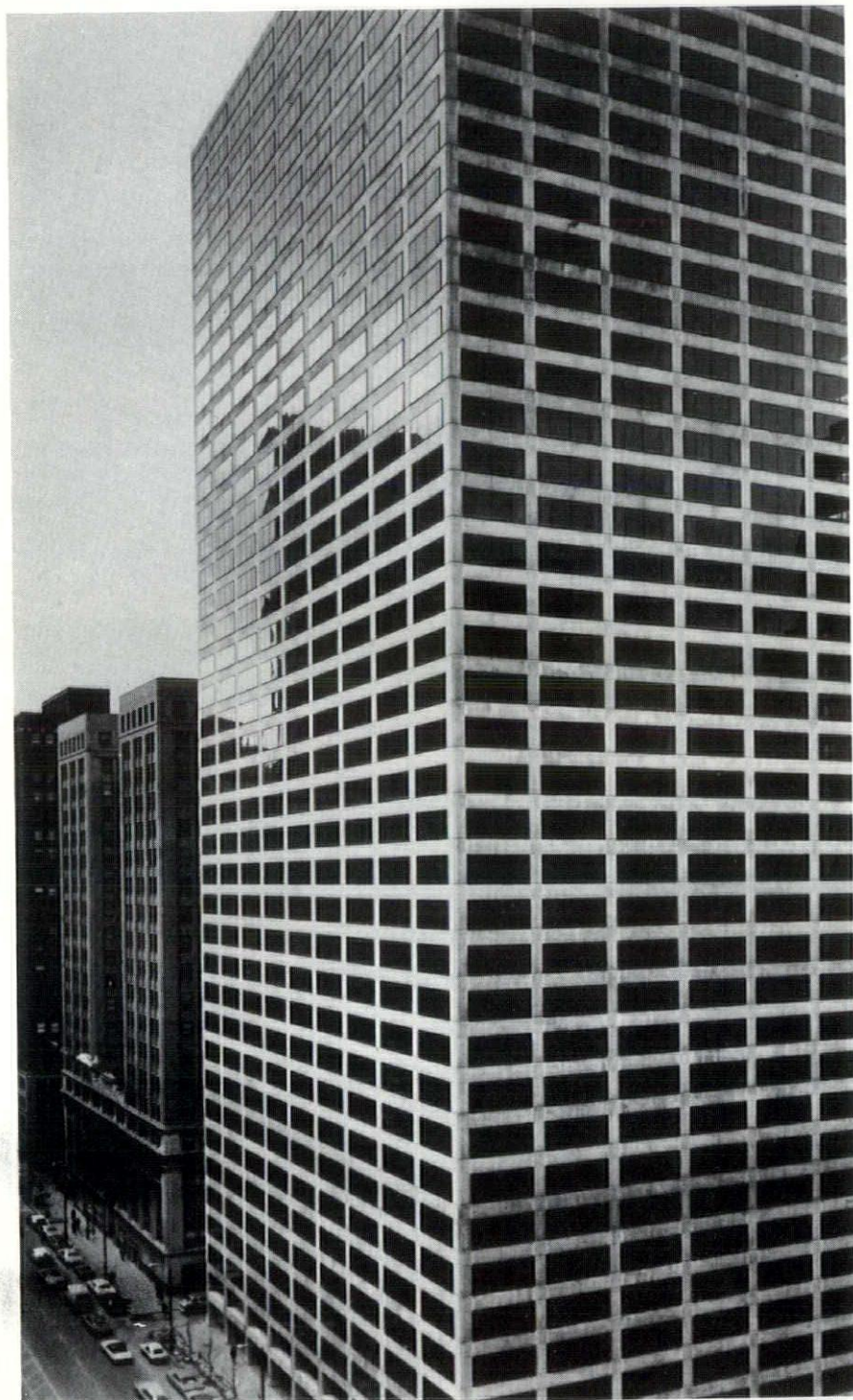
"The benefits of the ecological view seem patent to me, but equally clear are the profound changes which espousal of this view will effect. The Judeo-Christian creation story must be seen as an allegory; dominion and subjugation must be expunged as the biblical injunction of man's relation to nature. In values it is a great advance from "I-it" to "I-Thou," but "we" seems a more appropriate description for ecological relationships. The economic value system must be expanded into a relative system encompassing all biophysical processes and human aspirations. Law must reflect that death or injury

through flood, drought, avalanche, mudslide or earthquake can result from human negligence or malice and thus should fall within the jurisdiction of the courts. Medicine must be more concerned with creating the environment of health than with therapy alone. Industry and commerce must expand their accounting to include all costs and benefits. But it is in education that the greatest benefits lie. Here separatism rules, yet integration is the quest. This ecology offers: the science of the relations of organism and the environment, integrative of the sciences, humanities and the arts—a context for studies of man and the environment.

In the quest for survival, success and fulfillment, the ecological view offers an invaluable insight. It shows the way for the man who would be the enzyme of the biosphere—its steward, enhancing the creative fit of man-environment, realizing man's design with nature." ■



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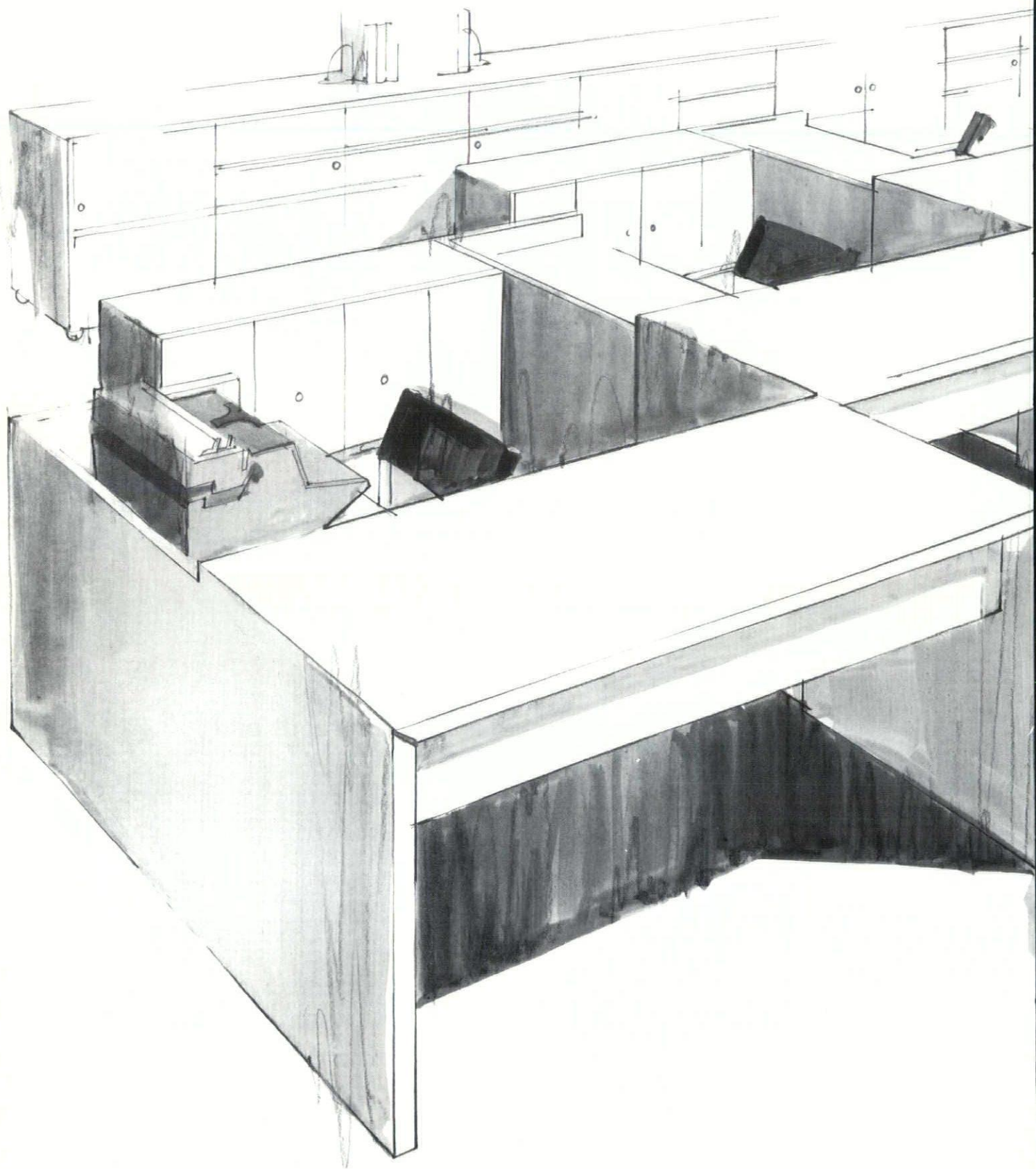
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Ouroboros

Alternative Low-impact Technologies in Human Habitat

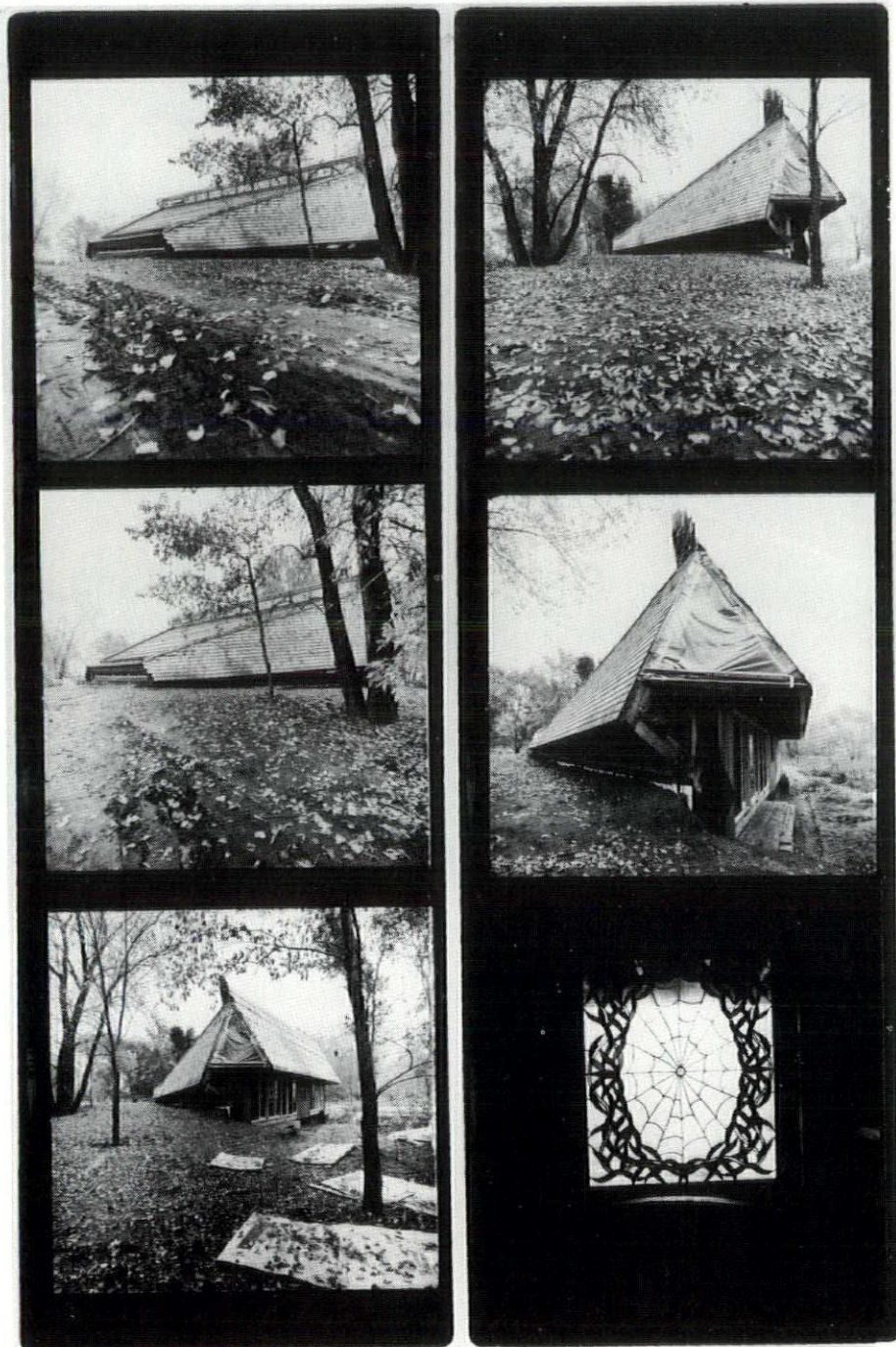
During the past year 150 students in the Environmental Design class of the School of Architecture and Landscape Architecture of the University of Minnesota have been studying architecture's role in energy conservation through the research, design and construction of a full-scale, working experimental dwelling.

The 2000-square-foot, two-level house incorporates energy conserving design features such as increased wall and window insulation, solar water and space heating, a windmill to generate electricity and sewage and water recycling.

The Environmental Design class project is named Ouroboros after the mythical dragon that survived by consuming its own tail — a symbol for energy conservation in a finite world. The students first studied energy conservation, alternative low-impact energy systems and construction techniques. With this research as a design program, they then participated in a design competition. The final plans for the house are a synthesis of many ideas submitted in the competition.

The house is a trapezoid in plan with the largest wall facing south, thereby maximizing collection of the sun's energy in the windows and solar flat plate collector. The side walls taper back to a small northern wall to reduce heat gain in summer and heat loss in winter.

Earth removed for the basement is pushed back against the north, west, and east sides to further reduce exposure. Another feature, a sod roof, is designed to help insulate the house during winter and cool it during summer (the latter through evaporation of water). A small greenhouse attached to the south wall, besides adding to the unusual appearance of



Photos by John Weidt

the house, will also provide food for the residents.

Inside the structure only the bathroom is enclosed by walls. The dining and living areas are separated by moveable panels. A loft provides space for sleeping.

Energy conserving mechanical components of the house, which were designed in part by university engineering students, will include solar water and space heating systems. A unique wind generator that is being built next to the house is theoretically expected to produce all of the power required. Designed and patented by one of the students, Allan Sondak, the wind generator will use a two-blade high-speed propeller 15 feet in diameter. Excess energy produced will be first stored in long-lived batteries in the basement with resistance heating coils in the hot water storage tank soaking up any additional excess energy produced.

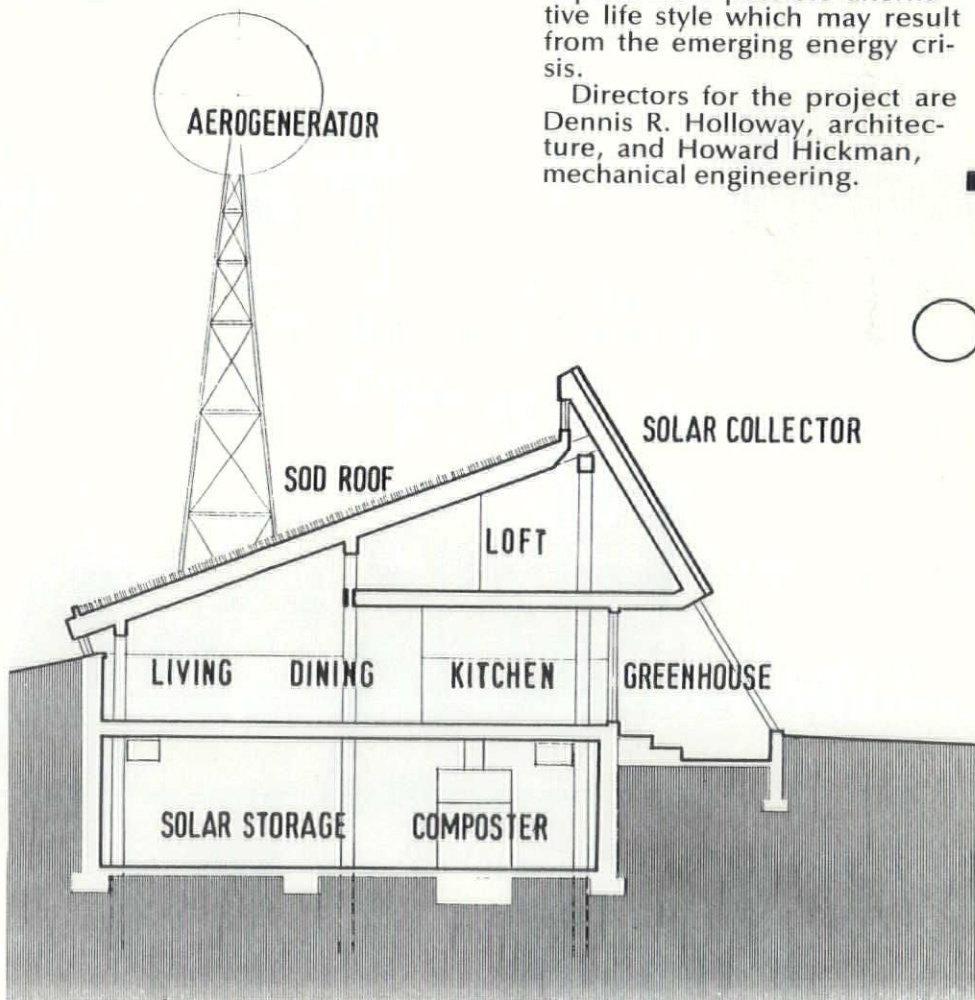
The house also has standard electrical service but it is hoped that use of this service can be minimized or eliminated. Though it stresses energy conservation, Project Ouroboros also seeks to conserve water and recycle wastes. Thus the house includes a composting toilet which uses bacteria to break wastes down into fertilizer for use in gardens and the greenhouse.

Construction of the house at the University Research Station at Rosemount began last spring and is expected to be completed by this winter. Money and materials have been donated by governmental agencies and a variety of businesses. The architecture students have provided all of the labor. Once the basic construction is completed, intensive research will determine the success of the energy conservation systems and ideas

used in the project. The students will then have the opportunity to refine them or try new ones.

Project Ouroboros recognizes that architecture exerts a major influence on energy use in the United States. The project serves not only the student in an action-oriented learning experience but also the public-at-large, which will be able to experience a possible alternative life style which may result from the emerging energy crisis.

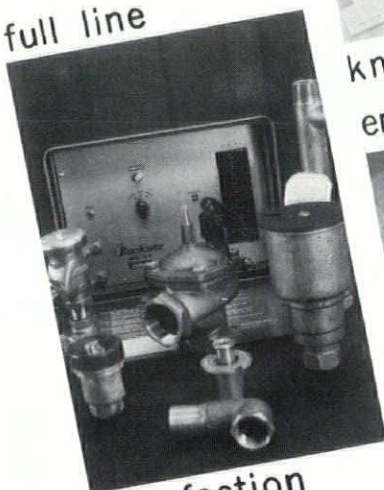
Directors for the project are Dennis R. Holloway, architecture, and Howard Hickman, mechanical engineering.



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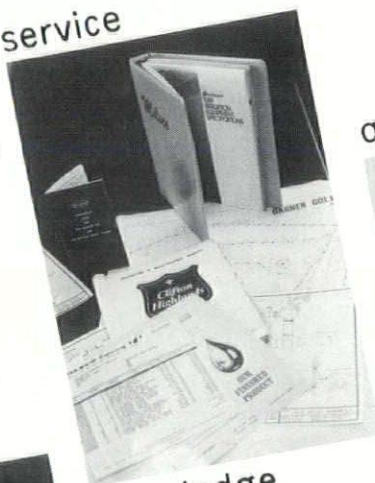
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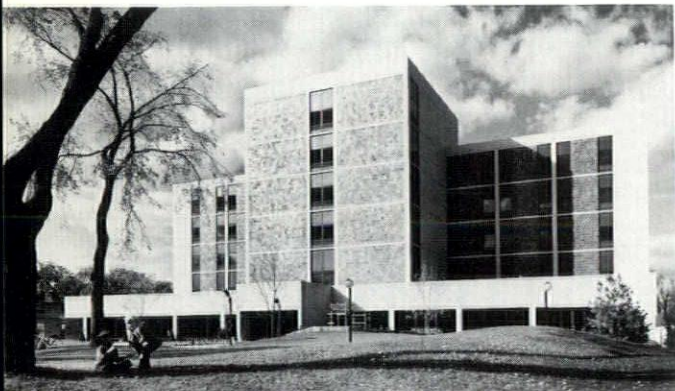
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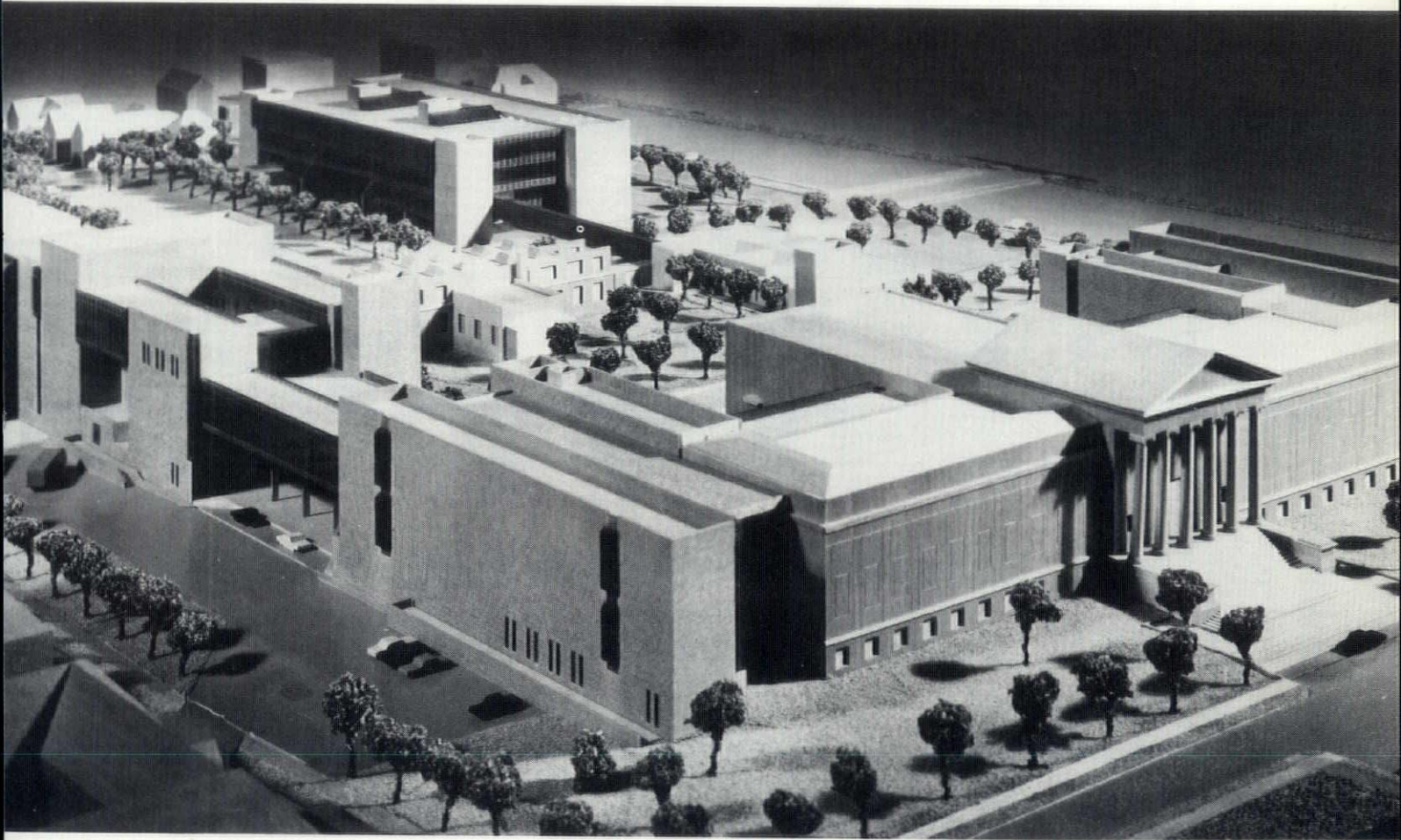
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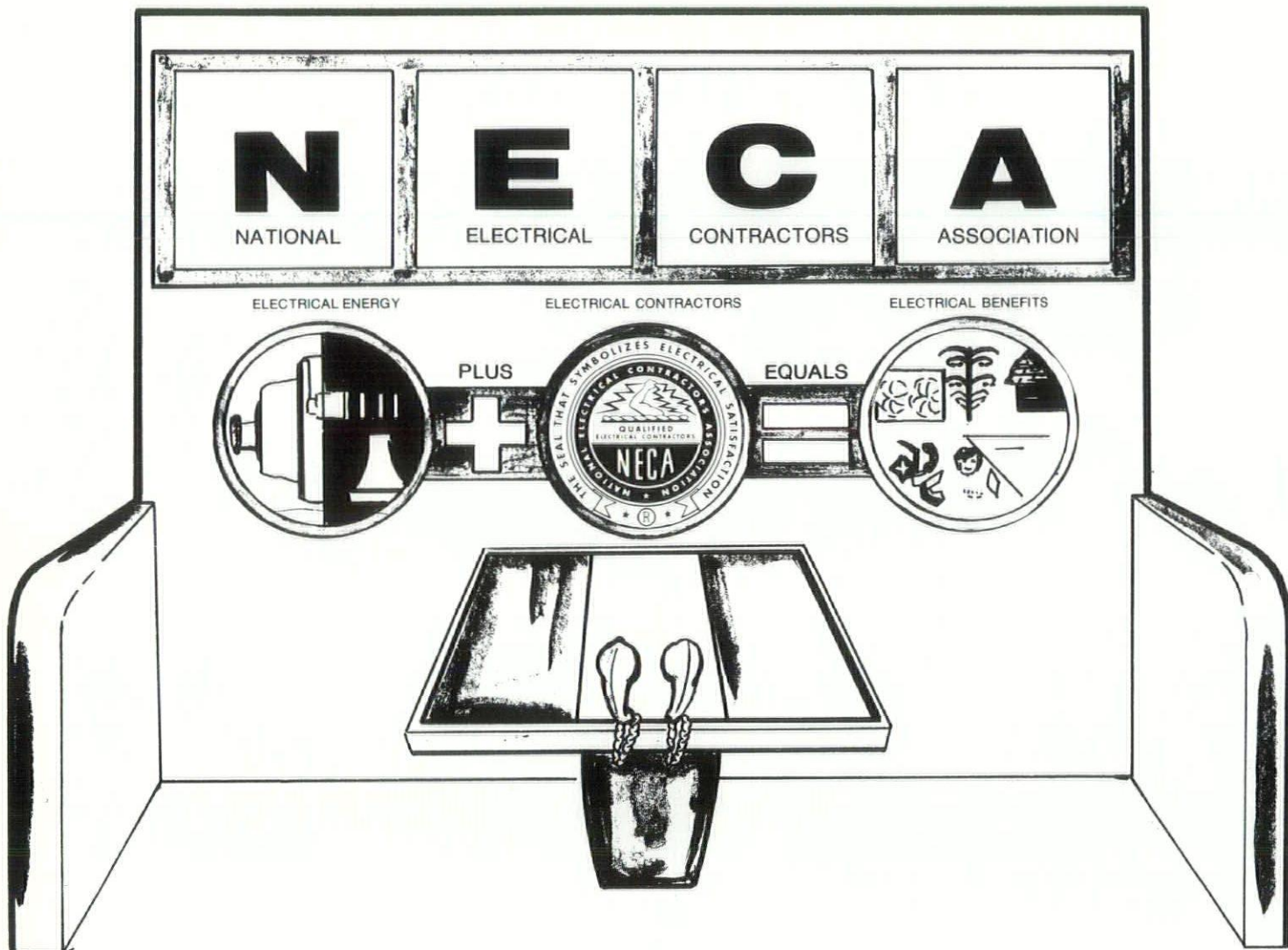
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The guideline would be that of preserving and multiplying choices for people. To the old statement "to govern is to choose" we may add that to govern well is to provide people with the opportunity to choose.

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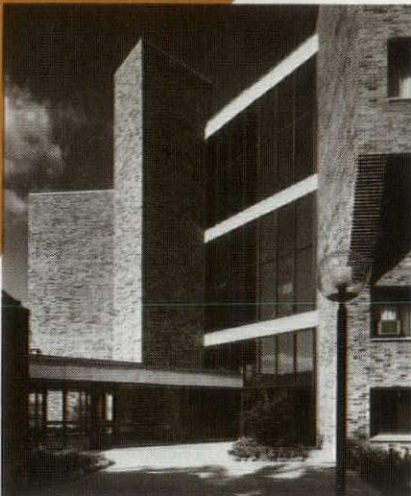


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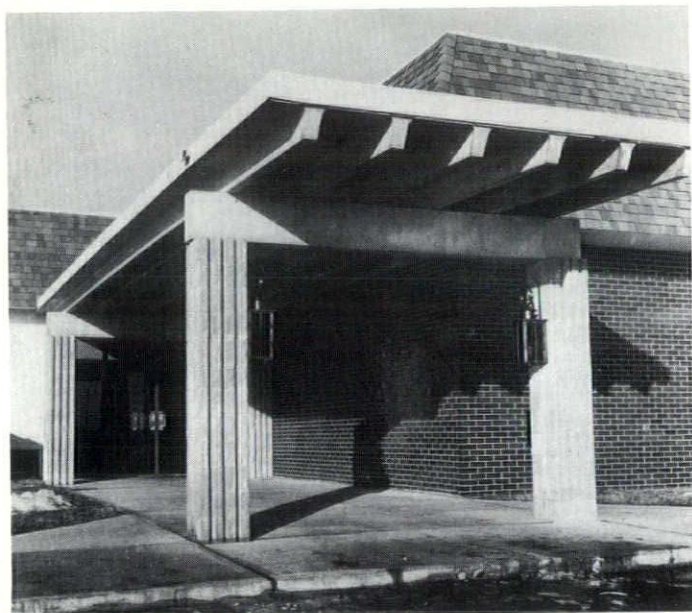
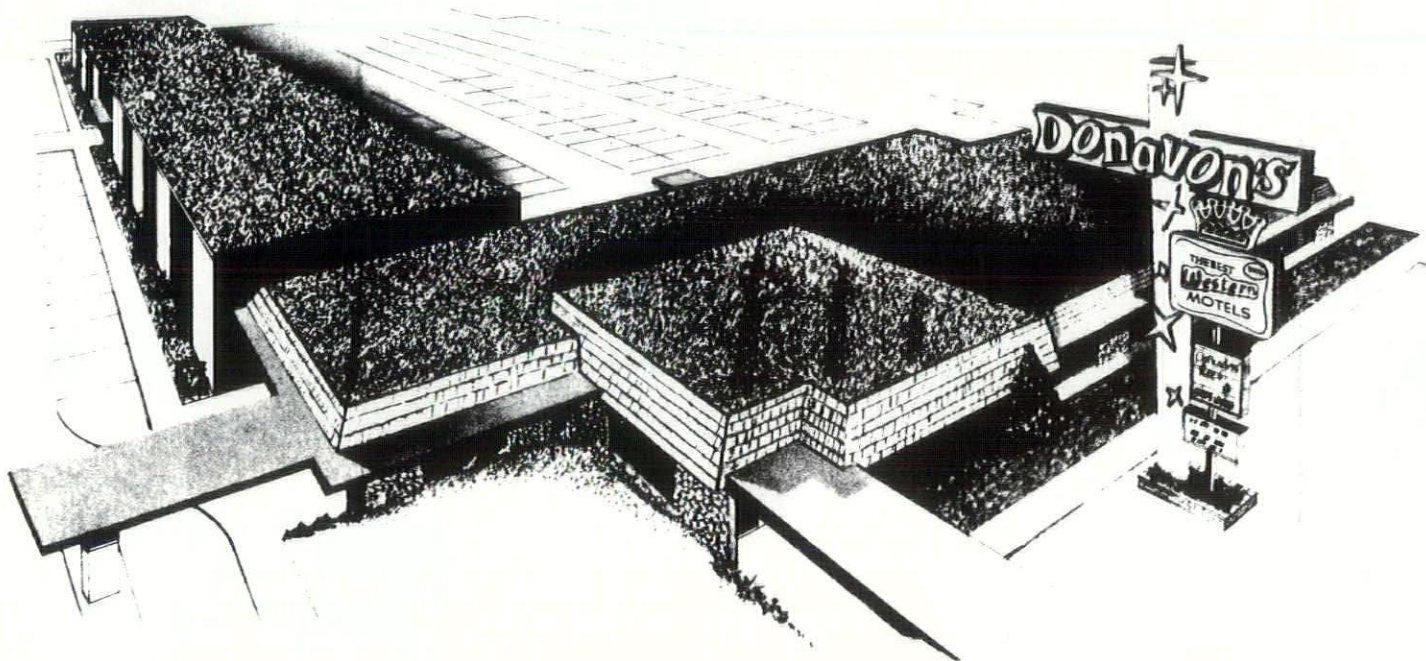
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Minnesota Response

(Continued from page 199)

through improved construction and insulation standards cannot be expected to alleviate the anticipated shortages for the winter of '73-74, it will ultimately do much to ensure greater utilization of available oil and gas supplies. Like many conservation measures which will have a long range effect, the decisions must be made now.

What Needs to Be Done?

Although the actions of public officials in Minnesota are designed to respond to the current emergency, the energy crisis will be with us for some time to come.

Knowledgeable observers of the situation conclude that neither increased imports, nor renewed efforts to identify new reserves and increase refining capacity, nor efforts to significantly curtail demand, will individually resolve the situation. Rather all of these actions are essential.

Even so, difficult decisions lie ahead. Adjustments will have to be made. Farmers unable to obtain adequate supplies of propane must take alternative measures. Either other forms for artificial drying of crops must be utilized or crops must be left in the field to dry. If schools are forced to close adjustments may be necessary in teacher contracts and school aid formulas. The current emergency may place additional pressures on public officials to relax environmental standards in order to allow for the use of "dirtier" fuels. Transportation uses almost 25% of the energy consumed so the anticipated shortage of gasoline in the summer of '74 may stimulate decisions on mass transit. **At the very least the outlook is for changes in our way of life. Conceivably our traditional growth-oriented philosophy will be subject to question.**

At present attention is focused on the current crisis but public and private attention must be addressed to the long range outlook and its consequences.

It has been said that "there are no simple solutions, only intelligent choices." **There are no simple solutions to the energy crisis; the challenge is to make intelligent choices.**

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Historic Preservation

(Continued from page 205)

the decision and show how the building can be turned into a viable, economic asset, rallying public opinion in favor of preservation through newspaper articles and the other media and testifying at public hearings in behalf of the structure, as was done recently for the Winona County Courthouse.

Obviously the individual architect cannot do all of these things himself. Much must be accomplished by concerted action of the profession. The Historic Resources Committee of the Minnesota Society of Architects is the vehicle in this state through which architects have been doing a great deal of this work. The committee serves as architectural adviser to the Minnesota Historical Society and to other organizations and individuals seeking such assistance. It has successfully nominated a large number of architecturally significant buildings and districts to the National Register. It actively conducts lectures and tours on Minnesota's historic buildings. It has, together with the University of Minnesota Manuscripts Department, established the Northwest Architectural Archives, the first of its kind in the country. It actively supports seminars such as the Minnesota Heritage Encounter. Its members serve in preservation oriented organizations such as the Minneapolis Heritage Preservation Commission, the Historic Preservation Sub-committee of Minneapolis's Committee on Urban Environment (CUE), the Minnesota Historical Society's Historic Sites Review Board and the Architectural Advisory Panel for the Minnesota State Arts Council. The committee has been in the forefront of successful action to save some of Minnesota's most important and endangered landmarks, including the Merchants



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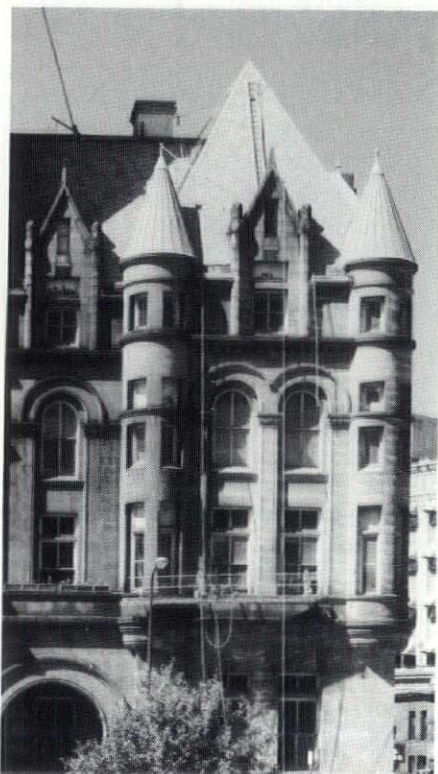
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National Bank and the Richard-sonesque Winona County Courthouse, both in Winona. It was less successful in its efforts to save Frank Lloyd Wright's Little-Stevenson House in Deep-haven.

Increasingly, however, more persons are seeking advice on ways and means to rehabilitate or restore buildings. More communities are asking for advice on where and how to seek funding and/or legal advice pertaining to preservation. More local and national magazines are seeking material describing preservation in Minnesota. More organizations are asking for lecturers or tour guides who can describe Minnesota's architectural heritage. More significant buildings are threatened. The Minnesota architect will give guidance and leadership in the conservation of our architectural heritage. ■

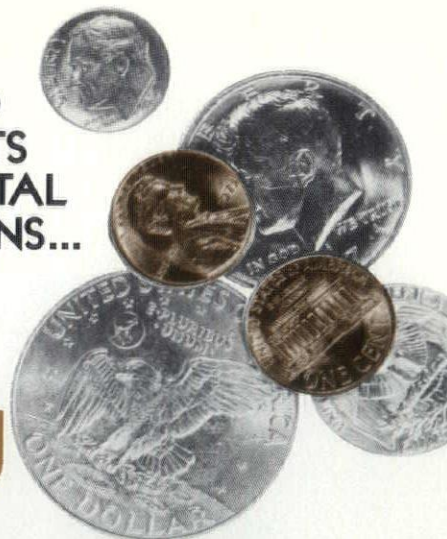


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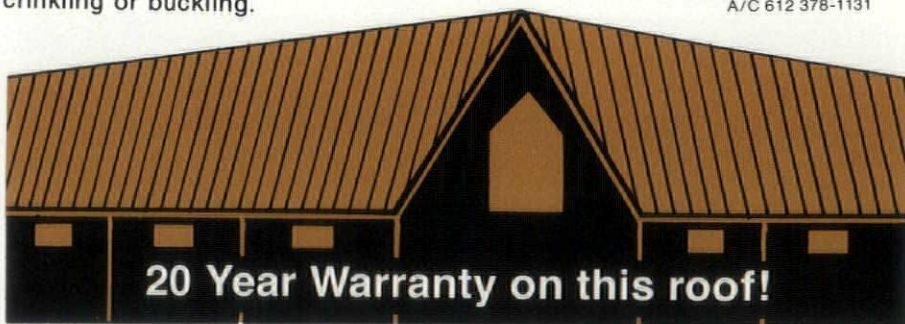
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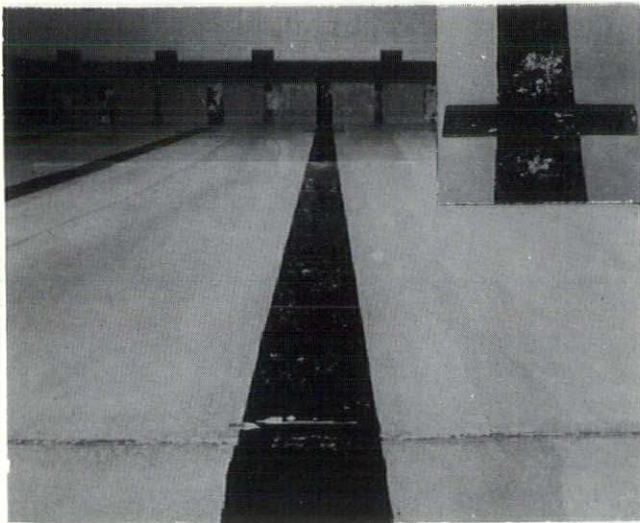
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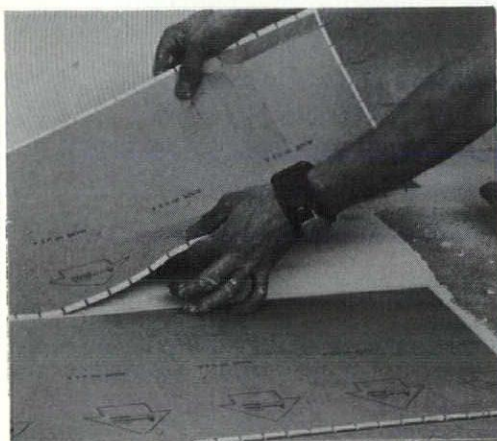
Before — pool surface is cracking and peeling (see inset). Pool needs daily cleaning and filtering system maintenance once a week.

CERAMIC TILE ELIMINATES HIGH COSTS OF SWIMMING POOL MAINTENANCE.

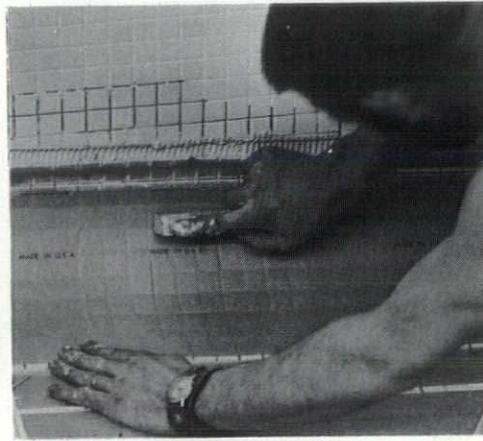
That's what officials at Park Senior High School, Cottage Grove, Minnesota, concluded when they totaled the cost of maintaining their painted pool from 1966 to 1972.

The maintenance and contracted work included sandblasting, painting, cleaning paint chips from the filtering system, daily pool cleaning, etc.

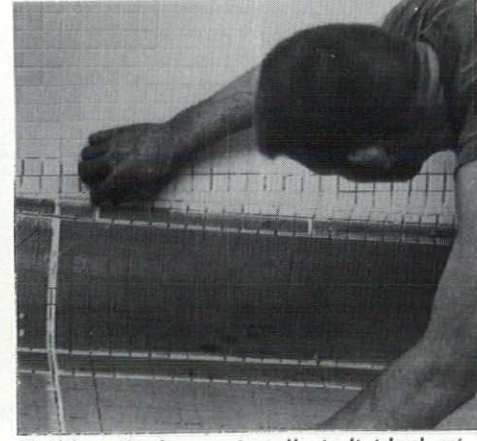
Officials decided to cut costs with Ceramic Tile early this spring. Now with work completed, they have a beautiful pool that will last indefinitely — *with minimum maintenance.*



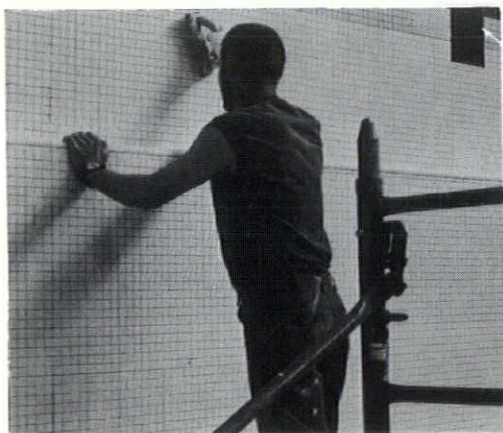
After sandblasting paint and cleaning surface, Ceramic Tiling begins.



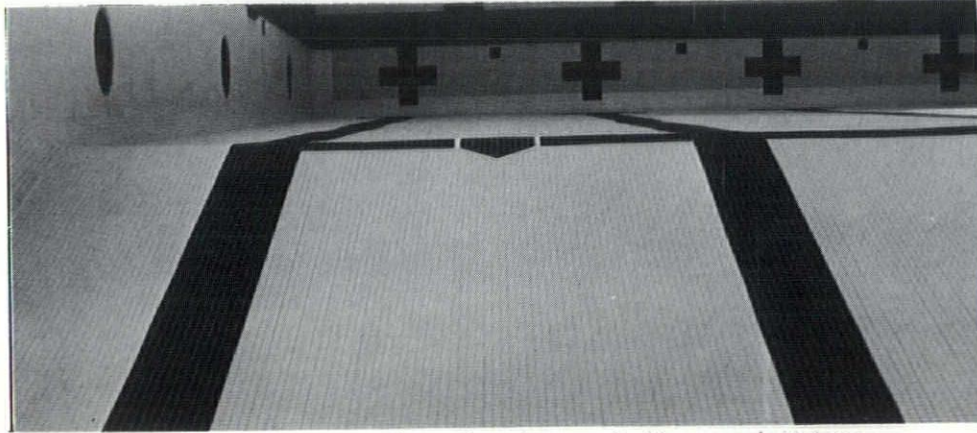
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Guildset Craftsman installs individual mitered Tiles for uniform finish.



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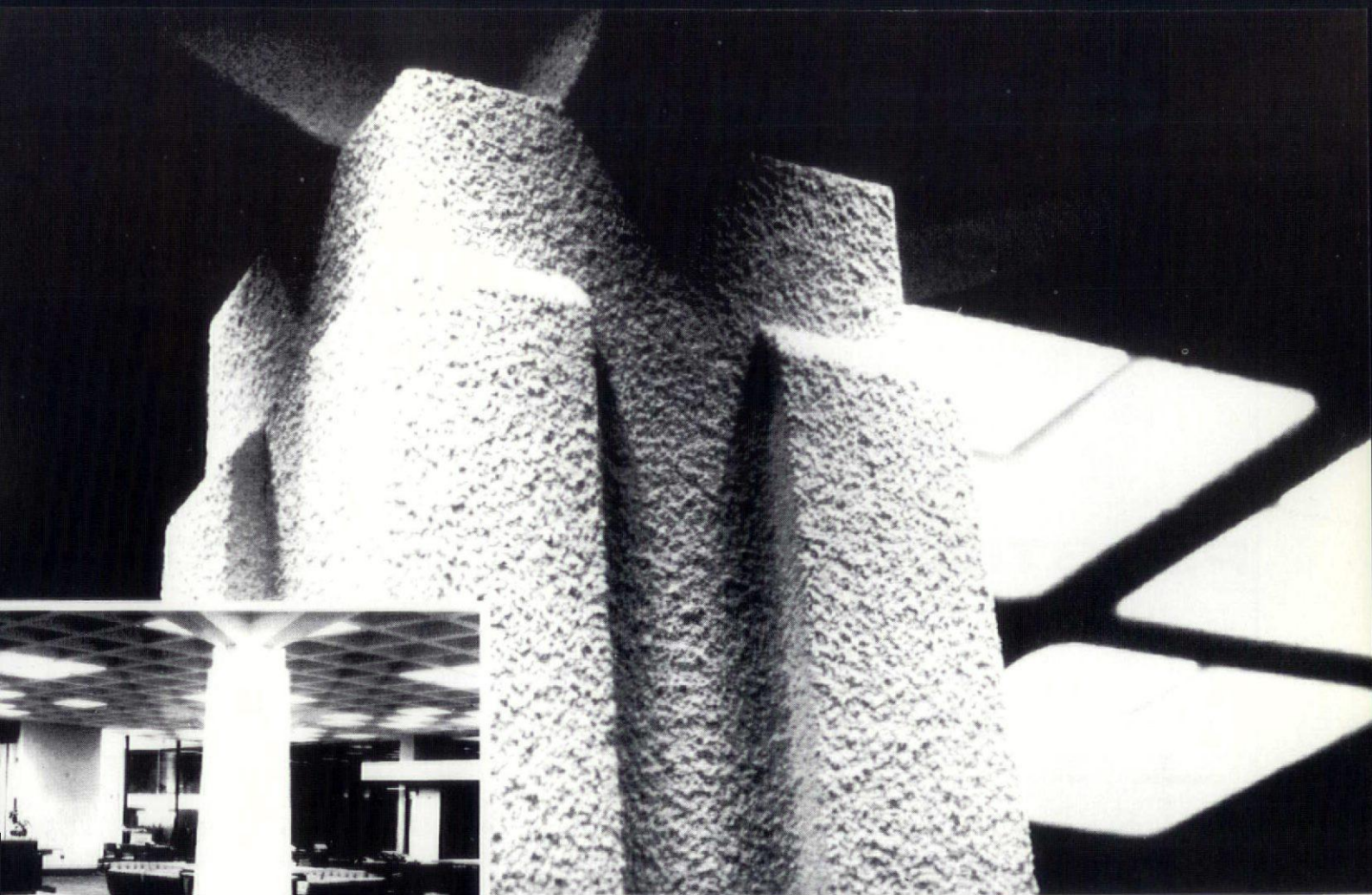
After — pool has durable Ceramic Tile surface that won't chip or peel. Maintenance costs are cut and pool will look new for years.

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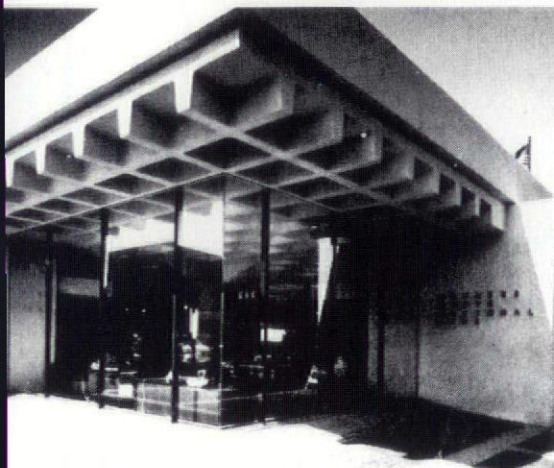
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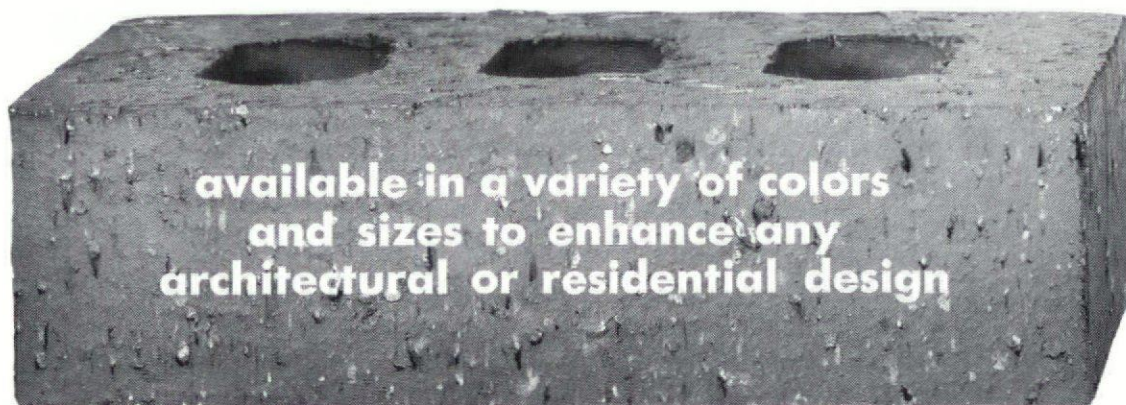
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Northwest Architectural Archives

The Northwest Architectural Archives (NWAA) has been established at the University of Minnesota as a joint project of the University Libraries and the Minnesota Society of Architects. The archives will, for the first time, systematically collect the documents generated by past and contemporary architects operating in a region extending from Wisconsin to the Dakotas and Montana.

The archives are an elaboration of the University Libraries' fledgling program in architectural history begun with the acquisition of the Leroy S. Bufington papers in the 1930's. The current project is the first attempt by any institution in this area to methodically collect and preserve architects' records such as drawings, renderings, specifications, business correspondence, financial records and photographs reflecting the span of their careers.

Through agreement with the Minnesota Historical Society, the Minneapolis Institute of Arts and the Walker Art Center, the NWAA has been designated the chief collecting agency for these historical records in the Twin Cities.

The University Libraries and the Minnesota Society of Architects, in widening the scope of the program, envision it as serving a multitude of purposes both inside and outside the university. By developing into a comprehensive collection, the archives will become a convenient study center for students of architecture, architects and regional historians. The archives will give support to the myriad of historic preservation and restoration projects which are springing up throughout the region. The archives have already furnished information for three major restoration projects, one of them outside the State of Minnesota.

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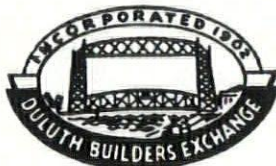


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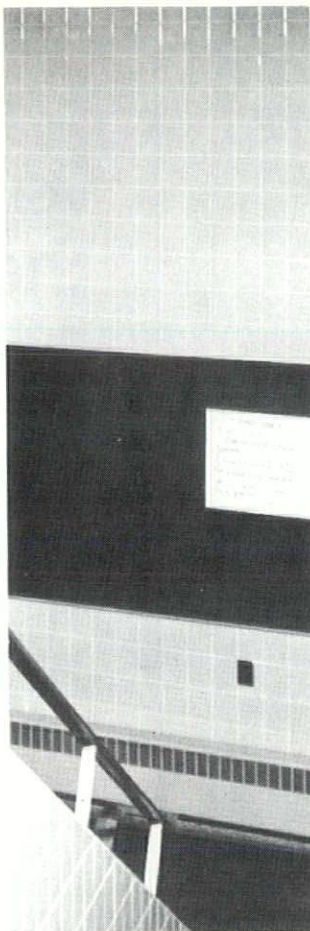
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In order for the NWAA to be fully and completely successful, it needs the active co-operation of all persons who are engaged in architecture, its allied fields and in historic preservation. The NWAA invites the active interest, support and participation of all segments of the community in ensuring that historically valuable records are not wantonly or accidentally destroyed by allowing them to remain in unsafe quarters.

Collections already on file include the Buffington papers (the West Hotel and Boston Block in Minneapolis) and the Harvey Ellis collection of more than 100 renderings from the Purcell and Elmslie collection. There is also a small but significant collection of blueprints and original linen tracings for nine Louis Sullivan projects, including the National Farmers Bank in Owatonna, Minn., the Wainwright Building and the St. Nicholas Hotel, both in St. Louis, and the opera theater buildings in Pueblo, Colo., and Seattle, Wash.

Ellerbe and Company of Saint Paul has begun depositing its historic records in the archives. Among the buildings represented are the Mayo Clinic and the St. Paul City Hall and Court House.

Others include the American Terra Cotta Co., Charles Hausler, Percy Bentley, Harold Crawford and Emmanuel Masqueray. ■

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Book Reviews

SIGN, SYMBOL & FORM

By Louise Bowen Ballinger &
Raymond A. Ballinger.
Van Nostrand Reinhold, 1972,
192 pp., \$18.50.

Reviewed by Douglas W. Foster

The reviewer, a graduate of the University of Minnesota and Harvard Graduate School of Design, is a principal designer with the St. Paul Housing and Redevelopment Authority.

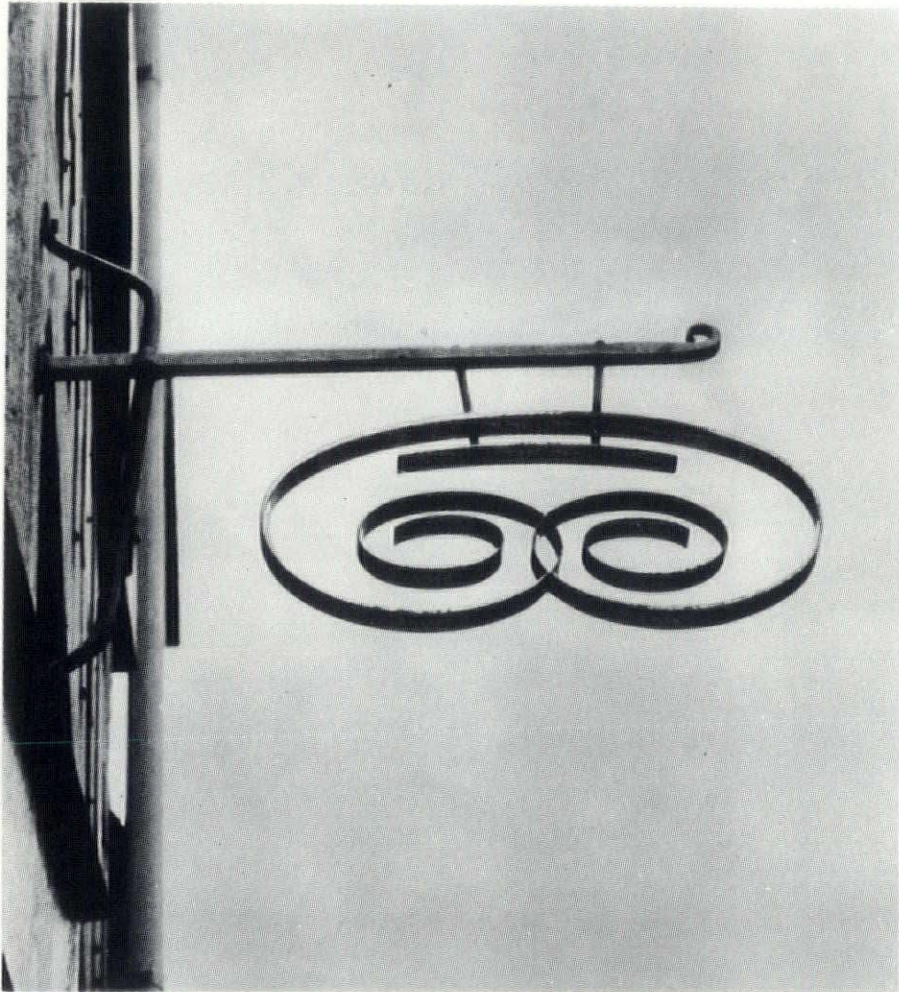
In the beginning of this book the authors quote the 19th century poet, Samuel Taylor Coleridge: "An idea, in the highest sense of the word, cannot be conveyed but by a symbol." This thought has much significance for our age of complex and expanding information systems. The design of appropriate graphic forms at all scales is thus of critical importance. In response to this challenge, a number of publications have appeared in recent years which explore the nature of symbol, form, meaning and perception. Such books as Gyorgy Kepes' "Sign, Image, Symbol" and Robert Venturi's "Learning from Las Vegas" combine considerable text with illustrations and are highly philosophical, particularly Venturi's writings about symbolism at the urban design level. (Another recent book about symbols is Henry Dreyfuss's "Symbol Sourcebook," which was reviewed in the January/February issue of Northwest Architect.)

The book reviewed here, "Sign, Symbol and Form," is a contrast to the Kepes and Venturi books. It is primarily a photographic survey of exterior graphic design in Europe and the United States. The authors, a husband and wife team involved in art and design, have travelled extensively with cam-

era in hand to record examples of signs, symbols and other forms of graphic communication. Much of the work shown is historic and of an antique character. The text is brief and easy to read, with the main interest lying in the many excellent photographs. Unlike the more analytical works on signs and symbols, this book, while containing much information, can be read and viewed in a leisurely manner.

A brief text is devoted to historical background and definition of terms. Included is an interesting discussion on the variations of a basic form for different symbols. In one context the circle, a universal form, becomes a symbol of authority as seen in the five intertwining circles of the International Olympics. The three gold balls symbolizing the pawn broker are "said to represent three bags of gold St. Nicholas tossed into the window of a house of three poor sisters who needed dowries to get husbands." The circle in another graphic derivation, as symbol of the sun, denotes power and is seen on Roman seals and on the banners of a French king.

The photographic essay is similar to the text in its informal, human view of graphic design. In most of the examples there is a distinct lack of "high art" or elite corporate imagery. The authors look for the everyday, almost folk art graphic elements that convey meaning in a vivid manner. The pretzel, for example, is an almost universal symbol for a bakery in European countries and a pretzel with a crown indicates a bakery which enjoyed royal patronage. The physical form of this fact then takes on a decorative and easily discerned image (see photos). There are other examples of the commonplace element used in a creative way: the interest-



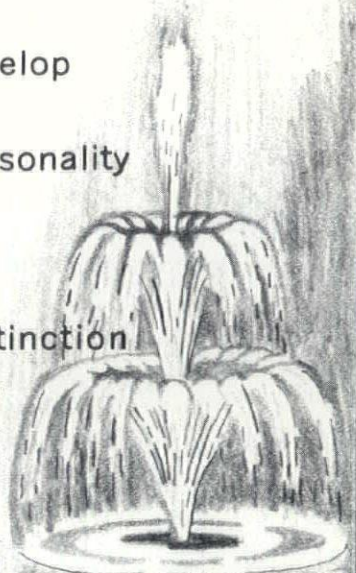
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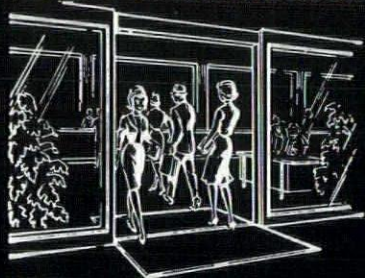
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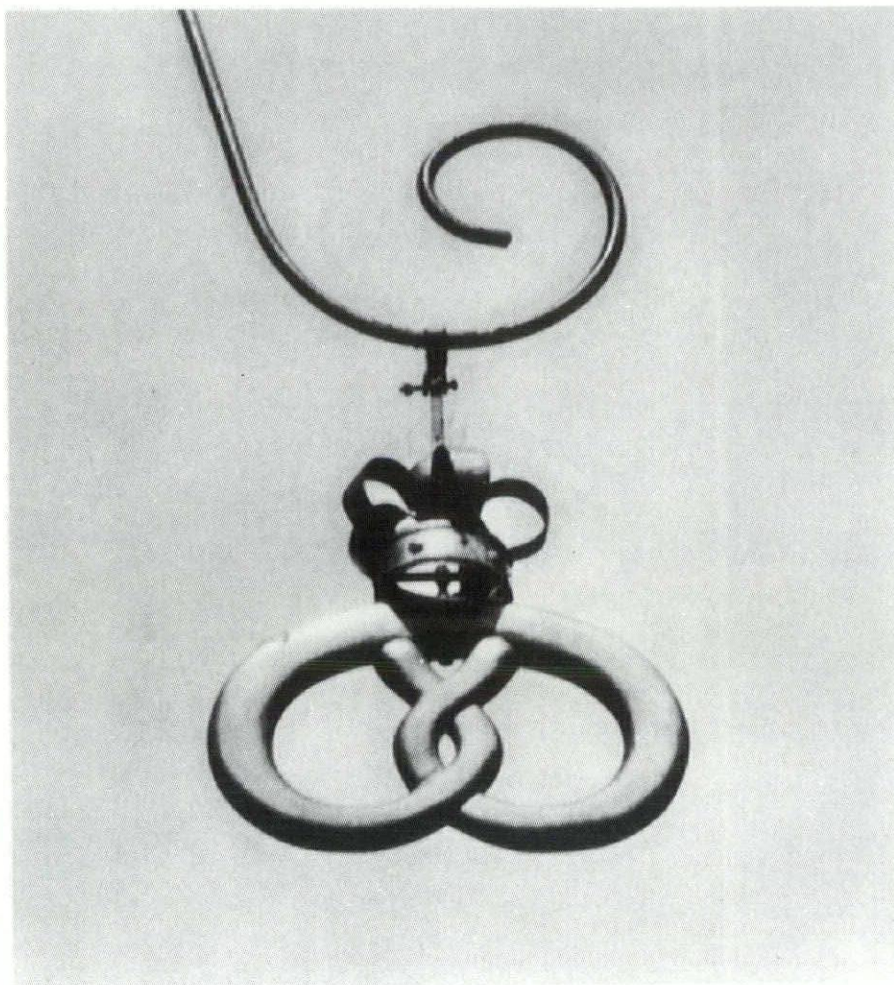
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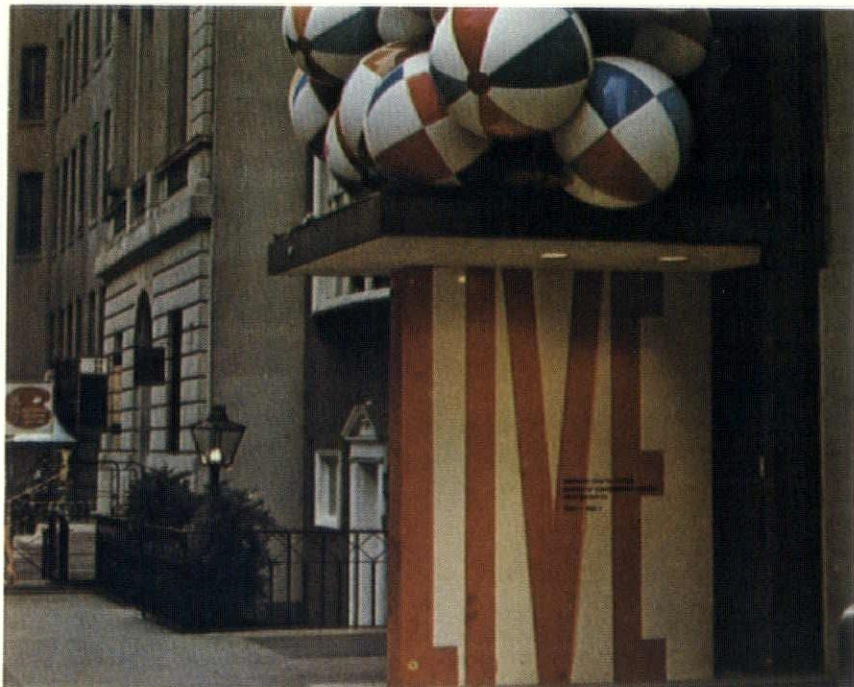


ing pattern of a stack of interlocking wooden shoes identifying a shoe shop in Delft, Holland, or the large scale opened scissors which, when projected from the wall of a tailor's shop, become a sculptured object in urban space. This is but a small sampling of the wide range of information on exterior graphics. There are sections on Form, the Decorative Sign, Materials and Fabrication, Lettering and Numerals, Signs and Architecture and a concluding section on Travel and Direction.

At first glance the book may only appear to be a collection of interesting, historical graphic forms. Upon further study, however, the reader begins to appreciate the humaness, refreshing naivete, sense of humor and intense meanings of these forms and the lessons they suggest to the designer. These are the same lessons implied in the work of the pop artists who understand that the commonplace object, with its

well understood meanings and associations, can become art through manipulations of form, scale and context.

The visual material in this book is also remindful of important new ideas about the role of symbolism in architecture and urban design today. Robert Venturi, in "Learning From Las Vegas," observes that architects, like artists, have become involved with abstract expressionism and are shaping space and form, rather than using explicit symbols, to convey meaning. He advocates a more conventional, ordinary architecture which is not only less costly but which, through applied ornament and graphics, is far more effective symbolically. Throughout history painting, sculpture and graphics have been combined with architecture to convey meaning in a direct way. The book "Sign, Symbol and Form" makes us again aware of that significant concept. ■



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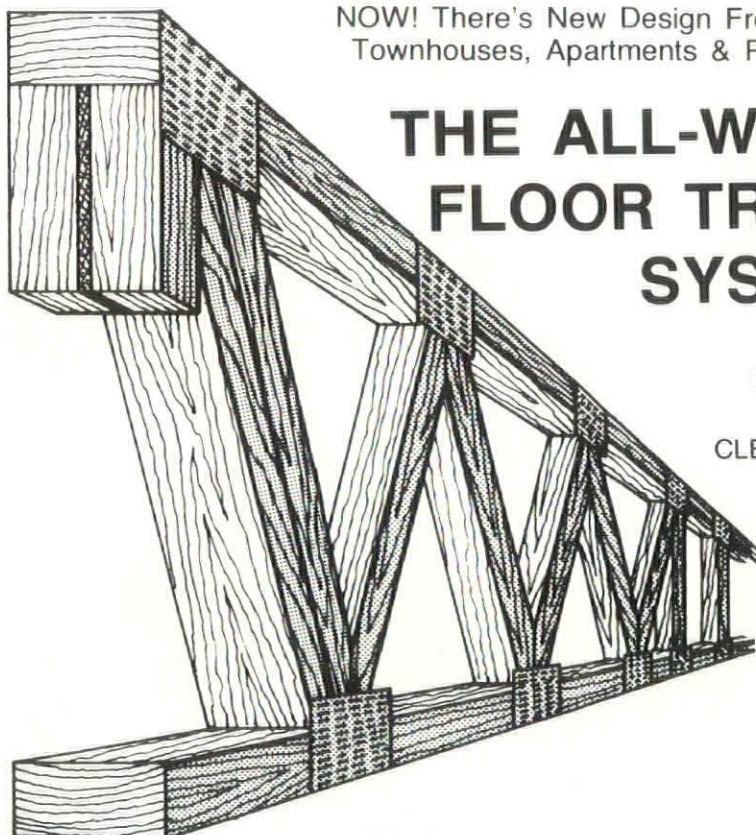
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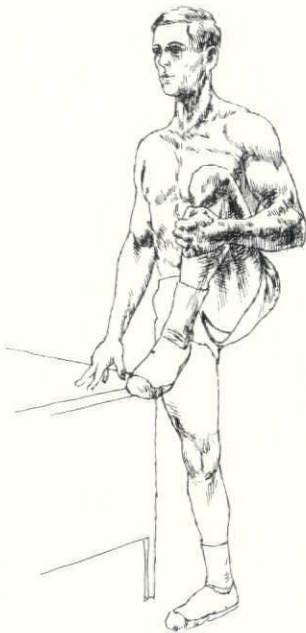
**Exercise in the Office; Easy ways
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By Robert R. Spackman, Jr.
Southern Illinois University
Press, Carbondale, Ill. 1968.

One more step in a process which will eventually enable those who really love their work never to leave it at all. I expect the next to be "How to Take a Sponge Bath while Drafting" or "The Sauna as a Conference Room."

This is a little paperback book featuring a series of exercises, mostly of the isometric variety, which can be performed in odd spare moments without props or preparation, in the office or at home or, even, some of them driving a car. The exercises are illustrated by line drawings of athletic young students — not exactly dressed for work but there is no reason why the exercises could not be performed in shirt and tie. The author's purpose is to encourage everyone to make a habit of exercise. So those with no office will not feel left out there is a short chapter with suggestions for the "Woman at Home."

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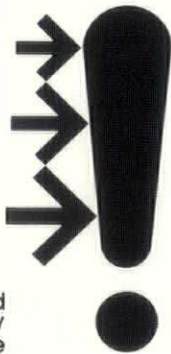
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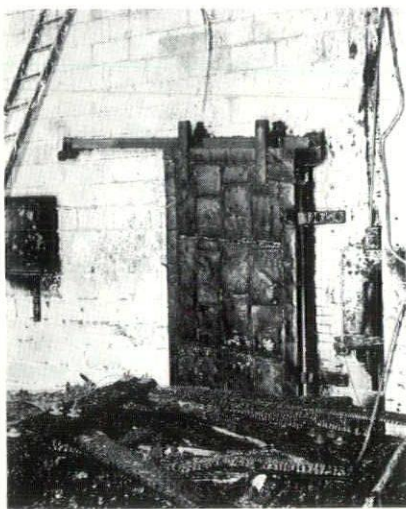
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The Story of Art

By E. H. Gombrich.

Twelfth edition, enlarged and revised, with 398 illustrations, 38 in full color. Phaidon, New York, 1972.

This is the first redesigned edition of this standard survey of art history, first published in 1950. Nothing which was in the earlier editions has been discarded but 14 works of art have been added and a number of fresh points made, according to the preface. The type is large, clear and easy to read, the color plates are of good quality but many of the black and white plates are faded and dim. ■

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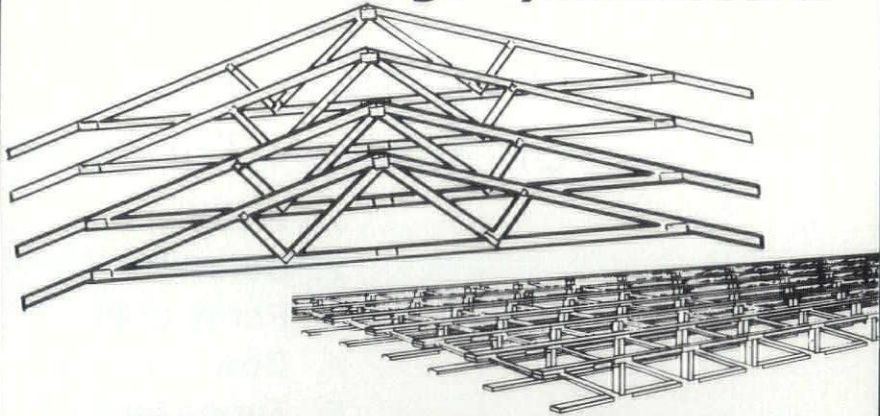
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New Leadership at the Community Design Center

Since September 1 the Community Design Center has been under the direction of a new administrative staff.

Elizabeth Robbins, formerly an instructional analyst with the Education and Training Department of Minnesota Mining and Manufacturing, Inc., has succeeded Tom Walz as the executive director. Walz has assumed duties as dean of the School of Social Work at the University of Iowa. Craig Hess, an architectural graduate and formerly a VISTA volunteer with the CDC, has been named assistant director. Lane deMoll has left her job as assistant director to take a new position with Criteria, an architectural firm.

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Design Professions Issue Joint Statement on Political Contributions

Seven organizations of design professionals — architects, engineers, landscape architects and planners — last month reemphasized their "responsibility to discipline their members for unprofessional conduct."

A strongly worded statement expressing their dismay at recent allegations of improper, or patently illegal, conduct by design professionals seeking contracts for public work was signed by the presidents of the seven professional societies. It was written at a meeting in Washington, D.C., of the International Council on Environmental Design, attended by officers representing the environmental design professions.

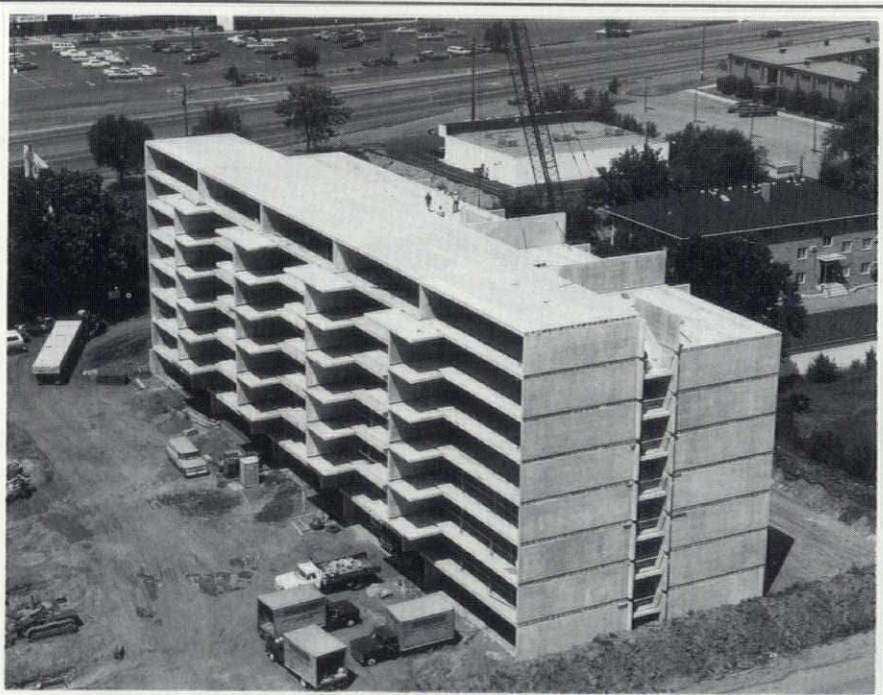
Pointing out that "the vast majority of design professionals practice in a legal and ethical manner," the joint statement said:

"We condemn without equivocation any attempt by any person dealing with government to influence the award of contracts through political contributions or by offering, or providing services, materials or other gratuities in the hope of obtaining work."

"Equally, we deplore the political pressures exerted on individuals and firms to make contributions in order to be considered 'preferred contractors' for services in connection with public work," it added.

The seven organizations went on record as strongly supporting legislation for limitation and full public disclosure of all political contributions and recommended enactment of laws which would make improper conduct by design professionals grounds for suspension of licenses by state registration boards.

The organizations which make up the Interprofessional Council on Environmental Design are the American Institute of Architects (AIA), American Consulting Engineers Council (ACEC), American Institute of Planners (AIP), American Society of Civil Engineers (ASCE), American Society of Consulting Planners (ASCP), American Society of Landscape Architects (ASLA) and National Society of Professional Engineers (NSPE). ■



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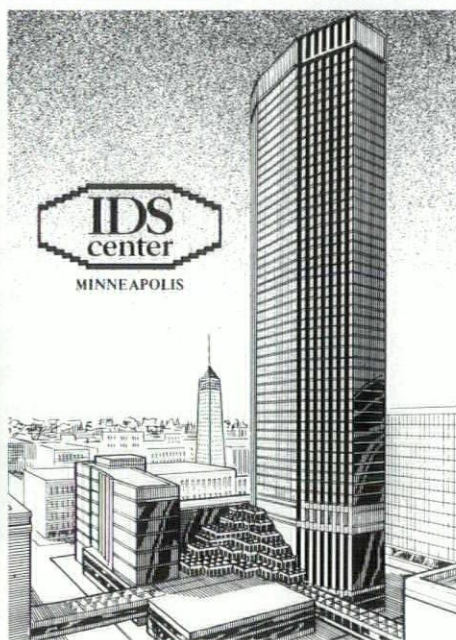
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University of Minnesota Students Honored

Jeffry Magnuson, a fourth-year student in the University of Minnesota's School of Architecture, was named first-prize winner in the 1973 Student Design Competition sponsored by InterRoyal Corp.

Entries in the 11th Annual Competition were judged by a panel of prominent professionals earlier this year in New York City. The competition drew entries from architectural and interior design schools throughout the country.

The judges this year were Judith Edelman, AIA, of Edelman & Salzman, New York architects, Olga Gueft, editor of *Interiors Magazine*, James Morgan, AIA, senior editor of *Architecture Plus*, and Hans Krieks, IBd, of Hans Krieks Associates, Inc., a New York interior design firm.

For the design project entrants were asked to work with a doorless, windowless concrete grain silo, theoretically abandoned on the campus of a midwestern agricultural college.

The silo was to be converted into a student audio lounge, with consideration given to the relationship of various sound media to visual and functional elements.

The winning design used a seven-degree ramp on the inside perimeter of the cylindrical structure, rising to special rooms for individual or group listening at different levels.

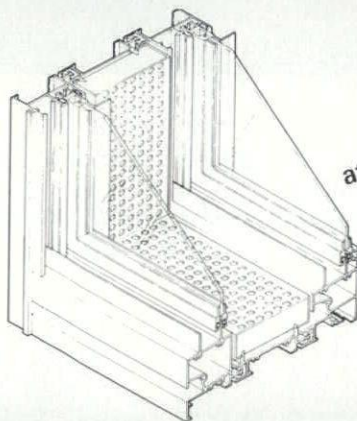
Steven R. Packa, a third-year design student in the University of Minnesota's School of Architecture, was named a winner in the AIA Scholarship competition.

The 20-year-old architectural

student received a check from the American Institute of Architects for \$300. There were 213 applicants for the awards and 99 received awards.

The AIAF awards come annually direct from organizations such as Pittsburgh Plate Glass, Blumcraft of Pittsburgh, The National Terrazzo & Mosaic Association and Knoll International, Inc. ■

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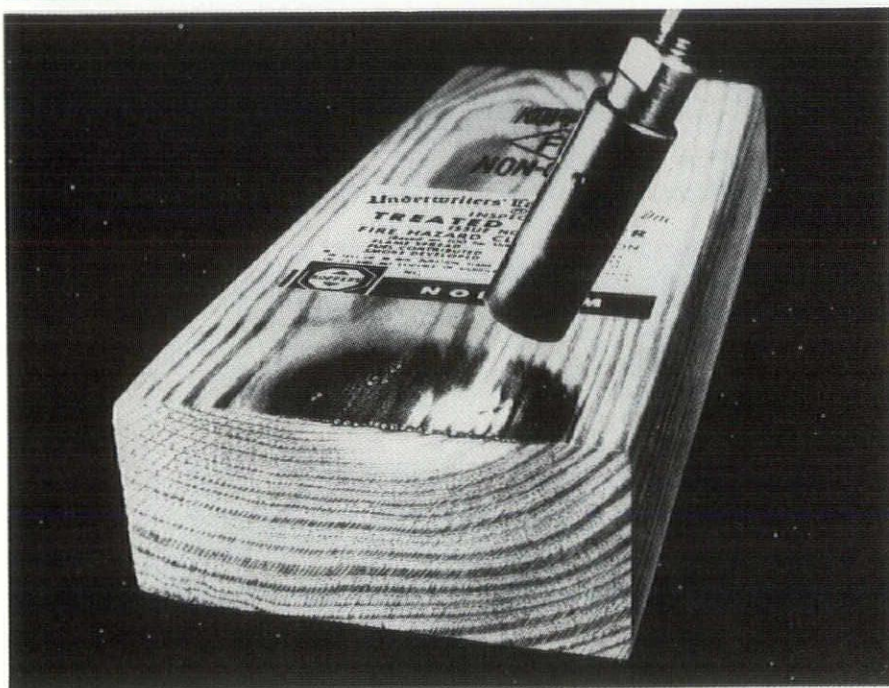
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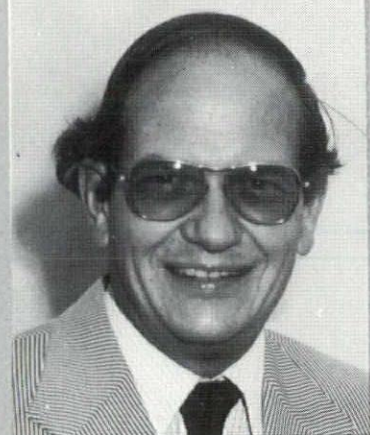
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profile

Time/cost problems call for understanding and co-operation among architects, engineers, suppliers and contractors, according to David Hanson, president of Fabcon, Savage, Minn. When preliminaries of design, financing and specifying have been completed, he said, the client wants to move in "immediately or sooner."

Fabcon's answer has been specializing in fabrication of units which can readily be worked into the specifications of structures ranging from apartment buildings to business structures to warehouses. Hung on steel framework, hollow core slabs and solid panels make rapid enclosure possible. Final finishes can be widely varied. The company handles no stock items; all production is of specified units. Delivery by truck is integrated so well that units move from truck via crane to structure. Range of delivery goes as far as Indianapolis.

Looking "onward and upward," Hanson feels rapid transit, possibly making use of existing railroad trackage, with high rises for housing, etc., can solve many problems.

Afterburner Cited as Pollution Solution

In the past year, according to Norstan Research and Development Co. of Minneapolis, incineration of garbage has become an offense in the eyes of the Pollution Control Agency. Apartment buildings and industrial sites are consequently cluttered with garbage piles or dumpsters, which are not only unattractive but inconvenient to the user.

Norstan has developed a solution to this problem in the West Creek Afterburner, which "has brought garbage disposal back indoors." The West Creek Afterburner can be adapted to most conventional incinerators in existing buildings or to new installations. The unit is roof top mounted and operation is very simple.

The West Creek Afterburner meets all local, state and federal air pollution codes. The unit operates on a minimal amount of gas. More than 25 units have been successfully installed in Minnesota in the past 18 months.

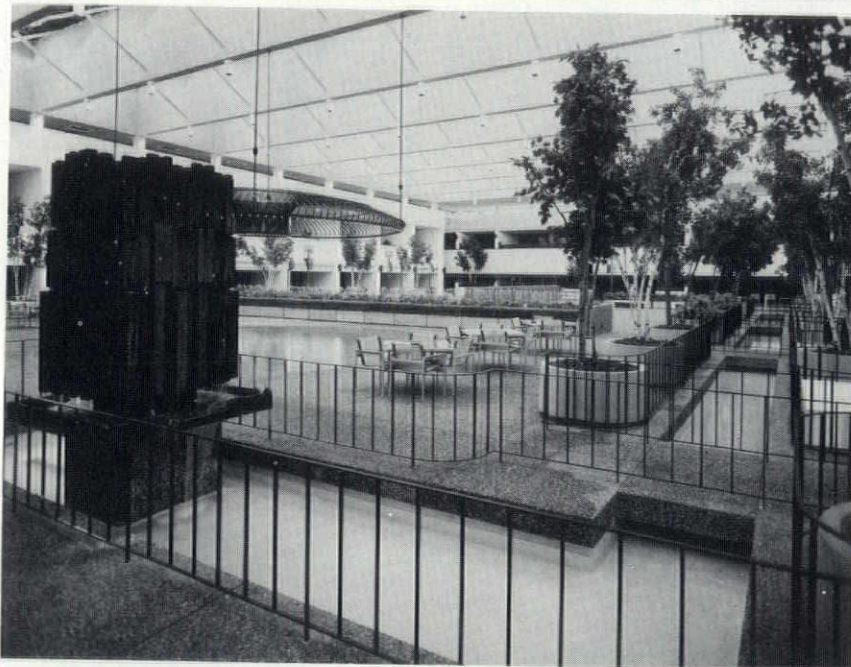
Information on the West Creek Afterburner can be obtained through Norstan Research and Development, or Schultz Sales Co., 7757 N.E. Van Buren St., Minneapolis. ■

Fischer Retires from Bartley

Albert J. Fischer retired on October 1 from Bartley Sales Company, Inc. & Door Systems, Inc., Minneapolis. He had joined with E.W. Bartley to form Bartley Sales Company. When Bartley retired in 1957 Fischer became president and has served in that capacity for the last 16 years.

New officers of Bartley Sales are John B. Bissell, president, H.A. Bielke, executive vice-president and treasurer, Harold J. De Lay, secretary, Charles W. Davenport, vice-president, and Max E. Ferree, vice-president.

Door Systems elected E.A. Kuppe president, replacing Mr. Fischer. ■



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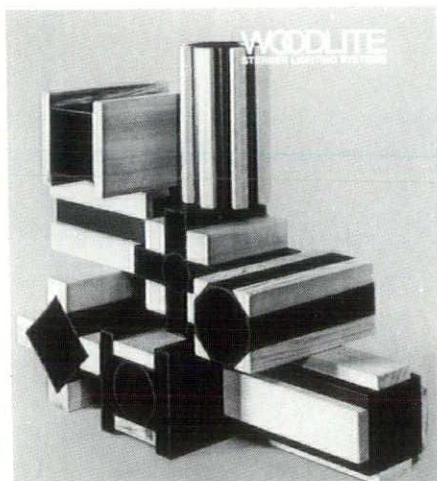
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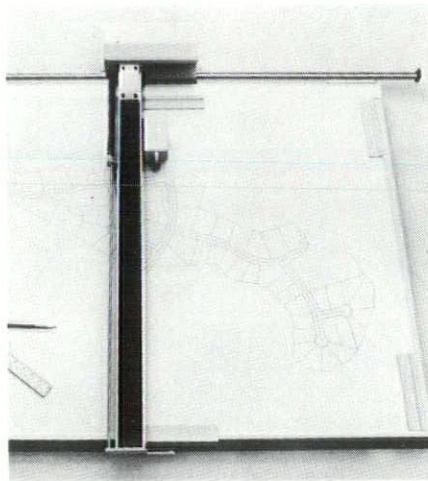
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New Plotter — Big Capacity, Low Cost

Very flexible in meeting needs of the designer, a new plotter which can be set up with a programmable calculator has been reported to give big capacity at low cost. Using several kinds of drawing instruments, the plotter gives flexibility of content, size, format and location of character setting. Details can be had from Wang Laboratories, 836 North St., Tewkesbury, Mass. 01876.



HIAC Sealer Answers Many Needs

Excellent weatherproofing, stainproofing, sealing and dustproofing qualities are reported for the new HIAC Acrylic Concrete Sealer. Applied to vertical or horizontal areas with ease, the sealer also "makes outside concrete surfaces as beautiful and easy to clean as inside floors," the maker said. Details obtainable from W. R. Meadows Co., 26 Kimball St., Elgin, Ill. 60120.

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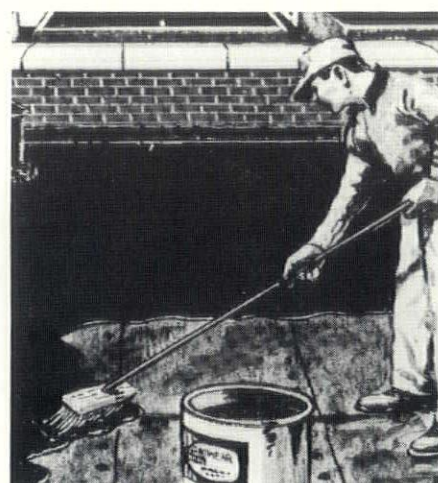
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Imaginative use of stock wood mouldings can enhance entrance interest. As shown, an improved flush door has been surrounded by rough sawn panels and several shades of finish have intensified the interest. This kind of handling can be used inside and outside. Added information can be had from Western Wood Moulding Producers, P.O. Box 25278, Portland, OR. 97225.



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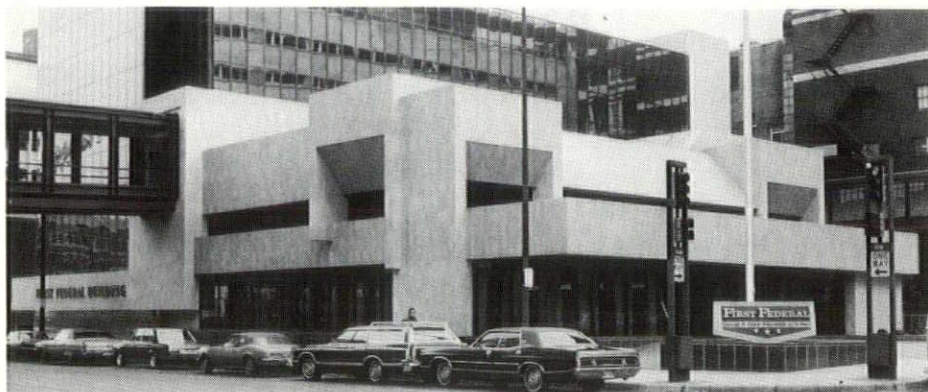
Vincent Promotes Carlson

Vincent Brass & Aluminum Company, Minneapolis-based distributor of metals and fasteners, has announced promotion of James P. Carlson to the newly created position of company manager of administration.

Presently serving as assistant to the president, to whom he will continue to report, Carlson

will have the added responsibilities of coordinating all administrative functions in the six branches the company operates.

Paul M. Vincent, company president, said Carlson will place special emphasis on developing standardized administrative systems and functions throughout the branches. ■



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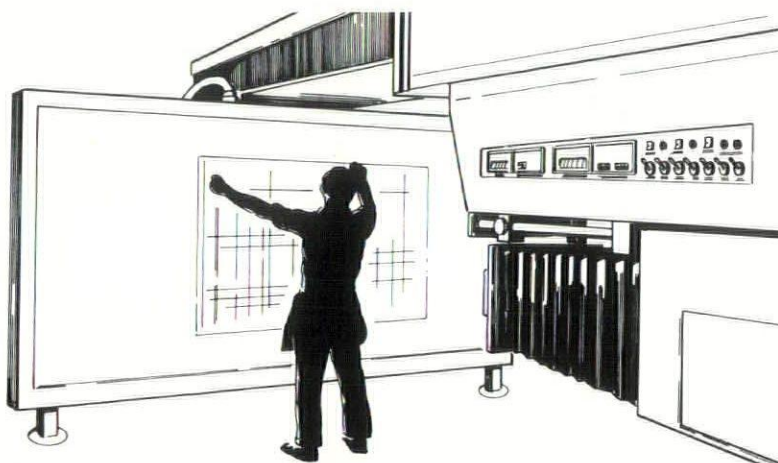
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In 1968, the courts declared that business, lawyers, schools, hospitals and clinics, and institutions could own their own phones. No more bondage to Bell.

That means that you can save your clients a lot of money. Because owning a phone system costs a lot less than renting one from Bell. Monthly payments are less. There are tax advantages. And, of course, the end result is a tangible asset instead of a bale-full of worthless phone rental bill receipts.

Your client will like that. Your client will also appreciate that you can specify a phone system that's just right for his needs. Instead of settling for what Mother Bell says you can have, now you can choose.

The OTC people have over a century of service with Bell. We know phones. We know communications. And now we're with The Other Telephone Company because here we have freedom to choose equipment that's right for the job... the best equipment made by ITT, Northern Telecom, Stromberg-Carlson, Voycall and many more famous names in communications. We start where Bell leaves off.

And take care of every system we install... No red tape... no waiting for maintenance. You just ask any of the more than one hundred and fifty owners of a TOTC system. They'll tell you.

One more thing: as an architect, you get your commission on the entire phone system when you specify TOTC. That's a lot of extra money... just for rendering your client a little extra service.

Make us prove it.

The Other Telephone Company

941-6622. We start where Bell leaves off.

