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Cover photograph by Harold Payne, A. I. A.

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Men who have done it say there is no experience quite so lonely as flying the ocean alone. At night, you turn your cabin lights on to create an artificial "homey" environment. But when dawn breaks, the environment is stripped of electronic gadgetry, and you are alone in an empty vastness. There is no earth, no familiar landmark, not even a clear dividing line between sky and water.

The only visual connections to the world you left behind are mechanical symbols that are real only in a comparative sense. How fast are you going? You look at your airspeed indicator, knowing that this is only the speed at which you are moving through still air. How do you know where you are? You used to answer that question by taking a fix on a star; now you place your trust in a series of gyroscopes that sense where you are by mechanically remembering where you were, and the changes in direction you have made since you started. One friend who made such a trip remembers, after many hours of flying alone, seeing sunlight glint off another aircraft making the same transatlantic trip. As the plane became larger, he realized that his aircraft and the other, while heading in the same apparent direction, were on converging and therefore dissimilar courses. Within a few minutes the second airplane had crossed in front of him and disappeared. Now he was alone again, but with a new concern: Which plane was on the right course?

I have repeated this story because it seems symbolic of our own situation, of our society, of our profession. We create artificial environments to shut out reality. We depend on figures, which may be irrelevant, to reassure us that we are making progress. We travel over great distances, survive great events, pass over war-ringed countries, burning deserts and icy wastelands without recognition or emotion. We wishfully give up our romantic guideposts and substitute the cold efficiency of mechanical devices to chart our destiny. How very much like our profession.

Scientists and philosophers agree that we have reached one of the decisive turning points in the history of humanity, comparable to the domestication of animals, the invention of tools, the foundation of the first cities and the conception of the universe. We are intrigued, but it is hard to grasp and believe.

The Canadian philosopher, Marshall McLuhan, points out that the electric light — by now a very old invention — abolished the divisions between night and day and thereby altered every consideration of space and time for work and production. But we act as if it hadn't. We still observe the three mealtime periods devised long ago to break up the long farm day and rest the horses. We all get up at the same time and go to work and go home at the same time. We allow our vast capital plant of highways, office buildings, banks, and factories to stand virtually idle two-thirds of the time. Why? We don't know; we've always done it that way.

People do not like rapid change and are prone to rejecting it, opposing it, or refusing to admit its existence. But change is happening more rapidly than ever before. Social critics say that television has done more to change our habits and culture in the last decade than anything else that has happened to us. It took 80 years for the telephone to get into 34 million homes and 50 years for the automobile to reach its present state of eminence and notoriety. It has taken television just 10 years to create an electronic culture for America. Cities came into being to cluster people together to see and talk to each other. But when an employer finds that he can instantly reach all his employees by television he may have little reason for leaving home. If you extend this basic notion very far, you can quickly envision an enormous change in our habits, our transportation needs, in the industries which sell cars and clothes, in education and certainly in the architecture for the new American society.

I think that most of us are also aware that the student-age generation of today is not quite like that of our day. It is, of course, the fashion of every middle-aged generation to say that the teenagers are going to hell, but that's not what I mean. It is we, not they, who are being held at fault. Our values and customs and moralistic axioms are being held up to a painful kind of scrutiny by students on our campuses. Our standards in honesty, political beliefs and personal behavior are branded as hypocritical. The religious and ethical values of Western civilization and our Anglo-Saxon heritage of legal and political forms are being seriously questioned. There is a search for life's meaning, they call it search for identity, in our youth, and it may just turn out to be a very good thing.

It is very easy to show, by rattling off a dozen kinds of statistics, that most of man's history on earth is happening right now, that the most fantastic thing about the change around us is the rate of change itself. This is very hard to think about because, as mature people, we are accustomed to thinking in straight-line projections of the present. Our sense of past and present has
developed out of an accumulated heritage of family ideas, a continuing sense of place and a relatively stable body of scientific, social and political information. There are no such links to the future and we can no longer envision, as a man could a few years ago, that his grandson might inherit and raise a family in the grandfather's house on the same piece of land. Our traditional institutions are falling down and we are finding that living through continuous change is something like surfing: The trick is to ride the turbulence without falling into it.

Given this tricky footing, how can our profession cope with a changing reality? More specifically, how can we educate architects for something whose shape changes so quickly we cannot measure or even comprehend it? It is best, of course, to start at the beginning. What is the nature of the professional task that faces us right now? Can we, at least, provide an answer to this question?

Our present task is to use our skills as best we can to create physical order in our urban society — to restore order to the city and to create it, often for the first time, in the vast area of urban confusion around it. Since we cannot instantly abandon the conglomerations of people who live in these great, confused organisms or create an acceptable substitute, we must inquire how best we can restore some physical order by application of our skills as urban designers. Any such inquiry will produce a startling answer: We cannot impose any kind of meaningful urban design upon the city and the suburb, as we know them, because there are at least four urban designers busily at work ahead of us.

Who are these four urban designers who block our way? The first is our highway system. The American freeway in its natural rural setting is often a beautiful thing and a great technical accomplishment; in the same form in our cities it is about as compatible as a bull in a china shop. The primary point, however, is not the kinds of highways or streets needed in a given situation but the fact that whatever they are will affect and largely determine the urban design or non-design of our community. The design of a roadway is important; the location of the highway may be of vastly greater importance. This kind of decision should not be made by the highway department alone on the spurious basis of present land costs assigned to various routes. The roadway system must be recognized for what it is — an integral element in urban design. It must fall within the appropriate jurisdiction of the urban design team.

The second urban designer who is always there ahead of us is the land speculator. Gerard Piel says: "The history of the New World has turned out to be not so different from that of the Old. The peril that threatens the last of the American wilderness arises not from the reckless dream but from the same historic forces of rapacity and cruelty that laid waste the land in the Mediterranean Basin, in Arabia, India and the treeless uplands of China."

This premise has been stated in a different way by a few articulate speculators. They point out, with justice, that it is often the rules of the game, and not the men who play it, which damage the community. If the law and the community custom encourage a man to line our highways with garish trash, how many men will abstain from doing it? If a man is faithless to his investors unless he builds shoddily and overdevelops a tract of land that should have been used differently or not at all, whose fault is it? It is our fault, because we should not permit conditions which reward anti-social activity. The simple fact is that we lack a coherent land policy. We did not always lack it. Many of the early American towns that we admire so much in New England and along the Atlantic seaboard drew their coherence not so much from the design of the individual buildings but from a relatively rigid policy on the use to which private land could be put. We accept without question restraints upon the individual if his actions are anti-social. Certainly the sale and use of land by an individual fall in this area of social concern.

Any community which develops a competent master plan for its land use and growth and uses its planning, zoning, and ordinance-making powers to effect and enforce it can return to its citizens the forgotten heritage of our American forefathers. The third urban designer that determines what shall be built, where and how well it will work is the antiquated political framework of our municipalities.

The answer to the first question, I think, is that we can really prepare for it? If there are at least four major community forces that pre-determine the shape and quality of the community so thoroughly that the professional urban designer — the architect — cannot do much more than patch and paint, what can we do about it?

The answer to the first question, I think, is that we must accept a continuing process of education and re-education. Least of all are today's practitioners exempt from this need. We must make every effort to learn and understand what is happening to our society, who
our clients will be and what they will require of us. Second, we must free as much of this practitioner's time as we can for the important tasks. We can do this by training others and using devices to take over that traditional part of his work which is essentially non-creative. Third, we must communicate to our architectural schools the urgency of change and their need to change with it.

It does not stretch the truth very far to say that today's student architects would be better off studying social anthropology and land economics rather than construction or writing specifications. The architect, ideally, should be artist, humanist, professional advisor, a sophisticated student of politics and finance, a competent technician in structure and construction and—not least—a good business administrator. This is fine. It is also impossible. There are only so many Michelangels and da Vincis every few thousand years, but we can train a profession to include a diverse group of men, each skilled and knowledgeable in one or more of these areas. We must also reach into the public schools, call together our friends of the press and do everything we can in a continuing pioneering effort to awaken a demand for good community design.

Without going into detail, I will say that the Institute now deeply involved in all of the activities I have mentioned here. There are Institute workshops for practitioners, training programs for technicians and research projects in architectural schools and experimental programs for children.

We do not want to dictate how or what to teach or even to try to choose the kinds of students who might become architects. We do want to help the educators look ahead so that both students and practitioners of architecture or whatever it may be called 20 years from now can have some means of grappling with the kind of practice and society they will deal with. If we are still teaching students to design buildings on an individual basis for individuals, to serve individual needs, then we are falling dangerously behind the times. If there are still schools that teach students to strain at artistry before learning principles and reasons then, as M.I.T. Professor Catelano said recently, they can only create "irrelevant poetry, without grammar or purpose."

The education of architects and the goal of architects in this new age must be rational. It must be social. We cannot serve our communities and at the same time seek the meaning of our lives in personal, existential statements.

The future is already here.

The architect must understand and be sympathetic to the social as well as the physical objectives of urban design. He must understand the working of the city and its inhabitants intimately. He must design with more than formal plan objectives in mind. In effect, he must create the desired environment for the American people. And thus he must know something of, or respond intuitively to, the needs and desires of this new person—the affluent, mobile American citizen with his vastly increased education and leisure.

It is a short step to finding the answer to the second question: What, if major forces pre-determine the environment, can we do about it? Picasso has said that art marches; it does not evolve. We must join the march. Putting it in familiar terms, what are we going to have to do is help write the building program for the community. We cannot stand on the sidelines, which our profession is wont to do, waiting for the important de-

isions to be made. We must immerse ourselves, all of us, in the social, civic and political life of our communities. Unless we do this we cannot possibly comprehend the problems of contemporary urban architecture, much less solve them.

We must also do our homework—read, listen, participate and learn. But never forget one thing: As ignorant and unprepared as we are to deal with the complex design problems of this age with all our flaws and imperfections we are still the only profession that is trained in the three-dimensional planning of the urban environment. Because this is so, we have the obligation of playing a major role in the struggle for a better and more liveable environment for our citizens. We have a great deal to learn from the industrial manager and the social scientist. But we can teach them something, too. We may find that our old city centers can be reclaimed if they are given different and further uses and urban stimuli.

We may find that the big old traditionalcity as we have known it is as dead as yesterday's horse and carriage and, possibly, today's V-eight. We may find that clusters of single and multi-purpose communities, linked by roads, tube and perhaps other forms of transit will create a desirable new form of small-town life in America.

We may find that the future city and town will be designed and built by our great corporations, whose basic objectives now include social goals as well as production, distribution and profits. Already, in addition to Rouse and Simon, General Electric, Goodyear, Humble Oil and even the American Hawaiian Steamship Company are planning to create a new kind of urban city, built as a package.

We may find that, as John Rubel suggests, a combination of government and private enterprise, working together as they have done on our space programs, will develop a brilliant new building technology with an agreed upon set of standards, objectives and incentives and that this team will create the new planned towns that our rising population demands. As Hedley Donovan of Time, Inc. said, "Business must be willing to apply the same creative radicalism to the creation of good cities, even great cities, that it devotes to the creating of good, sometimes even great products.

All of these possibilities will require new techniques, and indeed a new look at our profession. The appearance of new people with fresh ideas that have not been wilted by building industry prejudices or by a too-long association with the government is a wonderful thing for all of us.

Many things can happen. The point is that as professionals in design and as citizens we can help make them happen and give our communities some of the many options which they are now denied through law, custom and ignorance.

Will the future inexorably sweep away the human instincts and intuitions, the emotions and flashes of creativity that separate the human, the trained professional, from the cold efficient computer? My prediction is that it will not. I began this talk with an analogy to aviation and I will conclude with another.

The late test pilot, Scott Crossfield, once told a Congressional committee that man is a far more flexible and useful control system than a machine. Further, he said, he can be produced cheaply and in great quantities by unskilled labor.
House Paint—Yesterday, Today and Tomorrow

BY EDWARD J. ZIMMER

Technical Director, Trade Sales
Pratt & Lambert, Inc.

Is the paint industry old? Some say it's as old as Methuselah, others say it is older. We do know that primitive paint was used by the Egyptians from 8000 to 5800 B.C. to decorate the walls of their houses and tombs. Early paints were made with natural earth colors mixed with egg white, glue or treated beeswax. The history of paint evolved slowly from these early times until our Civil War period, when the manufacture of ready-mixed paint began. The latter development ushered in today's paint industry.

What is paint? Paint is a material which, when applied in a thin film, provides decoration and adds to the life of the substrate.

Paint is made of pigment and vehicle. Pigment is a solid material in fine powder form which imparts color and opacity to a paint. Pigments generally fall into three groups: (1) whites, (2) colors, and (3) extenders. Three of the principal white pigments used in exterior house paint are white lead, zinc oxide, and titanium dioxide.

White lead (basic lead carbonate), the oldest white pigment, is made by a variety of processes, one of which is called the Dutch process. In this process "buckles" of lead metal are converted into white pigment by the combined action of acetic acid and fermenting tar bark.

Zinc oxide is collected as a white smoke which results from the roasting of zinc ores, or zinc metal, in specially constructed furnaces. Zinc oxide helps to harden a paint film. It helps oil base paints to keep their color and it retards the growth of mold and mildew.

Titanium dioxide is the whitest and best hiding of all white pigments. It is produced from ilmenite ore which contains titanium dioxide and iron oxide plus small percentages of other materials.

Titanium dioxide in the 1920's was "free chalking" i.e., weathering of a titanium dioxide paint left a chalk-like layer on the surface of the paint. Research during the 1930's led to chalk-resistant pigments. This was accomplished by incorporating small amounts of aluminum, antimony, and zinc compounds with the titanium dioxide.

Titanium dioxide is available in many grades. They range from free chalking, for use in white house paints, to the most chalk resistant pigment used in automobile finishes.

Colored pigments can be divided into two classes—earth colors and chemical colors.

Earth colors are found throughout the world. Their shades vary, usually because of the percentage of iron oxide present. When mined, pulverized, and sometimes calcined, they are suitable for paint use. Ochres, siennas, and umbers are the most common earth colors. Others are metallic reds and browns, such as Spanish oxides and Persian Gulf oxides. Earth colors have good color permanency in both mass tone and tint shades. They are non-bleeding and low in cost. Low tinting strength and lack of brilliancy limit their use mostly to tinting and as color pigments for primers.

Chemical colors are the end products resulting from certain chemical reactions. Chemical colors, like para red, lithol red, and toluidine red are made from dyes.

Extender pigments were once viewed as adulterants but are now accepted as valuable paint components. Although they impart little if any hiding to the paint film, they do develop certain characteristics which are important for good appearance, durability and package stability of the paint. Extender pigments include talcs, clays and whiting.

The vehicle is the liquid portion of the paint and consists of both non-volatile and volatile materials. The non-volatile portion binds the particles of pigment together and to the coated surface, and gives strength and life to the paint film. The non-volatile may consist of oils and resins. The volatile portion, or the thinner, which is necessary for good application properties, volatilizes or evaporates after the paint has been spread. In solvent thinned paints, it is composed usually of hydrocarbons derived from the petroleum or coal tar industries; in water reducible paints, the volatile is water.

Yesterday's Paints

Early day paints were made by the painter acting as his own formulator and paint manufacturer. He mixed lead and oil paste with linseed oil, drier, and turpentine. His paints brushed easily and were very durable. They failed primarily by checking and weathered unevenly leaving a poor surface for repainting. Many times whites turned gray from normal weathering. Also the lead pigment would react with sulfur gases in the atmosphere to form black lead sulfide on the paint film. To improve whiteness retention, painters added zinc oxide paste to the lead and oil paint. Although the color retention was improved, large additions of zinc oxide adversely affected durability and caused the paint film to crack and peel.

One early ready-mixed paint was known as the 60-30-10 formula. It contained 60% basic carbonate white lead, 30% zinc oxide, and 10% extender. The extender was added to reduce settling and minimize cracking. This formula was followed by the better known high lead content paint which was popular until the 1935-1940 period. The latter paint contained about 50% white lead, 30% zinc oxide, 10% titanium dioxide, and 10% extender. The introduction of titanium dioxide added hiding, initial whiteness, and self-cleaning properties. However, these paints were costly and chalked unevenly.

The demand for white paints that would stay white led to a further reduction in lead content with an increase in titanium dioxide and extender pigments. Although these newer paints were less costly to make, their exterior durability did not suffer. The paints failed by gradual chalking, which left a much better...
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A Few Pix
Architecting and photography can't very well avoid one another, seeing that they both depend on the successful understanding of maybe two-three hundred of the same things—like light and shade, color, form, texture, and all that other stuff.

So this section presents photographs by architects, purposely, of non-building subject matter. Their interest in Nikon-pointing is obviously much more than casual.

*Bill Dikis*
HOUSE PAINT ... continued
repainting surface than that left by older high lead
content paints.
These were yesterday's paints.

Today's Paints

Today's standards are more demanding. White paint
must stay white. Colored paint must be color perma­
nent. Gloss paint must dry with a uniform gloss, wheth­
er applied at the high humidities prevalent in the San
Francisco Bay area or at the high temperatures during
the summer months in Salt Lake City. Flat paint must
be durable. Paint is expected to resist the growth of
mold or mildew and must not blister or peel. Paint
must decorate as well as protect the paintable surface.
Decoration means colors and lots of them — not 12 or
18 ready-mixed colors but hundreds of colors from
which to choose. Today's paints must protect not only
wood and metal but hardboard, wood fiberboard, and
the newer types of composition board that are now ap­
pearing on the market.
The high standards set for today's paints can no
longer be met with a single coating. Oil paints are ex­
tremely durable, can be made to stay white, brush eas­
ily, and offer satisfactory performance in two coats on
new work. Also, mildew resistance can be built into the
oil film. However, the new silicone-alkyd and conven­tional
alkyd trim paints are more color permanent.
Latex flat paints offer resistance to blistering, mold
and mildew growth, and color fading. They are ex­tremely
durable. With the proper surface preparation,
they can be applied over numerous substrates, whether
new or repaint jobs are required.
The alkyds used in conventional house paints are
reaction products of a polyhydric alcohol with a poly­

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basic acid and are further modified with a drying oil. The alcohol, which may be glycerine, is chemically reacted with the phthalic acid or anhydride to form glyceryl phthalate resin. This resin is brittle and has limited solubility. The addition of a drying oil plasticizes the resin to form tough and elastic films. Alkyds can be used alone or blended with drying oils or other resins to produce a wide range of air-drying finishes. Alkyd resin paints dry with a high gloss, and have good color and gloss retention on exterior exposure.

Until a few years ago, alkyd resin trim paints enjoyed the enviable distinction of being the only such type in their field. Now a newcomer, the silicone-alkyd trim paint, has entered the field. Silicone resin is derived from silica, or the same inert material found in sand and glass. This resin, when chemically reacted with alkyd resin, produces a silicone-alkyd resin. Pigmented coatings made from silicone-alkyd resin retain color and gloss about twice as long as their conventional alkyd counterparts. High quality exterior trim and maintenance paints are made with silicone-alkyd resins. A silicone-alkyd coating is more costly than conventional alkyd paint. Although this precludes mass market sales, silicone-alkyd coatings are most suited for those jobs where labor rather than material is the prime cost consideration. Radio and TV towers, skyscraper window sash, bridges, and guard rails are typical candidates for silicone-alkyd finishes.

Exterior latex paints are made from emulsions. An emulsion is a mixture of two liquids that do not dissolve in one another. French dressing, a mixture of oil and vinegar, is an example. In a paint emulsion, the mixture consists of resin globules in water. If one were to examine a paint emulsion under a microscope,
the resin particles would appear like ping pong balls touching each other. When an emulsion dries, the particles fuse together to form a film. The fusing process is best completed at normal drying temperatures. This is why latex paint should not be applied at temperatures below 50° F.

The resin portion of these emulsion paints can be butadiene-styrene, vinyl (usually polyvinyl acetate), or acrylic. Butadiene-styrene and vinyl paints have been used mostly on masonry surfaces with the vinyl being more popular. Although suitable for use on masonry surfaces, acrylic resin has been most often used in exterior wood paints. The paints have good wet adhesion. This adds to their blister resistance when they are applied on wood that may become damp from moisture either inside or outside of the building.

Latex paints are durable. Whites stay white, while tints and solid colors hold their color well. They brush easily and can be applied on damp surfaces. They dry fast which means that two coats can be applied in a single day. Tools can be washed clean with water. Latex paints allow moisture to pass through the film from the substrate to the outside and, therefore, have much greater blister resistance than more impervious oil or alkyd paint films. Although available only in a low sheen, latex paints are fast becoming the largest selling exterior house paints.

Tomorrow's Paints

To talk of tomorrow’s paint today is in a way speaking out of turn. A tremendous amount of research is underway on paint pigments and vehicles. It will be necessary to wait until these improved ingredients are available before we can begin to formulate tomorrow’s
paints. However, we can draw specifications for future paints based on current trends, technology, and consumer demands.

There is a definite trend to use more prefinished building materials. Solution-vinyl coatings, factory applied, are now used in producing some prefinished materials. They will be improved. Increasing labor costs will influence application techniques. Paints will be made which can be applied in fewer coats. There will be accelerated usage of "high build" finishes made with improved epoxy, polyester and urethane resins. Concern over air pollution will mean greater emphasis on improved water-thinned coatings. More colors and longer lasting colors will be demanded of tomorrow's paints. Gloss or semi-gloss emulsion paints will probably be among tomorrow's house paints.

One might assume that it would be comparatively easy to formulate tomorrow's paints, once the coatings chemist knows the requirements. However, the formulator is handicapped as many of the needed raw materials are still on the drawing boards while others will have to be time tested. Some ingredients must be developed or modified in order to comply with local laws and regulations, like the Los Angeles County Air Pollution Rule 66, and San Francisco Bay Area Regulation 3.

Tomorrow's house paint could be a new type of coating that cures by chemical reaction and/or heat which will increase the life span of the finish. Both solvent thinned and water reducible paints will be available, with water types predominating. Regardless of the types or kinds, tomorrow's coatings will still be decorative and protective.

Chemists began work yesterday and are still working today to provide tomorrow's coatings.
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USE OF SAFETY GLASS URGED BY AAMA

Safety glass in all residential aluminum sliding glass doors in the public interest is the long-range objective of a new program unanimously approved today by Architectural Aluminum Manufacturers Association. Approval came from the Board of Directors and the Technical Committee.

"We are 100 per cent in favor of safety glass in every sliding glass door sold by both members and non-members alike," said W. H. Goff, AAMA president. "The public deserves building products designed for the ultimate in safety. We are taking immediate steps to reach all manufacturers of sliding glass doors and other key groups with the importance of changing across the board to safety glass."

The program kicks-off with publication of sliding glass door glass safety guidelines for revising building codes, drawing construction specifications, or drafting legislation which will be broadly distributed to all levels of government, code groups, lenders and other bodies related to the building industry.

AAMA also plans distribution of a folder on glass safety in sliding glass doors to the millions of readers of newspapers and national magazines. General publicity in glass also will be increased to newspapers, radio and TV stations.

The AAMA Glass Door Safety Committee has established from its membership special subcommittees who will promote glass safety. The subcommittees will work with model building code agencies, local and state building code and government forces, Congress, lending agencies, insurance companies and the National Association of Home Builders.

One of the greatest supports of glass safety will come from the U.S. Public Health Service and the National Safety Council," Goff noted. "They are most cooperative, and we will continue to work very closely with both groups. This cooperation will include an all-out publicity program by them, which we believe will eventually reach every home in America. The support of these respected authorities will drastically shorten the time required to gain complete acceptance of safety glass," Goff concluded.
ACTION IS TAKEN ON HARDWOOD SHORTAGE

A tremendously expanded research and service program aimed at increased future supplies and improved quality of all commercial hardwoods has been charted by the U. S. Forest Service in cooperation with representatives of the hardwood industry.

The program was outlined in general at an unprecedented meeting of Forest Service officials and several industry executives in Chicago.

The Forest Service envisions cooperative programs with each of the 50 states, planting of trees on state-owned lands, enlarged insect and disease control studies, expanded fire prevention and stepped-up programs for dissemination of research results to land owners and farmers.

Hardwood workshops are needed throughout much of the nation, even at the county levels to encourage small land owners to produce quality hardwoods.

Among industry representatives at the meeting was Donald H. Gott, executive director of the American Walnut Manufacturers' Association and chairman of the Hardwood Action Council. He lauded the program as marking "the first time in the hardwood industry that an all-out research and timber management effort has been developed to bring about the needed increased supply of domestic hardwoods as well as to improve their quality."

He said the program was prompted in part by the success of a walnut improvement program begun five years ago by the then Central States Experiment Station, in cooperation with AWMA.

"What really triggered the Chicago meeting, however," Gott added, "was a growing general awareness of the harmful effects of the unrestricted export of walnut logs.

"As a result of soaring exports of walnut logs, the supply of walnut for lumber and veneer is being depleted rapidly, the quality of walnut for domestic use is suffering and the price is skyrocketing. Moreover, the situation has now affected other hardwoods. As users turn to other species because of the walnut shortage, they find the increased demand has made a number of these species increasingly difficult to obtain.

"The answer to all this, if the domestic hardwood industry is to survive, is an imaginative research approach of the magnitude of this new program," he said.
CONSULTANT WANTS BETTER MAINTENANCE PLANNING

A glance at most modern facilities should convince even the casual observer that the sense of esthetic value and the artistic touch of architects, designers and construction people have kept pace with their structural skills.

"But," says George Pierose, chairman of Pierose Building Maintenance Co., "sometimes these creators of beauty and facility make mistakes in design which create inefficiencies the owners and managers must pay for indefinitely."

"These might have been avoided if they had called in a maintenance consultant!"

A study of cost records should tell them, eventually, if their maintenance is costing too much, he noted. But the time for such studies is before the building is designed and material ordered.

"Test figures are available on the quality and maintenance requirements of most materials that go into modern structures," he said. "And experienced maintenance people can help them in the structural design, if they are brought into the picture early enough."

The 54-year-old Los Angeles-based Pierose Firm, largest building maintenance company in the West with two subsidiaries (one which specializes in condominiums and high-rise structures, and the other which performs complete operational preventive maintenance procedures for oil and chemical refineries), maintains some 18 million square feet of building space.

"We have found numerous instances when a change in design or specifications could have saved the owner money every day of the life of the structure," Pierose said.

Many of the most obvious mistakes can be found even in some of the newest buildings, he said. In listing some of the more obvious "maintenance errors," he cited:

1. Inadequate storage space which necessitates more costly small-quantity purchases.

2. Janitor rooms which are too small for keeping daily supplies. (One new building has the electrical control panel in the janitor's room, which precludes any storage.)

3. Costly, beautifully-faced doors open into the janitor's closets in another new building. The rinsing of mop handles scar them — and the janitor must clean them every day.

4. Terrazzo floors in rest rooms of some new buildings foretell costly maintenance, since cleaning acids sometimes necessary in these facilities destroy terrazzo. Ceramic tile is not affected by these acids.

Noting the importance of maintenance research, he reported that one study made over a 12-year period showed that a carpeting, with an initial cost three times that of a vinyl asbestos tile tested with it, actually cost only about one-third that of the tile when maintenance costs over the years were analyzed.

"The total amount saved by installing carpeting was 2.16 times its initial cost," he explained.

Pierose urged architects and designers to test wall and floor covering especially before specifying them.

"Wall materials which have a vinyl surface, are glazed, plastic-coated or enameled, may cost more initially, but the difference is soon paid for through lower maintenance costs," he said.

Most architects now specify many low-cost maintenance appointments which are apparent to even the inexperienced eye, Pierose noted. These include large push-plates and scuff-plates on washroom doors which minimize the cleaning and refinishing problems; vinyl or plastic-coated wall coverings; light fixtures of designs and materials which are easily cleaned; automatic entry doors which virtually eliminate hand smudge on glass; roof designs which facilitate automatic window washing equipment; and many other low-maintenance, money-saving specifications.

"But considerable improvement could be made in many designs which would simplify maintenance," Pierose said. "The structural arrangement, the location of air conditioning equipment and its exhausts, the location of service rooms and many other elements of basic design could be improved to reduce maintenance costs."

Asserting that a building should be designed to "look good 20 years from now, not just for the ribbon cutting," Pierose urged the use of a maintenance consultant who could show the cost differences over a period of time before the designs are submitted for approval.

"In our business there's a saying: 'Anything hard to clean cannot be kept clean.'" he said. "I'll add: 'It'll cost more too!'"
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