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ST. THOMAS CHURCH BY CRAM AND GOODHUE
BUILDING TYPES STUDY: DESIGNING THE NEW MARKETPLACE FOR DOWNTOWN AND SUBURB
FULL CONTENTS ON PAGES 10 AND 11

ARCHITECTURAL RECORD
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You know it's vinyl, but you might think it's carpet.

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83023 Gold  83024 Green  83025 Gray-Beige

The Quiet Zone pattern illustrated here is called Grand Central.

For more information, send this coupon to Armstrong, 304 Rock Street, Lancaster, Pa. 17604.

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Company

Address

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FROM THE INDOOR WORLD® OF

Armstrong

For more data, circle 1 on inquiry card
Overly acoustical doors perform with distinction at Kennedy Center.

John F. Kennedy Center for the Performing Arts, Washington, D.C.
Architect: Edward Durrell Stone, New York, N.Y.
Acoustical consultant: Dr. Cyril M. Harris, New York, N.Y.

Unique problems faced the architects who designed Kennedy Center for the Performing Arts. The hall combines a symphony hall, an opera and a theatre, each with its own facilities and the capability to present simultaneous performances. The structure is on the approach to the Washington National Airport, so incoming aircraft could raise serious sound problems. Overly acoustical doors helped solve those problems.

Overly furnished and installed acoustical doors of various sizes, thickness and performance ratings throughout Kennedy Center. Some were in pairs, with transom panels with integral seals. Others had curved faces. All doors were prepared for various surface finishes. Performance ratings covered both 45 db and 50 db.

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Aesthetically and acoustically, Overly doors are performing with distinction at Kennedy Center. We can show you how they can perform well for you. For more information, write Overly Manufacturing Co., Greensburg, Pa. 15601. Telephone (412) 834-7300.

overly
MANUFACTURING CO.

MAKES THE DOORS THAT OTHERS DON'T

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Armstrong introduces the bold textured lay-in ceiling panel. Boldface.

Easy-to-install, economical, and, above all, good-looking—those were the criteria that the Armstrong designers had to meet for our latest lay-in ceiling panel.

What they gave us was a panel with an exciting, bold, rough texture. We called it Boldface, and we think it’s a beauty.

Its design is nondirectional with a white paint finish, making Boldface the ideal ceiling for any interior space.

Boldface is available in 24" x 24" or 24" x 48" lay-in panels and 24" x 48" Tegular lay-in panels which rest on a standard exposed-grid suspension system. Installation is simple and economical.

Its specifications rank Boldface well. It has an NRC of 60–70; flame-spread rating of Class 25; good light reflectance—70–74%. And it has an average C factor of .52 at 3/8".

Boldface. It met all of our specifications and more. We’re sure it will exceed yours, too.

For more information, write Armstrong, 4201-3 Rock Street, Lancaster, Pa. 17604.

FROM THE INDOOR WORLD® OF

Armstrong

For more data, circle 3 on inquiry card
Letters to the editor

In this era of very mixed values, Bob Hastings was kind, helpful and ever ready to share his prodigious knowledge with all comers. What is more, as your January news columns so well put it, "(he) set high standards, which he lived personally..."

A lot of us will miss him.

Stephen A. Kliment, AIA
Architect, Editorial Consultant

I read your editorial "Industrialization and Costs: Are we making the same mistakes again?" in the September 1973 Record, and I was delighted that you didn't pull any punches. I am sick and tired, to coin a phrase, of listening to promoters pushing "systems" when in fact, these people have little or no knowledge of our business. Neither am I at all thrilled with the way a lot of big companies have been jumping into the construction business as if they were getting in the hula-hoop business or some other fad. I suggest that these conglomerates get into brain surgery instead, since everybody knows there is more money to be made there than in your office or my office.

Anyway, thanks again for writing what you did—I only hope that every architect reads it and benefits from it.

John M. Casey, P.E.
Commonwealth Engineering Co.

I would like to commend you and your staff for the outstanding December issue of the Architectural Record on planned communities. It is the finest publishing dealing with this subject that I have ever seen. The thoroughness with which you analyzed the subject and your detailed presentation of major examples represents the highest level of architectural journalism. Jonathan Barnett's article and Felicia Clark's article with Todd Lee, both on how new communities are planned shows the understanding of this subject to a new high.

A hearty "well-done!" from all of us in this office to the Record.

Earl R. Flansburgh, FAIA
Earl R. Flansburgh and Associates, Inc.

Congratulations on your high quality execution of a very ambitious project—the December number on New Towns. I know such a wrap-up is a difficult one, but your staff really excelled. However, I would like to make a few modifications—both major and minor—to the Flower Mound section. Unfortunately, some old information was apparently relied on instead of the most current which I forwarded to your publication. Our consultant Lewelyn-Davies Associates had nothing to do with direction of the plan. It was the firm of Marshall Kaplan, Gans and Kahn which was charged with that responsibility. Mr. Kaplan has since left his firm and is Project Manager of Flower Mound New Town. MKG was not mentioned as the social services consultant to the project in the listing on page 129. The other major point is the fact that our current plans call for no neighborhoods or villages. Under an early plan by Richard Browne & Associates of Columbus, this was suggested but it is the feeling of our planners that the neighborhood that we have known is dead.

Only one other point and this is quite minor: no credit was given to Flower Mound New Town or the firm of Marshall Kaplan, Gans and Kahn for the diagram on pages 120-121.

Again, I congratulate you and your staff on the production of a very significant project. I am certain that our offices will be using it as reference time and time again.

David Dunigan
Director of communications
Flower Mound New Town, Ltd.

Calendar

APRIL


18-20 West Coast Women's Design Conference, University of Oregon, School of Architecture and Allied Arts, Eugene, Oregon. Phone (503) 806-3631.


MAY


3rd international conference on "The Professions and the Built Environment," Graduate School of Design, Harvard University, Cambridge, Massachusetts 02138.

7-8 Conference on building codes and OSHA, Washington University School of Architecture, St. Louis, Missouri.

7-8 Conference on university in construction, New York University, New York City. Contact Sandy Padrick, NYULUCE, Room 3700 S, 600 Third Avenue, New York, New York 10016.

9-10 Seminar on How the Architect and Engineer Can Profit as Builder-Developer, Atlanta Sponsored by Architectural Record. Contact MCI, 505 Park Avenue, New York, New York 10022. Phone (212) 759-5830.

10-11 Seminar on documenting architectural and environmental heritage, Americana Hotel, Bal Harbour, Florida. Contact Architecture Department, University of Miami, Coral Gables, Fla. 33124.


26-June 1 FI/PICI Congress, New York Hilton and Waldorf-Astoria, New York City. Contact the Prestressed Concrete Institute, 20 North Wacker Drive, Chicago, Illinois 60606.

JUNE


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T-LABP
Armstrong introduces a grand new look in ceiling tiles.

Grandshire.

The look is houndstooth check, and its appearance is unbroken across an expanse of ceiling.

It's Grandshire, a 12" x 12" tile.

Grandshire is the newest addition to the Travertone ceiling line and offers a distinctively different monolithic look.

You can achieve this look two ways: by cementing the tiles directly to a sound, existing ceiling or by suspending the tiles from a concealed-grid system. Either way, it's an exciting seamless look.

Grandshire is an acoustically efficient, mineral fiber tile, with a Class 25 Flame Spread Index and an NRC of .60-.70.

For more information on Grandshire, write Armstrong, 4201-2 Rock Street, Lancaster, Pa. 17604.

You'll agree, it's a grand new look.

FROM THE INDOOR WORLD OF

Armstrong

For more data, circle 4 on inquiry card
The most beautiful roofing material you can use just happens to be the best insulation, too.

Red Cedar shingles and handsplit shakes are twice as resistant to heat transfer as asphalt shingles. Three times more resistant than built-up roofing. In fact, red cedar out-insulates such roofing or siding materials as asbestos-cement shingles, slate, aluminum and architectural glass."

Red cedar deserves close consideration for architects and builders concerned with the energy conservation of their structures. Its unique cellular structure makes it even more insulative than many other woods.

And the traditional overlapping application method effectively multiplies cedar's resistance to heat transfer.

Add to this the design flexibility and durability of red cedar on residences and commercial structures. It's no wonder the most beautiful roof and sidewall covering you can possibly use is also most efficient.

For more details, write Red Cedar Shingle & Handsplit Shake Bureau, 5510 White Blvd. Seattle, Washington 98101. (In Canada 1055 West Hastings St., Vancouver 1, B.C.)


Red Cedar Shingle & Handsplit Shake Bureau
One of a series presented by members of the American Wood Council.

For more data, circle 5 on inquiry card

These labels under the bandstick or on cartons of red cedar shingles, hand-split shakes and grooved shakes are your guarantee of Bureau-graded quality. Insist on them.
Armstrong introduces a suspended ceiling panel tough enough to take abuse.

Armatuff.*

You might look at this ceiling and think it's just another 2' x 4' lay-in. But its name gives away its distinguishing feature - toughness. You can't see it, but Armstrong has coated these lay-in panels with a thick, tough mineral material that allows Armatuff to stand up to repeated abuse. But, if these lay-in panels are subject to mistreatment, can't they be pushed into the plenum? If Armatuff were an ordinary ceiling, the answer would be yes. But Armstrong has developed an impact clip that firmly anchors Armatuff to the suspended grid.

This combination makes Armatuff the ideal ceiling system for schools or anywhere else where a ceiling could possibly be damaged. And Armatuff can easily blend in with any decor, because its surface design is a nondirectional, rough natural texture, with a factory-applied white vinyl latex paint finish.

For more information, write to Armstrong, 4201-1 Rock Street, Lancaster, Pa. 17604. You'll agree: Armatuff presents a good, tough case for itself.

*Process patent pending

Armstrong

For more data, circle 6 on inquiry card
If you find a cooler with 6 of these 12 features, consider it.

1. Start capacitor for longer compressor life
2. ARI certified—assures rated capacity
3. Dual thermostats for extra frost-up protection
4. Easily accessible stream height adjustment for in-house servicing
5. Automatic stream regulating valve inside cabinet—tamperproof
6. Four-piece replacement diaphragm kit for quick, economical, in-house repair
7. Incoming water line bonded to refrigerant coil around storage tank for instant cooling plus storage for peak loads
8. Non-removable anti-squirt device—vandal resistant
9. Welded unit-body cabinet construction—quiet, rattle free
10. Exclusive two-stream bubbler for ample, satisfying drink
11. Shipped completely assembled and tested
12. Removable drain strainer for easy cleaning

If it has all 12, buy it.

Okay, you're not fooled. You knew all the time that only Halsey Taylor offers all 12 of these features in its water coolers.

But there's more. We'll deliver our coolers in any of eight Polychrome colors. Or stainless steel. Or PATINA bronze-tone stainless. Even vinyl-laminated steel in a choice of colors.

Now dwell a moment on point 11, above. It means that we test every Halsey Taylor water cooler as it comes off the line. Thoroughly. Every cooler. No exceptions. And we completely assemble every cooler at the factory. It prevents installation booboos, makes the installer's job quick and simple.

If you can find a more dependable water cooler, buy it. If not, remember our name.

Halsey Taylor Division
1554 Thomas Road
Warren, Ohio 44481

For more data, circle 7 on inquiry card
Take a second look.
Those ceiling tiles are really lay-in panels.

Introducing the Second Look™ ceilings by Armstrong.

You really have to look twice. These are not 12" x 12" or 24" x 24" ceiling tiles, they are 2' x 4' lay-in panels.

That's why we call our new lay-in panels Second Look. They're designed to give ceilings the look of tile but with the economy of lay-in panels. What your client gets is a good-looking bargain. And the ceiling gets a lot of second looks.

We created this effect by scoring the panels to simulate 12" x 12" or 24" x 24" tiles—and we matched the exposed grid to the board finish in a speckled or low-gloss design.

Installation is the standard, economical suspended grid system. Just as soon as the panels are suspended, the total effect is achieved, because the grid and the ceiling panels visually blend to give an overall appearance of more expensive tile.

Find out more about these unique Second Look lay-in ceiling panels. Write Armstrong, 4201-4 Rock Street, Lancaster, Pa. 17604.

Then you can take a good long second look at our Second Look.

*Second Look Ceiling Systems I and II patent pending.

FROM THE INDOOR WORLD® OF

Armstrong

For more data, circle 8 on inquiry card
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3. George T. Heery says GMP doesn’t preclude CM
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79 Building activity
George Christie takes a look at the effects of energy, fuel and other crises in this first update of the outlook for 1974.
FEATURES

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Dark, disciplined and distinguished Park Central is a remarkably handsome new business center in downtown Denver's Skyline renewal area. Its architectural elegance is especially significant in view of the fact that it was built as a speculative venture. Combined in the block-long building are rental offices, retail shops, an unusually spacious banking office, and a parking garage topped by a pedestrian plaza designed as part of a raised concourse through the area.

113 The fourth St. Thomas Church
RECORD reported in 1914 that the new St. Thomas Church in New York, by Ralph Adams Cram and Bertram Grosvenor Goodhue, was "without doubt the most important and most successful parish church" in America. A second look 60 years later finds reasons, some of them unexpected, for vindicating this opinion.

119 Building renovation and the corporation image
Two projects—one urban and one rural—illustrate that occupying an older structure need not involve problems for the client desiring a progressive image. This concept is sure to grow in popularity, as the benefits of reduced costs are realized—and a surfeit of presently outmoded building stock continues to grow.

127 "The future of the office building," by Jonathan Barnett
A thoughtful analysis of how today's office buildings evolved into their world-wide stereotyped forms, and some portents for their future in the over-all urban complex.

131 Two houses at The Sea Ranch
The special character of The Sea Ranch—a second home development on the Sonoma County coast in northern California—requires a sensitive relationship between buildings and land. Simplicity is the essence of the two houses shown here: the Nimricht house (page 131), Fred L. Osmon, architect; the Whiteside house (page 134), Donald Jacobs, architect.

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137 Shopping centers
Will the typical regional center be replaced by the downtown mall within a hotel-office complex or "omnicenter"? What will the better suburban and exurban centers which do get built be like? What are the constraints which will be exacted by newer environmentally conscious zoning? No one knows for sure but architects who design merchandising facilities are giving these questions a lot of study.

138 Broadway Plaza
Los Angeles, California by Charles Luckman Associates

142 Baystate West Shopping Mall
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ARCHITECTURAL ENGINEERING

151 Flexible electrical distribution for changing spaces
New wiring systems have been developed in response to owners' requirements for flexible and open spaces to get power and communications to convenient points of use. Even plug-in systems are available to allow lighting fixtures to be easily moved or changed. Examples are shown of the growing number of applications in office buildings, schools and stores.

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NEXT MONTH IN RECORD

Building Types Study
Alan Lapidus calls it an American hybrid in hotel design. William B. Tabler calls it a single-structure city. They are referring to the convention hotel, and with the help of these two noted hotel architects, the RECORD will examine the behind-the-scenes functional—and financial relationships that produce a successful convention hotel.

Four Houses
You don't have to be rich to have an architect-designed-to-order house in the Hamptons, if the architect—in this case Robert Loren Rotner—knows what good builder developers know about construction economics. Next month's RECORD will discuss four remarkably low-cost custom-built houses designed by Rotner and constructed in eastern Long Island.
Desirous of helping the developing countries of the world to meet the challenges of unprecedented urban growth,

Inspired by the United Nations Resolution 3001 to hold a major United Nations Conference-Exposition on Human Settlements (Habitat '76) in Vancouver, Canada from May 31 to June 11, 1976, and wishing to contribute to its success,

The International Architectural Foundation, Inc. (IAF) has been formed for the purpose of organizing an International Design Competition open to the professions of architecture and planning throughout the world.

The IAF proposal has been described as “exciting and innovative” by Helena Z. Benitez, Coordinator, Preparatory Planning Group for Habitat '76. And Eric Carlson, its Deputy Director, has stated, “the IAF Competition has great potential for providing useful inputs to the important Vancouver meeting.” In addition, prominent architects, planners and government officials around the world have expressed their enthusiasm and encouragement.

The Competition, scheduled to start in the late summer of 1974, when full details will be available to entrants, proposes to challenge the design professions to address themselves to a problem of grave and growing international concern: the human and environmental problem of accelerating urbanization. The challenge will be to design within a largely pre-existing urban-regional context a new and beneficent cell of urban growth—one that will foster human well being and development and one that will be fully considerate of environmental impacts. Thus, within a framework reflecting the universal problem of urbanization, three specific sites for a human settlement of moderate size will be selected to which designers can respond in the specific detail of both their physical characteristics and their social and economic factors. These sites will be located in three cities: one each in Central/South America, the Middle East/Africa, and Asia/Oceania. Sponsoring local agencies will participate in the development of the Competition programs and agree to construct the winning designs and appoint their designers as project architects. In this unprecedented effort three design competitions, with three awards, to be built in three locations is projected; but the worldwide creative effort generated will yield the further benefit of many new ideas for urban community development which it is expected will be displayed at the Vancouver Conference-Exposition, featured in the world’s leading architectural magazines, and published in book form.

The international consulting firm of Guthheim/Seeling/Erickson has been appointed by The IAF to organize and manage the Competition.

Funds needed to meet the Competition budget will be contributed by a small number of philanthropic sources in several countries and by interested business firms. The IAF is pleased to announce that the Graham Foundation has already endorsed its Competition and pledged its financial support.

If you would like to consider the possibility of joining a small group of financial sponsors, and being identified over a three-year period with a major effort to help developing countries find creative and practical solutions to some of their crucial problems of human settlements, write (in the U.S.) Blake Hughes, The International Architectural Foundation, Inc. (41), 1221 Avenue of the Americas, New York, N.Y. 10020, or (in France) Jean-Louis Servan-Schreiber, The International Architectural Foundation, Inc., 10 Rue Lyautey, Paris 16.
What can we do about housing the world's urban poor?

We can try. And here's one way:

On the facing page, ARCHITECTURAL RECORD and L'ARCHITECTURE D'AUJOURD'HUI announce the formation of the International Architectural Foundation, Inc. for the purpose of organizing an "International Design Competition for the Urban Environment of Developing Countries."

That is a mouthful—and a mindbender!

The Competition—as the announcement explains—is for the design of prototypical urban neighborhoods "within the existing urban context" of three cities—one in Central/South America, one in Middle-East/Africa; and one in Asia/Oceania.

Full details are not yet available to entrants—since while The IAF is far along in developing commitments for program developments, commitments for building the premiated designs and commitments as to the three target cities, they are not yet locked in. But we expect these commitments soon (this has been an active project for just short of a year) and we expect the Competition to be formally underway this summer. For now, the most important questions to raise (and try to answer) are these:

Why such a competition now? How should one react to this idea? Can it really be done? Fair questions. Only the last cannot be answered with certainty. We believe it can—and will—be done. We take pride in announcing and endorsing The IAF Competition, so enthusiastic are we about the project, so impressed by the reactions of eminent persons at home and abroad, and so deeply in agreement about the need.

The late Charles Abrams, who was perhaps the single most knowledgeable person on the housing problems of developing countries and who was long a consultant to the United Nations, wrote in 1964 in his splendid book, Housing in the Modern World, "The growing city, with all its faults, is the crucible in which man's destiny will be determined."

And, because it bears so much on the decision to sponsor an international design competition, we want to quote Abrams further on the urbanization of developing countries.

He said, "The solutions to the problems of urbanization may be the key to an international rapprochement—and even to a lasting peace." He added, without minimizing the problem of space shortages around urban cores or the increasing strain on food and material supplies, "The main obstacle is, of course, the dearth of talent and knowledge for meeting the challenges of urbanization."

"The dearth of talent and knowledge." Certainly that is still the main obstacle—and it is to help remove that obstacle that the United Nations has scheduled one of the most important conventions in its history to be held in May 1976 in Vancouver, Canada: "The United Nations Conference-Exposition on Human Settlements [Habitat '76]."

Last year the Governing Council of the United Nations Environment Program (UNEP), seeking U.N. General Assembly endorsement for the Vancouver Conference-Exposition, defined its basic purpose as follows: "To stimulate innovation, serve as a means for the exchange of experience, and ensure the widest possible dissemination of new ideas and technologies in the field of human settlements."

The General Assembly responded in January by reaffirming its earlier decision to hold a Conference-Exposition and directed that the main purpose of Habitat '76 be "to serve as a practical means to exchange information about solutions to problems of human settlements against a broad background of environmental and other concerns. . . ."

We have applauded the objectives of Habitat '76 from the start, but at the same time we have asked whether it would be enough to assemble a couple of thousand official representatives and technical experts in Vancouver to confer on human settlements, exhibit solutions to the problems of urbanization, and disseminate large amounts of related literature around the world.

It seemed to us that something more was needed—something that would add to the effectiveness of Habitat '76 by engaging the attention of more people with something to contribute and eliciting new, creative and practical responses to problems of urbanization.

That is how the international design competition was conceived, and we are happy to say that The IAF has been greatly encouraged to pursue this difficult project by United Nations authorities responsible for planning Habitat '76. They feel, as we do, that the Competition can provide valuable inputs in two ways:

1) by focusing the attention of architects and planners (as well as students) around the world on the looming crisis of accelerating urbanization in developing countries;

2) by encouraging the submission of a substantial number of "designs for a small increment of urban growth within a larger urban planning context" for three widely separated cities—designs fully sensitive to local cultural,
We refer to a "looming crisis" in all earnestness—for we must do something
Much has been written about this crisis for a long time, but its full implications have not
been well enough understood, nor have they
penetrated deeply into the consciousness of people in general or even those equipped to do
something constructive about easing it.
There is not room here to explore all aspects of the urbanization crisis, but it is, of
course, terribly real. Consider this statement by
the U.N. Expert Panel on the Urban Conference-
Exhibition: "In the next 25 years, the
world's human settlements will confront pres-
sures unprecedented in human history."
Why? Well, for example...
• World population will nearly double,
• The majority of mankind will for the
first time live in urban areas of more than
20,000 inhabitants,
• The buildings of all kinds required will
exceed all the construction hitherto under-
taken by all the world's people!
There is just no doubt that there are many
new forces engendering perilous pressures in
developing countries. As a high rate of tech-
nological and economic innovation brings
changes around the world, the expectations of the
poor are raised—but too often they do not
share in the benefits of this innovation, and so
it serves only to add bitterness to frustration.
Winds of change drive millions of refugees
from rural deprivation to the city—where all
they find is a different kind of deprivation; per-
haps worse because roots have been torn up,
family and community patterns shattered, the
opportunity for self-help reduced.
These are great winds—so far heedless
and mindless and beyond control—yet, para-
doxically, full of potential for a better life IF...
If men of goodwill, vision and ability can
be found and motivated to help turn this
stormy flux to good account for the under-
privileged of the world. There must be wider
awareness, more understanding, more con-
cern, more commitment—and above all, the
that which alone validates commitment:
PARTICIPATION.
And that is what the Competition is all about:
participation
We want to involve architects and planners
around the world in the solution of real
problems. And we hope that some architects and
planners will be moved to continue to dedicate
their skills long after to the task of creating bet-
ter human settlements around the world.
We are not so naive as to believe that ar-
chitecture is the solution to all the problems of
the world; that good planning and design is a
substitute for jobs that don't exist, or for food
that doesn't exist or is too dear. But housing
and a sense of community are basic human
needs—and that is the part of the problem that
we know most about and can best do some-
ting about. So let us try.
—Blake Hughes, publisher

Our seminar on selling professional
services: a confident commercial
The first seminar on "Marketing professional
services"—jointly sponsored by RECORD and
Building Industry Development Services—took
place last month in Washington—ap-
propriately (for a seminar for architects and
other professionals) in the chapel of Mt. Ver-
non College which won an AIA Honor Award
for its architects, Hartman-Cox, Ray Gaio and
Gerre Jones of B.I.D.S., who produced and
directed and, as they say, played a leading
role, did a very good job indeed—not just in
my opinion, but in the opinion of the vast ma-
-jority of the attendees. One architect-attende-
e, I'm sorry to say, left disappointed at the end of
the first day (we're hoping he'll attend the sec-
day of a later seminar) but the other 20
gave the seminar good marks, and most gave
it excellent marks. A subjective but signifi-
cant scorecard: All but three attendees attended
the optional evening meeting on the first day, and
all but three (who really did have to be on
etime) stayed until 5 o'clock of the Friday
session—and in my experience that's darn
near unique. We made some mistakes in this
first effort—the man who was supposed to
show how to make most effective use audio-vo-
sual techniques delivered a dreadful commer-
cial for his sponsor; and we scheduled more
time for discussion of "political action"—a
perfectly straightforward discussion of how
and when to get help from your Congress-
man—than people either were interested in or
wanted to hear about (these days).

Anyway, as editor of a magazine which is
sponsoring these seminars (and which will get
a fair profit from them if all goes well) I've been
diffident about promoting them (unseemly
commercialism in an Ivory-Tower type, and all
that). But having attended and participated in
the first one (and the second will have taken
place, in Atlanta, by the time I have to put a
final approval on this copy) I can say confi-
dently that I think that the seminars are a good
investment for architects and other profes-
sionals who are interested in developing
within their firm a planned program for the de-
velopment of the right kind of work.

The emphasis is on planning—on decid-
ing how much of what kinds of work the firm
can best handle, on assigning the responsibility
to the right person, on figuring how much time
and money needs to be spent, and on doing
the job of "selling your services" in a steady,
efficient, way that will meet your goals. The
seminar is hard, concentrated work—and re-
quires follow-through back at the office if any
good is to come of the effort. Indeed, Gerre
Jones and Ray Gaio intend to follow-up with
each seminar attendee to see what action has
been taken in their offices along the lines sug-
gested and developed at the seminars.

You can get all the details on the seminar
locations for the rest of the year—and a handy
coupon for signing up—on page 186 of this
issue. Or call me.—W.W.

The feature attractions: Gerre Jones ... and Ray Gaio ... and the group.

"Off the roof you goys, off the roof!"
When it's 95° outside, this brick cavity wall gains heat at the rate of only .72 Btu/h a square foot.

A highly efficient glass wall admits 60 times more heat; a top-quality sandwich panel admits nine times more; a concrete sandwich panel admits three times more.

And, from a design point-of-view, it's also a more interesting square foot.

With a U value of only .06, brick cavity walls provide the most efficient barrier against solar heat gain in buildings. A 10,000-square-foot brick cavity wall gains only 7,200 Btu/h under summer design conditions, compared to 440,000 Btu/h for a double-glazed reflective glass wall. Brick solves energy conservation problems inexpensively. In most areas, a brick cavity wall can be installed for $4.50 to $7.50 a square foot. Price includes finished interior walls.

If the cavity wall doesn't meet your design needs, other brick walls will. All offer similar energy conservation and none will shatter your project's budget.
Put the flexibility of Kodak microfilm into your drawing operation.

There are many advantages to microfilming your drawings. It saves space, it provides security, and it's one of the most efficient methods of filing and retrieving engineering data. And now, you can make high-quality enlargements directly from the sharp, crisp microfilm images that Kodak products have produced.

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Bally Walk-Ins belong where food must be right and ready for the daily pupil parade

Bally Walk-In Coolers and Freezers belong everywhere mass feeding takes place. They can be assembled in any size for indoor or outdoor use from standard panels insulated with four inches of foamed-in-place urethane, UL 25 low flame spread rated and Factory Mutual research approved. Choice of stainless steel, aluminum or galvanized. Easy to enlarge . . . easy to relocate. Refrigeration systems from 35°F. cooling to minus 40°F. freezing. Subject to fast depreciation and investment tax credit. (Ask your accountant.) Write for 28-page book and urethane sample.

Bally Case & Cooler, Inc., Bally, Penna. 19503.

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This beach has the 3 essentials
Owens-Corning has the system

1. Acoustically non-reflective "ceiling"

1. An acoustically non-reflective ceiling is a must—to keep sound from bouncing to other areas. An independent acoustical testing laboratory examined eight ceilings, including expensive coffered and baffled systems. Their verdict: Owens-Corning's Nubby II Fiberglas* Ceiling Board (left) in any standard exposed grid suspension system is best for achieving speech privacy at economical installed cost.

*Reg. T.M. O.-C.F.
for speech privacy in open offices. that puts it all indoors.

2. An unobjectionable background sound helps mask distracting speech. Special electronic speakers, installed in the plenum, make it possible to hear normal conversation clearly within defined areas, without being overheard in other areas.

3. A barrier or the proper acoustical screen is necessary to keep unwanted speech from going directly between work areas.

All three essential elements should be "tuned" to work together with the help of an acoustical consultant.


Owens-Corning is Fiberglas

For more data, circle 12 on inquiry card
The reason our Acrilan® acrylic fiber is so versatile is that it's made in two distinctly different forms. Carpets labeled Acrilan Plus offer a luxurious look and hand, and the styling versatility to set the tone for the Chairman's suite. In fact, custom designers, who have been traditionally committed to wool, are now using Acrilan® acrylic to make custom carpeting.

Q: THE LOBBY. THE CAFETERIA. CAN BE RIGHT FOR THEM
that sells for as much as $50 a yard.

Carpets labeled Acrilan 2000+ contain the only solution-dyed acrylic fiber available. The color is not applied later, but is an integral part of the fiber, all the way through. Because of this, carpets of solution-dyed Acrilan® acrylic 2000+ are the most color-fast you can specify. In sunny locations with large glass areas, like most lobbies these days, you can't beat this fiber. 2000+ is a Weatherometer rating, showing no visible fading after 2000 hours of burning noonday sun. (For comparison, the industry rating for normal carpets is 40 hours). And some of our colors actually rate up to 6000 hours!

Acrilan 2000+ carpets are also perfect for the cafeteria. Or any location where food or chemical spills are a problem. We tested it with more than one hundred hospital stains, and with their solvents, which are even worse. It came through with glowing colors.

What's more, our licensing program is your guarantee of good quality. We insist that constructions meet specific weight/density standards, because face weight minimums alone can't guarantee quality. We also require that pile density increase as pile height increases.

For all these reasons, consider Acrilan for your next contract installation. Meanwhile, for more information, write Monsanto Textiles Company, 1114 Avenue of the Americas, New York, N.Y. 10036.

CHAIRMAN'S SUITE.
ANY CARPET FIBER ALL?

A: ACRILAN CAN.
This is Triton I, Rotolite’s new odor-free, non-ammonia whiteprinter. It gives you quick, clear, sharp prints or copies. At speeds up to 19 feet per minute. All for a $50-per-month lease charge, a charge that includes everything. Which means you can use your Triton all you want. And never exceed your $50 monthly lease charge.

Our non-ammonia machine vs their non-ammonia machine.
A price comparison.

There is only one other non-ammonia whiteprinter on the market. It costs $25 per month to rent, plus $5 per hour for every hour you use it (up to 18 hours a quarter). Even under moderate usage, that adds up. In fact, even if you only use their machine two hours a week, it’ll cost you more than ours.

Not that we’ve sacrificed convenience for savings. Far from it. Our machine is easy to operate and clean (there’s no daily clean-up) requires no warm-up, and installs easily atop any table or counter (it’s only 60” long). All you do is plug it in.

Best of all, Triton I is made by Rotolite, the people who pioneered diazo printing equipment and have produced quality machines for over 20 years.

We think you’ll like Rotolite’s new Triton I whiteprinter. Why not write us for all the details? Teledyne Rotolite, 328 Essex Street, Stirling, N.J. 07980.

Now you’re on the right scent.
Why our non-ammonia whiteprinter won't cause a stink in the budget department.

TELEDYNE ROTOLITE TRITON I
Owens-Corning announces its third annual Energy Conservation Awards Program for architects and engineers

The Owens-Corning 1974 Energy Conservation Award.
"Triangles," a Steuben Crystal sculpture that captures and refracts light from multiple triangular planes.
This year, the whole world is watching.

Show our Awards Jury a building design that doesn’t waste energy—and you could win one of the Energy Conservation Awards Owens-Corning will present for 1974.

The Awards Jury will be looking for three things: Creativity. Originality. And most important of all—designs that save energy.

Too many buildings waste fuel and contribute to environmental pollution.

By continuing the Energy Conservation Awards Program we initiated in 1972, Owens-Corning hopes to stimulate even more new ways to conserve energy. And it will let us honor the architects and engineers who do the best job of designing buildings and mechanical systems that conserve fuel.

Who can enter

Any registered architect or professional engineer practicing in the U.S. is eligible. As an individual. Or in a team. But to quality, your entry must be a commissioned building project—in the design process, under construction, or a completed structure.

Although Fiberglas* products are an excellent way to conserve energy, their use is not a requirement.

Four entry categories

A winner will be selected in each of these categories:

- Institutional—schools and hospitals, for example.
- Commercial—office buildings, shopping centers, retail stores, and similar structures.
- Industrial—including manufacturing plants, research centers, warehouses.
- Governmental—post offices, administrative buildings, and military structures to name a few.

The Awards

Winning architects and/or engineers will receive the Steuben Crystal sculpture “Triangles.” Owners or clients associated with winning entries will receive other Steuben Crystal awards.

The Awards Jury for 1974

Eight outstanding professionals in architecture and engineering will serve as the Awards Jury to select the winners.


Send for entry details now

Completed entries must be submitted by August 31, 1974. Winners will be selected and notified in early September.

For a brochure giving complete details, contact your local Owens-Corning representative. Or write N. E. Meeks, Owens-Corning Fiberglas Corporation, Architectural Products Division, Fiberglas Tower, Toledo, Ohio 43659.

*T.M. Reg. O.-C.F.

Owens-Corning is Fiberglas

For more data, circle 15 on inquiry card
The new Speedramp® passenger conveyor system with glass balustrade (shown here in exact scale model) is a logical part of the new light, airy concept of interior design and merchandising.

The glass balustrade Speedramp is supported by an opaque enclosure less than 2 feet thick for a slim, attractive profile. Conventional escalator systems—even those using glass balustrade—require a heavier opaque enclosure, nearly 4 feet thick.

Speedramp offers passengers a clearer view of displays. And it offers you more opportunities to catch the shopper's gaze and turn it into sales.

Your customers also enjoy the convenience of cart shopping. A special Cart-Lock® feature allows the grooved cart wheels to grip the belt and then release automatically at ramp end.

If you're planning to move lots of people—and lots of merchandise—you'd be wise to include a Speedramp system in your plans. For complete information, write to Goodyear, Transport Systems, Box 52, Akron, Ohio 44309.

The glass balustrade Speedramp.
A moving idea that's perfectly clear.

GOODYEAR
TRANSPORT SYSTEMS

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Some of your clients may be passing up the great economy and versatility of open plan office design. And only because they think they'll lose conversation privacy. Which is why we think you and your clients should know about the Executone electronic SoundScreen™ system.

By masking the specific "articulation" frequencies with a low-level background sound, the Executone system screens out unwanted conversations from adjoining office areas.

SoundScreen components include matched amplifiers, sound generators and heavy-duty ceiling speakers...all conservatively rated for continuous operation. They're tailored to your specifications and installed and serviced by Executone sound specialists. The same system can also be used for background music, paging and alarm signals.

Coordinated with proper acoustical materials, SoundScreen makes closed conversations a reality in open offices.

For your copy of Executone's new sound masking brochure, just mail the coupon below.

For more data, circle 17 on inquiry card
Ideas that meet today's concerns.

Noise: panels that control it.

Inryco AcoustiDeck® and Acoustiwall™ reduce reverberation, a major contributor to uncontrolled noise levels which can be fatiguing, distracting...even physically damaging. In schools, factories, offices and other buildings, these panels absorb as much as 95% of sounds reaching them. Since they are integral with Inryco wall or ceiling systems, they permit noise control at minimum cost. Panels are 24” wide for fast installation, and are finished with a two-coat high-baked coating system.

For more data, circle 18 on inquiry card

Ideas from Inryco help you design
Energy: curtain walls that conserve it. Inraco®/Fenmark® steel grid wall systems make possible flat surfaced walls with low U-factor ratings. Integrated glass areas of any size you choose, with or without ventilation. Or no glass at all. And you'll save more than energy. You get all the advantages of complete factory-fabricated grid construction—units up to 8' x 40' arrive ready to install. Metal exteriors are tough galvanized steel coated with any of a wide range of long-life oven-cured color finishes.

Cost: hatches that lower it.
Redesigned Inraco/Milcor® unobstructed roof hatch has low first cost. Light weight saves on shipping, installation and imposed roof loads. And improved U-factor—down from .26 to .17—reduces heat loss. Unique stressed skin cover is more rigid, increases load capacity to 70 psf. Torsion spring is in cover, leaving opening clear. Popular 3'0" x 2'6" size, steel or aluminum. Latter can have domed skylight cover. Full line of other styles and sizes, heat and smoke vents, floor and sidewalk doors.

For more data, circle 19 on inquiry card.
Why gamble on unmatched components?

We engineer, test and ship total standby power systems.

Sure, you can pick up a generator here, an engine there, an automatic transfer switch somewhere else. If you’re lucky, maybe they’ll even work together as a system when the chips are down and the lights go out.

Maybe.

If “maybe” is good enough to stake your reputation on, fine. But please remember that we stake our reputation on a solid 5-year warranty that’s nationally advertised.

We also take full responsibility for the whole system: engine, generator, automatic transfer switch. Every system is Performance Certified by an independent testing laboratory to deliver every watt of power you pay for.

So if anything goes wrong, you’ve got just one place to call.

That’s a promise, not a bet.

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For more data, circle 21 on inquiry card

Onan

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Luminaires that look as good as they light.

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For openers, there's a variety of shapes, textured with a delicate array of tiny light controlling prisms. There's even a unique prismatic sphere.

Other spheres are smooth, and surround intriguing geometric forms that are both appealing to the eye and functional in their control of light. The spheres can be clear, or bronze, or dusk, or opal white.

It's a collection that's certain to challenge your imagination.

Mount them singly or in clusters. On wall brackets or on decorative wood or metal poles.

You'll like the way they look, and the way they light.

Your Holophane sales engineer will be glad to give you complete details on the entire collection. Or write to Department AR-4, Holophane, A Johns-Manville Division, Greenwood Plaza, Denver, Colorado 80217.

For more data, circle 32 on inquiry card.
Elkay reinvented the water cooler and here's why

Water coolers needed to be redesigned to permit simple, fast and economic installation. Elkay did that with sectional construction to keep mechanical systems away from the plumbing connection area. Water coolers needed a basin that is vandal-proof, minimizes splashing, looks better. And Elkay has created water coolers to fit every need: corner models, free standing, multiple basin models, two-level models. All of them with contemporary styling and finishes and colors to complement any decor.

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ELKAY® Manufacturing Company, 2700 S. 17th Avenue, Broadview, Illinois 60153

For more data, circle 23 on inquiry card
Louis I. Kahn, 73, died in New York on March 17. Cause of death was an apparent heart attack. He died in New York's Pennsylvania Station, on his way to Philadelphia after returning from India. Details on page 34.

The 1974 AIA Convention will be held May 19-23 at the Sheraton Park Hotel in Washington, D.C. For more information, contact AIA headquarters, 1735 New York Avenue, N.W., Washington, D.C. 20006.

A U.S. trade mission to the Middle East includes Clarence R. Jones, president of Jones & Fellers, Augusta, Georgia. Mr. Jones, a director of NSPE and chairman of the Architects and Engineers Liaison Committee, represents the construction-engineering-architectural community in talks aimed at developing work in that area for U.S. firms.

Congressional land-use advocates have opened a campaign in support of the sidetracked Federal land-use bill. The bill, delayed by the House Rules Committee, was opposed by President Nixon who earlier this year said it was top priority legislation. The President has instructed House Republican leaders to work out a compromise bill. Details on page 35.

The nation's supply of steel remains low and the forecast is gloomy. Exports are increasing, while imports are down, and coal strikes could slow production further, according to steel producers, who see no way to equal last year's 111 million tons of steel shipped. The most expected to be shipped this year is 105 million tons.

Federal assistance to city transit systems has been shunted aside in Congress, as the House Rules Committee refused to let the conference report on the bill come to the House floor for a vote. The reason: the Rules group will await the President's Unified Transportation Assistance Program before taking final action on the subsidy measure. The President's program, in another bill expected to come out of committee in several weeks, seeks to increase mass transit spending over the next three years from $900 million to $1.6 billion.

The proposed Housing and Community Development Act is ready to be taken up by the Senate. In the proposal is authority for HUD to undertake research of the social and environmental consequences of housing design. Also in the measure is authorization for $2.5 million in the next fiscal year for demonstrations and research into the use of solar energy for heating and cooling residential space. Creation of a non-governmental entity, the National Institute of Building Sciences, is another aspect of this legislation, focusing on the need for a national unit to advise all sectors of the economy on building sciences and technology.

A United Nations-sponsored conference and exposition on human settlements will be held in Canada in 1976. The main purpose of the international gathering and display of environmental technology is to exchange information about solutions to the problems of human settlements. See Editorial (page 13) and "Human Settlements: World News" section, page 41.

Archibald C. Rogers, AIA president, will serve as jury chairman for the 1974 PCI Awards, to be given by the Prestressed Concrete Institute for excellence in designs using precast and/or prestressed concrete. Deadline for entries is July 19, 1974. Further information can be obtained from PCI, 20 North Wacker Drive, Chicago, Ill. 60606.

The Wainwright Building, St. Louis, is being considered as part of a state office complex competition. In an announcement made by Missouri's Office of Administration, it was confirmed that plans are under consideration for an AIA-supported design competition for a new state office building next to the Wainwright Building which the state plans to purchase. The competition would be open only to Missouri firms.

HUD has been advised not to apply Operation Breakthrough guide criteria beyond that program. A Building Research Advisory Board committee also recommended that HUD not incorporate guide criteria provisions that deviate from currently accepted practice into its own housing requirements. Details on page 35.

VISTA and the Peace Corps are looking for volunteer architects for 72 projects beginning this summer. VISTA volunteers work in 30 U.S. cities, while Peace Corps architect volunteers work in 42 countries, dealing with problems of rapid urban growth. Architects interested in either program are asked to contact John Albertella, ACTION, Box 810, Washington, D.C. 20525. Phone (800)425-8580.

Only one per cent of the revenue-sharing funds released to states has gone to housing or community development, according to a report from the Office of Revenue Sharing. Since the program began 16 months ago, 32,665 state and local governments have received $6.6 billion, of which 42.5 per cent has been expended. Over half the funds spent went for public safety, education and public transportation. The report indicates that states chose to use 94 per cent of their funds for operation and maintenance, rather than for capital improvements.
High, higher, highest: Toronto takes the lead with world’s tallest structure

In the race for the world’s tallest freestanding structure, the city of Toronto has shot ahead with the topping-out of the 1800-foot-high CN Tower (left). Designed by John Andrews and Webb Zerafa Menkes Housden, the CN Tower—a $125.5-million communications and observation tower—is being built primarily to meet the need for improved transmission facilities for Toronto television and radio stations. It is the first structure in Metro Centre, a 15-year redevelopment project embracing 190 acres of railway land between the central business district and the waterfront. The project belongs to Metro Centre Limited, a partnership between Canadian National Railways and Canadian Pacific. Opening of the Tower will be in 1975. In Miami, the Inter-American Center Authority has commissioned the 850-foot tower (at right) as the nucleus of a 1976 inter-American trade fair to coincide with American Bicentennial activities in Miami. The tower is for observation with a retail center at the base. It was designed by Fereydino, Grafton Spillis Candela.

Manufacturers plan expansion in 1974

Companies predominantly in building-materials manufacturing plan to increase their investment in plant and equipment sharply in 1974. The median increase in investment planned by these firms is 29 percent, according to results of the 1974 Annual Survey of Corporate Profit Trends and a special recheck of capital spending plans conducted by the McGraw-Hill Department of Economics.

The biggest investment increases are planned by general companies (34 percent).

National growth unit becomes permanent

AIA president Archibald C. Rogers has reported that a permanent “Forum for a National Growth Policy” is being formed by the interdisciplinary coalition of construction groups responsible for the recent report “Structure for a National Growth Policy.”

The coalition consists of major professional and builder organizations who will continue the work begun by the AIA National Policy Task Force, now disbanded.

Environmental guides studied for Miami

To promote quality building and land development policy in South Florida, the local chapter of Associated General Contractors has commissioned the University of Miami to study environmental planning.

The UM’s Center for Urban and Regional Studies is undertaking the AGC-funded project to produce an industry-wide document of building and land-use development guidelines and policies. The objective: better methods for building in relation to the ecology, local building codes and land use regulations. Florida averages more than 6,000 new residents each week; 65 percent move to south Florida.

Peoria, Illinois downtown master plan will be developed by 1985

A current project in the office of urban designer Angelos C. De Metriou is the master plan shown for redeveloping downtown Peoria, Illinois. The concept, according to the firm, is to foster a series of 36 city, state and private projects including government, sports, office, retail, residential and open spaces.

Critical to realizing the full impact of the plan are, according to the architect, a mini-mall and Civic Center. Eventual work will lead to construction of a major residential enclave and civic auditorium along the waterfront.

The staging of the proposed projects is divided into two periods spanning from 1974 to 1985. The downtown plan comprises 200 acres.

Louis I. Kahn dead of heart attack at 73

Louis I. Kahn, one of the great architects and teachers of this century, died in New York’s Pennsylvania Station, March 17, of an apparent heart attack. He was enroute to his home in Philadelphia, after a trip to India, where he was overseeing the partially-completed complex for the Institute of Management at Ahmedabad.

Recipient of the AIA Gold Medal in 1971, Mr. Kahn was a professor of architecture at the University of Pennsylvania and maintained an international private practice.

Fire fighters given data on volatile materials

From the good idea department, this item:

Under a HUD-sponsored program in Charlotte, N.C., a fire operations module has been developed there which provides fire fighters at the scene of an alarm with rapid access to stored computer data on the amount and location of volatile materials which can be critical to the fire fighting or rescue tactics. The information is available on any building on which a fire inspection has been conducted.

This project is part of HUD’s Urban Information Systems Interagency Committee.
Land-use maps made for U.S. cities

The San Francisco Bay region became the first of eight selected metropolitan areas of the United States to be covered by an experimental series of maps showing various categories of land use and their changing patterns, the U.S. Geological Survey announced.

The USGS prepared a total of 44 maps covering 7000 square miles of the nine San Francisco Bay counties. The maps document 14 major categories of land use from unimproved open space to multifamily residential.

Similar maps are being prepared for Boston; Cedar Rapids, Iowa; New Haven, Connecticut; Phoenix, Arizona; Pontiac, Michigan; Tucson, Arizona; and Washington, D.C.

Burning city waste: new energy source

The Environmental Protection Agency, in a new pitch for burning big city waste to augment other sources of electricity, said America's large cities generate about 90 million tons of residential and commercial solid waste each year.

It estimates that 70 to 80 per cent of this can be burned and it used as fuel would save an energy recovery of 800 trillion BTU's annually. That's equivalent to 150 million barrels of oil a year.

Los Angeles approves a new planning guide

After a decade of working on a master plan, Los Angeles has finally approved—although tentatively—its two key policy documents.

The detailed citywide plan is designed to be a blueprint for the next 20 years. "Concept Los Angeles" is a broad planning guideline for the next half-century. It will form a framework for a collection of 35 community plans that will make up the city's master plan.

Basically, the two documents present a single-family-dwelling way of life and direct new growth into 37 major high-density urban centers linked by mass rapid transit.

AIA claims solar role for architects

The architect is not about to be "left out" of the efforts to harness the sun to provide heating and cooling in buildings.

This much was clear in the testimony given recently before the Senate's Aeronautics and Space Science Committee by John P. Eberhard, AIA, president of the American Institute of Architects Research Foundation.

It was obvious that Eberhard was referring to the House-passed bill to finance a five-year study of solar energy when he indicated the architect would certainly expect to be a part—in cooperation with the scientists and engineers—of this work.

Eberhard explained that his organization resisted the notion of using design professionals simply to generate a series of stock plans for limited hardware application, and pictured the design issue as being far more basic and pervasive, in urging that the design professions be included in the conceptual and evaluation stages as well as in the applications.

HUD warned on use of unusual guidelines

The Building Research Advisory Board committee has recommended that the Department of Housing and Urban Development should not apply the present Operation Breakthrough guide criteria developed for it by the National Bureau of Standards beyond the OB program itself.

Nor should HUD incorporate guide criteria provisions that deviate from currently accepted practice into its own housing requirements unless or until it has established and documented their need to reduce certain risks.

Very significantly, the BRAB unit suggests that HUD work with and through the existing public and private building community organizations and processes to transfer the knowledge gained from use of the guides and all other experimental housing programs into the existing national regulatory system.

GSA revises rented space fire standards

GSA Administrator Arthur F. Sampson has announced that the agency no longer would recognize what it called the "grandfather clause" in fire safety regulations. This means that from now on, GSA will not approve space for Federal occupancy in a privately-owned building unless it meets current fire codes and standards. Heretofore tenants have been allowed in space governed by codes existing when it was built.

Land-use legislation backslides in House

Land-use legislation has suffered a severe setback on its tortuous route through Congress as the House Rules committee deferred indefinitely further consideration of the bill.

Advocates of the national legislation have maintained that local governments, delegated responsibilities over land-use planning, now need assistance and over-all guidance in their effort. Opponents of the legislation held that passage of the House version, and final enactment of its provisions, would result in the demise of private property rights due to the implicit sanctions of unconstitutional "taking" of land.

Most members of Congress appeared to agree that the Rules action firmly pigeon-holed the measure for the rest of this year in spite of many supporters.

Hancock tower to be relazed

Each of the 10,348 window openings in the new John Hancock Tower in Boston will soon be covered with single sheets of tempered, reflective glass at an expected cost of about $7 million, replacing the single panes that were breaking in high winds. Occupancy of the building is scheduled to begin in the fall.

A higher energy (heat) requirement is seen by architects with single and double glass. However, a member of the design firm of I.M. Pei & Partners believes the increased energy requirements will be relatively small because of reflective qualities of the single pane glass, which may lose more energy in winter but would tend to save some in summer.

Meantime, plans are underway to sell to the highest bidder the tons of plywood used to cover the broken windows. It is expected to bring more now in the market than it cost when bought by Hancock.

Used street lights for sale in New York

New York City will sell about 95,000 operational mercury-vapor street lights now being replaced during the city's "high intensity" street relighting program.

Municipal Service Administrator John T. Carroll said sealed bids will be opened May 1 by the Department of Purchase, Room 2217, Municipal Building, New York City.

The lights should be a bargain for communities seeking modern street lighting and for governmental agencies involved in lighting extensive areas. They can also be used for lighting parking lots.

Charles Bronson plays architect in new film

Architects are rarely portrayed on the silver screen, but one will be the central character of "Death Wish," a motion picture to be released by Paramount in July.

Filmed in the New York offices of McKee-Berger-Manual, the movie stars Charles Bronson (center) as a liberal New York architect who turns to vigilante justice and murder, imposed on the city's muggers, after his wife and daughter are attacked.

Certainly, an unorthodox—not to mention illegal—approach for an architect depicted as perceiving a connection between decaying urban environments and violence in the streets.

ARCHITECTURAL RECORD April 1974 35
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BY

DOR-O-MATIC

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**Sofia, Bulgaria opera house design selected**

From 123 projects submitted by Bulgarian and foreign architects, the designs shown here were selected recently as first and second place entries in an international design competition for the new opera house in Sofia. The winning design (top) by Yugoslav architects Ivan Strauss and Halid Muhasilovic consists of a large main hall and a smaller one linked by a pedestrian zone. The jury commended the design for its function-prescribed form. Second place was shared by a Soviet team (design lower left) headed by Alexander Velikanov, and a Bulgarian team (design lower right) including Boris Kamilarov, Mihail Sokolovski and Tsanko Hadjistoichev. Rules for the competition were set by the International Union of Architects. Designs for the opera house had to conform to the general plan of Sofia, taking into consideration a future subway station nearby. It was further determined that the auditorium should not be monumental, yet emphasize prestige.

**Office-commercial center to be built near San Francisco airport**

Architects M. Arthur Gensler Jr. & Associates have recently completed this design for the San Francisco International Office Center in Burlingame, California. The 17-story structure fronting on San Francisco Bay will provide 288,000 sq ft of office space, ground-level commercial space, computer and conference facilities and parking for 800 cars in a separate five-story structure. Set in a one-acre plaza at 45 degrees to the street, the tower is planned to maximize views of the Bay, for both the building and surrounding residential areas. Completion of the $30 million complex is planned for late this year.
Energy research facility in a Rhode Island mill

A mid-19th century mill in Providence, Rhode Island is being "retro-fitted" with solar energy utilizing systems as part of a research program to demonstrate alternative sources of electrical power generation. The project is a cooperative effort of Brown University, Division of Engineering; the Research and Design Institute; and local industrial organizations. As a large-scale solar energy laboratory, the demonstration project is expected to show that existing buildings can be successfully equipped to be less of a burden in terms of energy consumption.

Pittsburgh bank by Skidmore, Owings & Merrill

This design by the Chicago office of SOM is being built in the geographic center of Pittsburgh's Golden Triangle, and is expected to be completed in the summer of 1975. The prime tenant will be Equibank, and Oliver Tyrone Corporation is the developer. The 34-story structure, sheathed in reflective glass, consists of two octagonal towers joined at one side. The unusual shape, use of reflective glass and interior systems of the building are said to represent an attempt to design space and energy conservation into a high-rise structure. A spokesman for the developer claims the Equibank building will use much less energy than any other office building of similar size in Pittsburgh. The shape of the building is said to be partially dictated by an unusual site, giving the architects a chance to design pleasant variety into the city's skyline. The building will contain 500,000 sq ft of space, and is the first major high-rise office building to be built in Pittsburgh in more than four years.

Knoxville art gallery addition timed for completion during Bicentennial

The proposed new museum facility for the Dulin Gallery of Art in Knoxville, Tennessee is sited to complement the existing historical Museum House on a wooded site overlooking the Tennessee River. Designed by McCarty Bullock Church Hol-
scape, the new building is scheduled to be under construction this year, with completion in July, 1976. Since the property is located on a bend in the river, the axis of the main concourse and three-story sculpture court allows views down the river. Materials will include masonry walls with stucco to complement the existing house. Interior finishes will consist of brick and natural oak floors, with a suspended natural wood grid ceiling to integrate mechanical systems.
Community school for children, adults
Choestieh Woodard Smith & Associated Architects have designed this 290,000-sq ft elementary and junior high school to serve the community's educational needs, except senior high school, from kindergarten to adult. All learning areas are based on the open plan concept. Presently under construction in Washington, D.C., the reinforced concrete structure utilizes exposed waffle slabs within a 30- by 30-ft column grid. A two-story skylighted commons is included.

Soviet apartments in Bronx built from top down
A 19-story apartment house now under construction for the Soviet mission to the U.N. is being built largely from the top down using a patented system developed by International Environmental Dynamics, Incorporated. Pre-assembled floors, according to the concern, are hoisted to the top of twin support columns and secured; each floor installed from the top down. Skidmore, Owings & Merrill are the architects on the project which is expected to be completed at a cost saving of $1 million because of the construction method. The towers contain elevators and mechanical equipment.

Boston's waterfront renewal plan modified
Recently announced by the Boston Redevelopment Authority are changes in the city's downtown-waterfront urban renewal plan. Two new features include realigning Atlantic Avenue (see plan) which would be built as a 44-ft-wide roadway instead of the originally proposed 80-ft wide road. This will result in a larger waterfront park. Also changing the size and shape of the parcels would permit over 700 housing units to be built, half for elderly and low-income families.
A good actor must adapt himself to a wide variety of roles and styles of interpretation. So must a good stage.

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Settlements conference set for Vancouver

Habitat '76, a major United Nations conference and exposition on human settlements will be held in Vancouver, British Columbia, from June 31 to July 11, 1976. The formal decision to convene and sponsor this meeting was taken at the 28th General Assembly of the United Nations on December 13, 1973.

Up to 2000 participants are expected, including governmental representatives and technical experts from member states of the United Nations. The exposition will consist of theme exhibits prepared by the U.N. explaining the global situation of human settlements, illustrating examples and demonstrating techniques and technologies for building better settlements.

Preliminary preparations for Habitat '76 are under the direction of the United Nations Environment Programme (UNEP) established by Maurice F. Strong, to prepare a budget and carry on planning through the 28th General Assembly.

Agenda topics

The conference will focus on: 1) the quality of life and human needs in these settlements; 2) human settlements and national development policy; 3) planning and managing of human settlements; 4) international resources for human settlements; 5) the global situation of human settlements and community technology and ecosystems.

The main purpose of the conference-expo is to provide solution-oriented, pragmatic dissemination of already-applied technologies that can improve the environment in all human settlements, from megalopolis to rural village.

Exhibit plans

Chernoyeff and Geismar Associates have been retained for a preliminary study of exposition design alternatives. The firm was jointly selected by representatives of the Canadian government and UNEP-PPG, the Preparatory Planning Group.

The exposition will focus on priority areas of human health, habitat, land, water, and desertification. Similarly, all of the agenda themes are to be incorporated in the exposition, illustrating technical advances such as the application of low-cost housing. Member states attending the conference will be asked to prepare exhibition presentations of their human settlements problems and solutions.

One such exhibit might pertain to the international design competition being developed by Architectural Record and L'Architecture d'Aujourd'hui, under the auspices of the International Architecture Foundation. (See Editorial, page 13, and advertisement on page 12.)

Preparations have begun. Architects, planners, engineers and planners will be asked to submit designs for an urban community that satisfies human needs without stunting the environments of the 'three sites selected.'

Proposals for exhibit projects will be released from government June 30, 1974 and selection and evaluation by an international panel will occur on September 30 of this year. Projects from developed and developing nations, rural and urban areas, will be included, if they offer solutions rather than define problems; are capable of wider application to other countries; demonstrate imaginative use of local resources and skills; and use efficient materials and administrative techniques.

For all countries, the cooperative sharing envisioned for the United Nations Conference on Human Settlements can facilitate and speed the goal of creating desirable, livable environments.

Oil wealth may prompt Arab growth

According to The Urban Strategy Center, at the Chamber of Commerce of the United States, the average revenue per barrel of oil producing nations has risen from $1.60 in 1972 to $8.50 in 1974, with the total revenues for 1974 estimated at $95 billion. Arab nations will receive most of this money.

What will the Arab countries do with this abundance, which could be $900 billion by 1980? Some Arab countries can and do use funds for development, and others, particularly Saudi Arabia will undoubtedly benefit from investment opportunities in the U.S., Japan, and Europe.

Trying to encourage some of the Arab currencies to flow into U.S. architectural and engineering firms will be Clarence R. Jones, president of Augusta, Georgia AVE, firm of Jones & Fellers. He is a part of a U.S. trade mission to the Middle East.

German Marshall Fund announces grants

Commitments totaling $750,000 have been made by The German Marshall Fund of the United States for projects including the study of problems common to industrial societies.

The Fund, a memorial to the Marshall Plan, was formed in 1972 as a gift from the German people in gratitude for the American decision of 1947 which brought about the Marshall Plan.

The purpose of the Washington-based Fund is, like the Marshall Plan itself, to foster international cooperation in meeting the pressing needs of industrial societies—internally, and in their relationships with each other and with developing nations.

Among the projects to be initially funded is a 30-month, $500,000 international comparative land use project (see RECORD, February 1974, News Briefs, page 35).

The United Nations Environment Programme recently held a series of meetings in New York to identify innovative solutions to the problems of human settlements, solutions that could be applied immediately and presented at Habitat '76 (see preceding item) in Vancouver.

The meetings, held in February and March, featured speakers from 18 countries discussing the technologies for food production, transportation, architectural design, energy and other problems relating to developing and industrial nations.

Dr. Othmar Ruthner, a manufacturer of tower greenhouses and one of the featured speakers, described his product which grows plants on a vertical conveyor under controlled conditions. Located in the heart of a train; the first is now being built in the Canary Islands.

The train (see drawing) is an improvement over the monorail used in Japan and can also be used underground. The drawing shows the Japanese system compared with the Spanish train, which uses a narrow wagon in order to reduce excavation costs; the tunnel can be built economically using screw-type machinery. According to the designer, the lightness of the fiberglass cars eliminates the need for heavy supporting structures, and the trains are suspended between the sides of the supporting track, riding on rubber wheels close to the cars' center of gravity. This gives a far greater degree of stability and safety, even at high speeds, than is possible in conventionally-designed trains.

Frederick Guthrie, a consultant on urban affairs, concluded the discussion on long-range projects that might be initiated for Habitat '76 by suggesting the compilation of an urban atlas of city data in graphic form. All cities, according to Mr. Guthrie, could be mapped at the same scale, for comparability, with census and other social data superimposed in graphic form, using computer tapes now available in many countries.

Washington University, in St. Louis, has already produced such an atlas for 20 U.S. cities, stated Mr. Guthrie, whose office is in Washington, D.C.
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Environment and Cognition

In his most recent attempt to bridge the inter-disciplinary gap between architecture and psychology, William Itelson continues his leadership role by editing a respectable volume dealing with the complex interrelations between man and his environment. Gathered under the editor's umbrella is a group of contributors from the fields of architecture, planning, design, and geography as well as from the behavioral sciences.

Itelson observes at the beginning that psychologists have largely neglected perceptual studies of the total environment. By paraphrasing Whitehead's famous comment, he explains this gap by saying "that it takes an uncommon mind to undertake the study of the obvious. There is nothing more obvious than the environment, and with few exceptions psychologists have not possessed minds uncommon enough to undertake its study."

At first glance the impression one gets is that $10.50 is a lot of money for 167 pages. However, to us the content of these pages justifies the cost. The information contained in all six chapters is enlightening and provocative not only in content but also in the realization that other disciplines have been engaged for some time in environmental research, with man in mind.

A descriptive list of the contributors may be appropriate to display the breadth of the book. The five psychologists are all associated with the City University of New York. William Itelson and Harold Proshansky are associated with the Environmental Psychology Program, coauthors of Environmental Psychology (1970), and both widely published in their own right. Joel Kameron is associated with the School of Human Environment at Ramapo College of New Jersey as well as CUNY's Environmental Psychology Program. Gary Winkel is also with the Environmental Psychology Program at CUNY and editor of the journal on Environment and Behavior. Stanley Milgram is with the Department of Psychology at CUNY and is director of the Ph.D. Program of Social Psychology there.

Contributions from the field of architecture include Denise Scott-Brown, Steven Izenour and Robert Venturi; and Herman Field, who was formerly Planning Director of Tufts—New England Medical Center and presently with the Department of Political Science at Tufts University. Geographers making their contribution include Reginald Colledge and Georgia Zannaras, both with the Department of Geography at Ohio State University and Thomas Saarinen with the Department of Geography and Area Development at the University of Arizona. The research reported in the book is as wide in scope as the disciplines themselves, even though methodologies are psychological in nature.

Itelson's first chapter sets the stage for the book by acquainting the reader with "Environmental Perception and Contemporary Peptual Theory." In explaining the elementary roots of perceptual theory, the professional terms are used with regularity and consistency, so that the reader who is not a psychologist is not confused by them. After satisfactory groundwork is laid to ensure that he is understood, Itelson then describes the state of contemporary perceptual theory.

Proshansky provides an objective review in introducing the last nonpsychological contribution by Herman Field entitled "Environmental Design Implications of a Changing Health Care System." Field assumes the role of a sniper taking shots at the present day health care systems and their resistance to change. His thesis is that the hospital, the tool of the system, perpetuates obsolescence as a built-in handicap in its resistance to changing what has operated smoothly, regardless of its usefulness. As an alternative, Field proposes a decentralization of the facility out into the community. In his introduction to this research, Proshansky points out the realistic problems in Field's ideas.

In the last chapter, "Experimental Studies of Environmental Perception," Kameron gives a brief overview of some of the research on environmental perception to date. The focus of the research discussed falls into roughly four categories: architectural forms, perception of cities, perception of highways and streets, and perception of natural environments.

This book was not written as much for psychologists as for those currently in the planning and design fields. It provides a psychological focus to interrelate the many disciplines and to help bridge the gap between them. It does not serve as a panacea for research in environmental perception and cognition but rather as an eye-opener and knowledge-expander in understanding how man and his environment are related and how they interplay with each other.

-Calvin W. Taylor and Wane D. Veneklasen

Mr. Taylor is Professor of Psychology at the University of Utah, and Mr. Veneklasen is a doctoral candidate at the same institution.

Women in architecture

One of the more exasperating aspects of male chauvinism as practiced by this magazine staff is the custom of referring all editorial submissions relating, no matter how tenuously, to the themes of women's liberation, to one of the ranking females on the masthead. "This one's for you, Mildred—something about how women could be really terrific architects if us men would only let them, because they designed the first tipis back when they were squaws. We'll run a review," this is said magnanimously, "if you will review it." In other words, don't expect us men to read and respond to such a book as this, but go ahead and support your sex if you are so inclined.

Too bad, for From Tipi to skyscraper is excellent social history with much to say to both men and women about the role of women in the practical arts, and the contributions of a few of them to the art of architecture. It covers architecture in the United States from pioneer days, emphasizing the humble buildings with which women had a lot to do since their concern for comfortable, convenient, artistic and healthful domestic arrangements was often greater than that of their husbands. The author traces women's participation in the social services and their concern for humanitarian design. The rise and fall of the Cambridge School, the first architectural school for women, and the rescue of its students by Harvard is very well documented.

Doris Cole is a young, registered architect with a Master of Architecture degree from the Harvard Graduate School of Design who practices in Boston and is married to architect Sergio Berizzi. She has not only thoroughly researched today's architectural scene from the standpoint of those who work in offices, but she is living in it and she is at her best in her last chapter on contemporary practice. Through her own experience, and doubless through her husband's, she is completely without illusions as to what life is like for young architects, both male and female, working within the pyramidal structure of large architectural firms and she demonstrates convincingly how that pyramid actually works to the detriment of design. Armed with statistics proving the discrimination against women in these offices, she knows that the system can be tough on the men too. The message of her book is that women architects must join their male colleagues as equals to renew the practice of architecture. — Mildred F. Schmerz
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NECA study reveals opinions of design professionals.

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Reasons? The electrical contractor is an important member of the building team. And his specialized knowledge, applied early in the project, can be very valuable in assuring overall coordination of the electrical job. Skilled at project scheduling and expediting electrical work, his knowledge of product applications, code requirements, and his installation expertise can help avoid costly potential problems and delays later in the project.

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Chicago's newest showcase hotel, McCormick Inn, can quickly divide four large rooms into as many as 20 separate rooms with "Quiet Quality" Richards-Wilcox Operable Walls. According to James Freeman, Convention Services Manager of the spacious hotel located adjacent to McCormick Place convention center, R-W Operable Walls were selected for three main reasons:

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interested in Energy Savings through efficient architectural lighting. see page 97

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The guaranteed maximum price: a sampling of views

The ringing sound of the words “guaranteed maximum price” applied to construction projects prior to bidding has a reassuring effect on certain owners and developers. While it incites many construction design and management professionals to a variety of highly argumentative responses—pro and con. We have invited a number of professionals to express their views and the results reported here have excitement and cogent reasoning in them.

The reasons for the excitement are plain. Large amounts of money are involved, and the practitioner on the issuing end of the guarantee is accepting an element of risk for which there must be, in ordinary business prudence, a proportionate prospect of profit. Further, the role of the guarantee as an advantage to owners and as a constraint on professional service is a controversial issue. The views expressed here are those of the protagonist in each case. The effort has been to solicit views from a variety of sources without coloring the response by any survey-kind of averaging.

Some common elements emerge, but bear restating in each context to point out differences, procedural, philosophical and fundamental, that are important to the understanding and to the industry.

John L. Tishman views the GMP in changing times

First, a point of view expressed in an interview with John L. Tishman spoke not only to the definition and rationale of the guaranteed maximum price per se, but also to the basic client-design-construction universe that puts the GMP into its own perspective in these times.

Mr. Tishman is executive vice-president for construction, Tishman Realty and Construction Company. He pointed out that the classic pattern of design-bid-construct has not been working at all smoothly in recent years. He was calling upon the experience of the Tishman firm over some 75 years of activities in building development, ownership and construction. The pattern of activities in recent years has included increasing construction and consultation work for other owners and designers as well as for their own account as owners.

The Tishman firm has worked as both owner and co-consultant with hundreds of architects and other professional consultants. It is zealous in protection of the quality of professional agency on behalf of owners. This quality guards against conflict of interest in the provision of any professional service: architectural, engineering, construction management, cost consultation or other.

Putting aside for the moment any debate as to which of these services may be usefully performed by architects (Mr. Tishman has understandable and strongly logical views in this area), the disarray in which the classic pattern has found itself in recent years is attributed to a clear set of the manifestations of our times that have made the single-bid, firm-price construction project difficult to assemble in the owner’s best interest.

One of the manifestations has been that the scope of the average job has increased tremendously. At the same time, the normal time-span of the job has also increased. Many jobs, especially in the years following World War II, became so large that competition was limited by the available number of General Contractors large enough to bid them and obtain bonding for the required financial responsibility.

Citing the range of $50 to $100 million as common in jobs today, Mr. Tishman points out that, under the classic procedures, plans and specifications were completed and detailed before bidding took place. With the increase in cost and size, the drawings and specifications necessarily became even more detailed. These documents had to be understood and translated by contractors into their ultimate pricing detail. So, most General Contractors were forced to become the conduits through which plans and specifications packages were distributed to some 20 or 30 trades, and bids were then re-assembled as rapidly as possible for tendering by bid-opening day.

While he is assembling his bid, the GC adds up all the component sub-contracts, adds his own estimate for coping with general conditions on the site and further adds his own expectations of profit. If the General Contractors in a given area must assemble their bids from the same universe of sub-contractors, the only area in which there can be a difference is in the general site conditions and profit allocations (assuming that the sub-contractors submit the same price to each GC who requests it). On a $50 million job, the difference in per cent from one GC to another is likely to be plus or minus two or three per cent—unless one or more of the GC’s decides to forego any markup on bids and to make his profit on savings or purchased or change orders.

It turns out that where little of the actual work among the trades is performed by a GC with his own forces, the opportunities for cost-saving innovation in construction technique become more and more limited, especially where innovation might involve the interaction of various trades. Few GC’s today employ their own forces in, for example, mechanical systems or steel framing systems. These systems comprise as much as half the cost of the work, so the opportunities for innovation are restricted on that much of the job to reside only in the separate ingenuity of the trades themselves.

Once the client accepts three or four bids on a single general contract, he must have overriding reasons for awarding the contract to other than the lowest bidder. Indeed, the Federal Government is constrained by law to make such an award. Once the job is awarded, the client has no problem and is assured of the final price of his building. Provided the GC is assured of making his profit, it, on the other hand, conditions worsen or he finds he has made a mistake in the bidding, if inflation goes wild or one of his sub-contractors renegoties on his part of the work, then the owner has a problem. Obviously, the GC, already facing a profit margin low enough to win the bid, is faced with a loss, which he can ill afford.

Where does the problem arise? In simple fact, it comes from the sub-contractor who has second thoughts or very real difficulties in getting his portion of the work put in place at the price he originally quoted. The reasons may have nothing to do with his competence in his trade. They may in fact derive solely from the lack of clarity in original specifications or in the inability of other trades to make schedules. In any case, the sub-contractor appeals to the GC with what may be a simple statement that he needs more money. The GC, then, who is accepting the over-all job at a low figure, is presented with a claim. Without pre-judgment of whether the claim is right or wrong, the GC sees his first duty as presentation of the claim to the owners. He marks the sub-contractor’s claim as “received” and transfers it on to the owner.

The GC then waits for the owner to react to the sub-contractor’s claim. An owner may refer the matter to the architect, and there may be a concurrence in the validity of the claim whereupon the sub-contractor’s new price is written into the over-all cost of the project.

If, however, there is disagreement with the sub-contractor’s claim, the owner then
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responds to the GC to that effect. The GC relays this information to the sub-contractor. The sub-contractor then decides to pursue the matter by way of the courts and bases his legal procedures on the fact that the general contractor has not taken a strong position between one or another.

A question of advocates and adversaries
This non-partisan attitude of the General Contractor is based on the balance of two sets of influences. On the one hand, he wishes to deliver the job to the owner within the price he has bid. On the other hand, had he taken a strong position as adversary to the sub-contractor and rejected the claim out of hand based on his own analysis, he would anticipate a confrontation on his own part as adversary to the sub-contractor. The outcome of any legal procedure then would apply only to his own position and responsibility relative to the claim. Win or lose, he would have spent his own profit on the case.

So the GC cannot afford to put himself in this position. That is, he cannot permit the owner to refer to his, the GC’s, own correspondence relative to the invalidity of the sub-contractor’s claim and simply state that he, the owner, has no position but agreement with this letter and it is up to the GC to deliver his promise. Nor can the General Contractor put himself in the position of being forced to pay additional amounts to the sub-contractor without being reimbursed by the owner.

The GC then is forced in the initial phases of the statement of claim to take the position of advocate of the sub-contractor in presenting the matter to the owner and/or architect.

In the days when the GC was performing a major portion of the work with his own forces, this issue of claim against the exigencies of the job did not arise. Now, however, the general contractor may indeed be an expert in buying and expediting construction services, but he is also the first adversary the owner confronts in a claim for an increase. The client has not only lost an advocate, he has gained an adversary in this situation.

The owner, then, is faced with the position of requiring either an in-house body of expertise to support his own advocacy, or he must rely on the professional consultation of the acknowledged expertise which will accept a professional role of advocacy on his behalf. Without such consultation or in-house support, the court can respond only to the General Contractor who stipulates, perhaps correctly, that he has nothing to gain by acknowledging the credibility of the sub-contractor’s claim.

New interpretation of the bid process
Now, a reexamination of the bid process forces a new interpretation of what that process is capable of bringing about. The original intent was to fix the price of the project and permit the construction process to proceed in a climate where cost-saving ingenuity was a primary motive. Under the circumstances now pertaining, the motivation for performance is still a strong one, but the power of the GC in his role of brokerag CAN seldom be directed toward inter-trade improvement of the process so much as it is toward protection of his profit.

The second loss to the process has developed along the lines described as the loss of the input of construction expertise at the planning stage of the project. Large clients, particularly government clients, have not had access to the expertise which may indeed still reside in the hands of General Contractors. This loss occurs because the contractors have little motivation to make the knowledge available without some assurance that the job will be theirs in the end. They may, of course, be consulted on a fee basis in planning stages. But without long-term commitment to success of the job (in owner’s terms), the discipline of such knowledge is likely to be less stringent on the owner’s behalf.

It has been the Tishman experience in coping with these problems from the point of view of both owner and builder that preservation of the essential role of advocacy or agency calls for an examination of where the reward of technical and economic sophistication may lie. If, for example, a true application of expertise and management discipline can make a saving of, say, 20 per cent on a job, it is a matter of history that at least half of this savings occurs in the disciplines applied in the planning stage—and the other half in buying the project. Once bidding has taken place, there is virtually no opportunity for further saving no matter what disciplines may be applied except in matters of schedule and management which are, in fact, only methods of avoiding disaster rather than ways to effect savings.

Thus, the essential role of construction management as a technique has been applied (with or without that label) over the years. Suppose, by application of the coordination of what might be called a professional team, a building is brought in at $40 per square foot. Experience tells us that the same building without those disciplines would cost on the order of $50 per square foot; and the real cost difference is not only in delivered price but also in the amount of the added time it takes to deliver a building for $50 per square foot. There is a direct relationship between the cost and the time, even though the delivered product appears identical.

The owner who accepts the risk should share in the profit
Under the terms of construction management as it is now being defined, the owner begins to have more direct association and responsibility among the trades involved in his project. The Construction Manager, putting his expertise and advocacy virtually in house to the owner, enables a process of pre-design communication to take place. The owner, through the CM, is able to talk to the trades and evaluate the options that arise in many basic alternates that are not available in a process that must arrive at construction documents before bidding in the open market place.

The whole building programming and design operation—and in fact proceeding back into elements of development and feasibility, and on through elements of ownership and operation—takes on a more uniform aspect. The owner does participate more directly with the project. This, of course, means that he accepts more risk, but at the same time, he is not required to pay the price of that risk to an entrepreneur whose profit is adversary to his own interests.

What, then, becomes of the owner’s security blanket residing in the guaranteed maximum price? If this price is important for reasons other than the quality of the job per dollar expended—that is, if the knowledge of a maximum is germane to the financing process or to the corporate responsibilities of the owner—a reasonable approach to the guaranteed maximum price can be made very early in the game under the multiple contract procedures of the usual construction management contract.

It is well known that the work of six or eight major sub-contractors represents 75 to 80 per cent of the cost of a typical job. If the systems represented by those major sub-contractors can be expedited and bid before the physical placement of the job begins, it is reasonable to assure the owner that this major portion has a fixed price and that the balance of the job is more than likely to come well within the projected figures.

The client then has the option to make his own decision about the risk of the ultimate bottom-line figure. He should understand that in accepting the risk without the guarantee on the part of the GC or the CM, he alone can benefit by savings. That is, the direct relationship between risk and profit pertains at this point. If the CM or GC is forced to take the risk of the guaranteed maximum price, he is not only entitled to, but in all prudence he must raise the level of the guaranteed price to cover contingencies and the certainty of his profit. This is seldom in the owner’s best interest.

The point is frequently made that, if the CM is invited to participate in savings when the job comes in below the guaranteed max, there is an immediate dilution of the role of professional agency between the CM and the client. That is, the CM thereupon becomes involved in profit on the job and puts himself in the same position as any GC concerned with his own profit.

Mr. Tishman has a great deal to say about the role of the Construction Manager in handling the bidding process. He points out that at least half of the savings that can be expected as a result of the construction manager’s professional services are made in the bidding phase as a result of the CM’s fulfilling the role of GC in handling the bids of separate trades. The CM takes bids from the trades but he also is able to talk with them directly as the owner’s agent, clarifying documents and scope so that each sub-contractor can submit his bid with confidence that the scope and detail are truly as stated in the documents. The construction manager is able to work in detail with each trade before the sealed bid is professed. Fur-
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Bradford Perkins states a clear case for and against

When Bradford Perkins was an associate of construction management consultants, McKee-Berger-Mansueto (since the turn of the year he has been a partner of Llewellyn-Davies Associates, New York), he made many contributions to this department, among which was the following. This is the statement that started it all when Brad agreed to let it be shown among friends and not-so-friends to see what controversy might arise.

One of our (MBM's) consulting clients recently admitted "we finally are beginning to understand why you advised against the guaranteed maximum price (GMP) construction management contract!"

Even though they had signed such a contract with a highly ethical and capable firm, they were experiencing many problems stemming from weaknesses inherent in this approach. To a knowledgeable firm in the industry, the weaknesses should be clear as they are to many experienced owners. But the surface appeal of the GMP concept has made it a major issue in the development of construction management services and it will continue to be an issue until it is fully understood.

Six points in favor

Its attraction to the average owner is obvious. It provides an owner with an early answer to the question that scares him most: "What is the maximum cost I must be prepared to pay?"

There are also some more tangible reasons for its use.

1. The major reason for its confusion with the construction management approach is the pseudo-CM contract recommended or required by a few major public agencies such as New York's hospital finance program, HEW's Hill-Burton program and others. Some of these are now moving away from their original requirement for a firm price as a pre-requisite for a commitment of their funds. In other cases, owners are building the first phases of a project with their own money and obtaining the commitment later when they can take bids on the remainder in the traditional fashion.

2. On public projects which permit CM only with a GMP, this at least allows the owner to select the contractor of his choice rather than the low bidder.

3. Some private as well as public financial institutions also require a fixed price before they will sell a project's bonds.

4. On some simple buildings, such as industrial facilities, it is possible to fix cost and quality relatively accurately early during design and the GMP provides the owner with some assurance.

5. There are firms which—in spite of the limited legal strength of the guarantee—treat it as a real guarantee. Thus, the two primary reasons that any GMP remains in effect are that the GMP was either a "safe" number or a GMP given by a firm that equates it with a firm pledge of its word.

6. And occasionally, there are even some aspects of a guarantee which—if the contractor has not been careful—can be enforced.

Nine points against

1. The guarantee—if given before completion of design—is usually meaningless. The most important parts of the construction contract are the plans and specifications. Thus, any subsequent change in the documents—upon which the contractor had based his guarantee—is usually grounds for a change in this guaranteed price. The typical guarantee language contains force majeure and scope change escape clauses which are more than wide enough loopholes for any experienced contractor.

2. In many ways experience with guaranteed maximum contracts can be paralleled with the general experience of owners in enforcing liquidated damages or penalties for time delays. As most experienced firms will testify, it is rare for anyone to collect liquidated damages. If the liquidated damages are regarded as a significant possibility, the experienced contractor immediately begins issuing correspondence carefully structured to build a case for a time extension. The same is true of a GMP as the contractor immediately begins to label any development of the design as a basis for change in the GMP.

3. The analogy to the liquidated damages experience can be taken one step further. The guarantor facing the writer of a liquidated damages specification is whether to call for large or small daily penalties. If the penalties are too large, all bidders build large contingencies into their bids; if they are too small, they are ignored. In the case of the GMP, if the contractor suspects that the GMP could be too low, he will immediately begin to build a change order justification as a cushion. If it is a safe number, the owner need not have the guarantee.

4. As a general rule, whenever an owner attempts to shift total liability or risk to another party, he ends up paying the price of this transfer. A major impetus for the rise of the project management and construction management approaches, is the realization that the owner is the real manager of any project, the chief beneficiary of its successful execution, and, thus, the proper risk taker. An owner cannot really ever successfully transfer his risk without incurring a cost, whether it is in increased project cost or reduced service.

5. The possibility of higher project cost can be traced in part to the normal bid impact of a no competition situation. The general contractor offering the GMP is typically a sole source and, thus, is under little compulsion to give his best price. Some agreements do not even require this sole-source bid to be given until the 90 percent point in the contract documents phase. This is a ridiculous compromise for at that point the owner might as well put the job out to bid. On the other hand, if the guarantee is required early any reasonable contractor will...
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George T. Heery says the GMP doesn’t preclude CM

George T. Heery, president of Heery & Heery, has been thinking and performing in the disciplines of architecture and construction management for many years, as RECORD has reported from time to time. Following is his direct response to Brad Perkins’ statement.

First, let me summarize some of my views on Mr. Perkins’ article and the subject of the guaranteed maximum price (GMP), construction management and general construction contracts:

Generally, I agreed with Mr. Perkins in his various points, except for his liquidated damages analogy. On this point we have used liquidated damages too long with many good successes, without added cost to the owner, and with collections, for me to agree on that.

But liquidated damages was not Perkins’ main subject, and he is certainly right to point out that a GMP rarely even exists except in name, is not in an owner’s best interest because it is misleading, and in most cases is but a subterfuge for a negotiated, cost-plus construction contract.

Threaded through most discussions on construction management today is the narrow idea that an owner who must have or insists on a “maximum” or lump sum construction contract cannot really employ professional construction management. This is not true, and is very confusing when injected by statement or interjection in such discussions. An owner who must have or wants a lump sum contract is simply precluded from non-cancellable early contracts, only one tool of the complete construction manager and not a necessary part of a specific project’s plan of management. In fact, phasing is not always in a specific owner’s best interests and sometimes does not contribute to early occupancy or cost control. That doesn’t say, however, that every project and owner can’t profit from professional construction management.

The pre-design GMP is meaningless. The owner has a price, but on what? Once the owner’s requirements are fully defined, the GMP either evaporates or the owner’s and the CM’s interests divide (thereby doing away with professional CM), or both occur, this usually being the case.

I have never seen a GMP construction contract word as advertised unless the GMP was set too high in the first place. After 22 years’ experience, I’ve learned that GMP is cocktail conversation and a flamboyant sales pitch for a negotiated construction contract, nothing more.

Yet most owners must put a handle on cost before extensive design or other commitments are made, and there is a better way to accomplish this which may be carried out in either one of two modes, the key to both is a proper contractual obligation (and commensurate fee) in the AE agreement. The two modes are:

1. A combination design and construction management contract wherein the AECM accepts the obligation either pre-design or by the end of schematics.

2. The CM, separate from the AE (which arrangement has its pros and cons), in which the professional CM works out a compatible budget and program with his client and then puts the AE under contract for the owner with a pre-design obligation on the budget. (Any owner that uses a separate CM and doesn’t follow this sequence and approach has missed his biggest opportunity to make time and cost control effective.)

Number 2 above is easier than 2 because one entity carries out design as well as CM services—a very efficient arrangement and frequently the best of the owner’s options. Arguments that this represents a conflict of interest simply don’t hold water. First, the design plus-construction-management contract must be fashioned to pair the professional’s and his client’s interests. This can be done through an objective approach to the agreement. In the case of pre-design setting of a maximum budget, the owner’s requirements must be clearly stated, all latitudes that do not adversely affect the owner should be left to the designer, a schedule adopted, and an escalation index adopted and projected. There are, of course, many projects which are more complicated that do not lend themselves to a pre-design “lidd” commitment by the AECM or anyone else. In these cases, though, the agreement is made in advance to set the maximum at the schematic phase. This may raise some eyebrows, but consider these points: The owner cannot force the AECM into an unreasonably low figure. The AECM cannot receive design approval and proceed payment until he has justified his figure and obtained the owner’s approval on budget as well as design. In both the pre-design and schematic design commitment cases, the owner is in the best shape he can be in for cost control in the construction industry if the AECM is of substance, the contract is clear, and the AECM’s obligation is significant.

In 2 above, the finest single service the professional CM can perform for his client is to come as close as possible to the situation described above in putting the AE under contract. This points up the fact that when an owner made in advance to set the maximum at the schematic phase. This may raise some eyebrows, but consider these points: The owner cannot force the AECM into an unreasonably low figure. The AECM cannot receive design approval and proceed payment until he has justified his figure and obtained the owner’s approval on budget as well as design. In both the pre-design and schematic design commitment cases, the owner is in the best shape he can be in for cost control in the construction industry if the AECM is of substance, the contract is clear, and the AECM’s obligation is significant.

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conclusions, write a contract with every 'I crossed, bid it, and when we know exactly what the costs will be, we'll start construction.'

There was logic in the process, the logic of one step at a time. But there also was waste, both in time and money. Independent activities that could have been accomplished concurrently were done sequentially, extending project schedules needlessly. The stodgy approach simply could not survive the inflationary market of the current economy.

Enter construction management. Its announced intentions were to make the process businesslike, predictable, and faster. And it has. But while construction management has solved some of the old problem, it has spun off a new one: the spectre of client risk.

To gain speed in building, design and construction are usually phased. Construction management has abandoned the simplicity of the traditional process and with it the apparent security of the general contractor's lump sum price. The most frequent question asked the construction manager by clients is, 'With construction underway before design is complete, how can I be sure of finishing my project within the budget?'

As a result, some clients are asking their construction manager to sign a Guaranteed Maximum Price contract. There is a significant difference between the two. In the GMP contract the construction manager becomes the vendor of the building. He says, in effect, 'I agree to get you your building for X dollars and if I don't, I'll pay the difference.' He is what lawyers would call a contractual adversary. He assumes the risk, so in order to protect himself, he may pad his estimate. In the agency contract, instead of selling the building to the client for a maximum price, the construction manager represents the client in buying the building. He says, 'I'll get you your building for the best possible price, but you'll pay whatever it comes to.' Since he has not assumed any risk, his advice need not be conditioned by the necessity to protect his own business.

And so the question has arisen: Which arrangement is best?

Perhaps because of their backgrounds, A/E derivative construction managers seem to have a predilection for the agency contract, while those deriving from general contracting firms lean to guaranteed maximum price agreements.

At CM Associates, we've used both. And while we can understand a client's interest in transferring risk to the construction manager, we believe the agency contract is usually the better way for the client, for, even with the GMP, a considerable amount of risk remains with the client. Under the agency contract the risk is clearly exposed so it can be dealt with directly.

In the final analysis, a project's success depends not on the contractual obligation but on the quality of people involved and the atmosphere in which they're placed. If they're skilled and conscientious and working towards a common goal and not against a threat, risk will be minimized.

The theory of guaranteed maximum price is that since the construction manager has guaranteed a price, an owner can begin construction before the plans and specs are complete with financial security assured. That's fine, but there's a basic, logical contradiction. With incomplete drawings and specs, it's hard to prove what it is the construction manager has guaranteed to do. In essence, the GMP requires a fixed price for an undefined product—and that's less than rational proposition, no matter how you slice it. So the risk has apparently been assigned to the CM, but much still remains with the client.

There are numerous variations on the GMP contract, but in general they fall into three categories: scope drawing, phased purchasing, and client-architect-construction manager agreement.

Traditional GMP
the scope drawings approach

GMP contracts usually are based on the scope drawings approach. The construction manager obtains a set of design development drawings and detailed outline specifications, then enters into a cost-plus contract with a guaranteed maximum price. The construction manager takes the design and specs to his major subcontractors and negotiates similar contracts with them. Everyone has a safety valve; a padded bid. If the project is built for less than the guarantee, the construction manager often gets a percentage of the savings—but the savings are probably nothing more than the pad.

In many instances, the construction manager knows what he's talking about and estimates costs correctly. The project is completed within the budget and everybody goes home happy. But in other instances, everybody goes home mad.

Guaranteed max contracts are not foolproof. And with the wrong team, GMP will prove to be little more than a security blanket to the client who doesn't understand the facts of the matter—a blanket that has little warmth in it. When GMP goes wrong, it is usually for one or more of the following reasons:
1. When it's time for the CM to guarantee the project, he pads the price so much that it's out of the budget.
2. Someone underestimated and needs to cover anticipated losses after construction begins. He asks for substantial extras on items that are "out of scope."
3. A contractor gets into financial difficulty on another project and tries to make up losses out of the project with the "scope" contract.
4. There is a genuine misunderstanding by a contractor of the architects' and engineer's specifications.

When situations such as the above occur (and they're usual), the client and his architect are in for trouble. The construction manager and subs, realizing the varied interpretations that can be given to incomplete design documents, probably will push for all the extras they can. Some claims will get through; some won't.

It is certain that working relationships will suffer, and with them performance, in the haggling that ensues. Instead of pulling together to straighten things out, everyone will be going his separate way to protect his own interest.

If the project winds up in the courts in pursuit of its guarantee, then everybody loses. Court cases take time. And time costs money in this business more than in any other. (Paradoxically, the same contractual conclusions that makes a GMP questionable also can make it work. Everybody can build a case, and the other parties know it. Since court battles are unpredictable, time-consuming, and costly, the team will work together simply to avoid them. But what a way to do business?)

There are several variations on the GMP theme

There are variations of the GMP contract, almost any one of which is preferable to the scope drawings approach. One of these is phased purchasing.

Traditionally, all plans and specifications for all building systems (mechanical, structural, electrical and so on) are developed together and finished together. But good decision management (in some cases, the use of performance specifications and preengineered components) has allowed architects on construction managed projects to reschedule the drawings and specifications production so that complete contract packages for parts of the building become available sequentially instead of simultaneously. The project can be bid or negotiated as each part becomes complete. About 80 per cent of a project's cost may lie in only 40 per cent of its contracts. If work drawings and specs are completed on these contracts first, 80 per cent of the cost of the project may be under solid, fixed-cost contracts well before design is finished. A guarantee can then be signed for the remaining 20 per cent of the project, which substantially reduces the risk—especially if there is a contingency.

Another form of guarantee is an owner-architect-construction manager "cooperation" agreement. The architect/construction manager agrees to build a project of defined scope for a maximum price but retains the right to juggle quantity and/or quality. The construction manager simply guarantees that he'll continue to work to get the owner the best possible project for his money and the architect does, too. In other words, he guarantees the price but not the product. (There is a "fixed cost of construction" clause in the standard AIA owner/architect contract.) This strikes us as excellent because the architect/construction manager have exactly the same contractual obligation and that increases the chance of their working together.

A clause can be written into this guarantee, if the client desires, which specifies that the final project will meet applicable codes and a general description of scopes required by the client (so many classrooms, so many hospital beds, so much administrative space, and so on.)

The danger with such an agreement lies in the participants' interpretations of "coopera-
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PARK CENTRAL

Dark, disciplined and distinguished, this new business center, built as a speculative venture in downtown Denver's renewal area, handsomely achieves the objectives of both developers and architects: an elegant building, designed and built within a tight budget, providing varied and stimulating spaces to excite both workers and visitors with a new definition of urban quality. Muchow Associates, with George Hoover as project architect, were the architects.

James Maxwell
Park Central's location in the Skyline renewal area of downtown Denver imposed certain constraints on its design—height limits, for instance, for each part of the site, and a raised pedestrian concourse—which influenced the final solution, but not so much, in fact, as the exigencies of the design process itself. The irregular form of the building is no mere design whimsy; it derives from the need for an overall concept which could, without loss of integrity, adjust to the frequent changes made by the developer-owners in the building program. Because of the lively building profile which evolved—three towers of varying height and mass rising from a raised plaza on top of a block-long structure—the curtain wall exterior of the building is dark in color—charcoal black anodized aluminum panels and bronze glass, set flush—in startling contrast to Denver's other tall buildings. To accomplish so elegant a building within a tight budget—total cost for the project was $20.5 million, but the basic building cost came to 13 million dollars—was a notable achievement, obviously strongly affected by the early and close relationship among those most deeply involved: developer (who was also contractor and a part owner), curtain wall manufacturer, engineers and architects. The main entrance to the complex is by way of a unique and unusually lofty loggia leading from the street to the plaza level off which open the tower lobbies and shops and which will eventually connect by street overpass with other blocks.

The pedestrian plaza tops a three-level, below-grade garage and is the base for Park Central's three office towers. It serves as both entrance to the tower lobbies and to the shops, and protected open space for pedestrians, intended eventually—if the master plan (by Marvin Hatami & Associates) is fully implemented, as it should be, in the adjacent blocks—to provide a raised concourse throughout the area. At plaza level, the precise detail and the terse design of each element is clear. The 30-by-30-foot structural grid which is the building's design discipline, applies both horizontally and vertically: where openness is needed, as for pedestrian access, it is "carved away"; where additional volume or space is required, it is added to. The result is the lively form and mass of the building.
The architects (Frank Zancanella in charge) were also designers of all interiors of the banking offices, and of the public spaces in the office towers. Bright colors are used for furniture upholstery; carpet, in a soft neutral color, is used on floors and on low space partitions. Alternating colors in elevator lobbies effectively mask an uninteresting space. After steel had been ordered for the building, engineers redesigned the main bank space structure to obtain the unusually open space, but used only the steel already on order, despite the changed concept. The loggia steps afford a good view of the room.
THE
FOURTH
ST. THOMAS
CHURCH

Some practical lessons for building in today's cities from Ralph Adams Cram and Bertram Grosvenor Goodhue
One of the oldest traditions in architecture is tradition itself—the use of understood and proven precedents which are partly repeated, partly modified to make a new building. No matter what they say, all architects rely on tradition. It may be an old one ("Georgian") or it may be fairly new ("Modern"), and it may even be the latest fad brought hot from the drafting room of a fashionable architecture school. But tradition won’t be ignored, because a knowledge of what might be done under a particular set of circumstances—and how, in fact, it has been done—is too useful a tool of architectural practice, just as it is one of the cornerstones of architectural education. Such knowledge guides the architect through a bewildering variety of specific choices, emphasizing certain possibilities while giving others lower priority. Glass walls and exposed steel enclosing a rectilinear space, for instance, carry with them a host of suggestions for making the rest of the building, just as do walls of rough wood or shingles around a plan shot through with surprising diagonals. Traditions also conjure up images for both the inhabitant and the architect; they provide a set of alternatives for what a building might actually look like as well as how it can be formed. And a knowledge of what has been done in the past obviously avoids the useless reinvention of the wheel (happily leaving more time for those wheels that really do need reinventing).

Ralph Adams Cram and Bertram Goodhue, the designers of the 1911 St. Thomas Church in New York, paid notable attention to architectural tradition, and in fact they did so with such erudition and scholarship that most of us now are likely to think of them as merely—to use that faintly derogatory word—"traditional" architects. St. Thomas Church certainly looks traditional, and people who remember it remember it most often for the abundance and elegance of its Gothic detail. Cram and Goodhue clearly understood the power that well-known architectural images have over the mind, and they knew just which set seemed appropriate in this case, and how to make them correctly. They also knew how traditional forms could be used to solve traditional problems like walling in an interior space and covering it over and lighting it.

It may therefore seem surprising that the building which resulted is in many ways boldly original, having finally about as much to do with real Gothic architecture as the town of Chartres with Manhattan. For Cram and Goodhue seem to have used Gothic precedent in a particularly creative way—not just to provide formal models for each of the parts and a controlling image for the whole, but as an indication of what was usual and what was unique about the design problem at hand. That is, if a tradition—any tradition—is taken as the framework for a particular design, then part of it will fit and part of it most probably will not, and will have to be modified. If, as in the case of St. Thomas Church, the chosen tradition has extensive associations, then the ways it fits and the ways it doesn’t each take on an unusual importance. A building like St. Thomas Church thus speaks as vividly of the particular (this church in a modern city) as of the general (the Church). It is this combination of general and particular, abstract and specific, traditional and original—and not some elegant mode of architectural historicism—that makes the building worth revisiting in the aggressively un-Gothic late 20th century.

Ralph Adams Cram and Bertram Goodhue were partners in the firm of Cram, Goodhue and Ferguson of New York and Boston, and together they designed a number of important buildings in the early 20th century—most of them in Gothic style and most of them religious
(including the chapel of the United States Military Academy at West Point). Cram, like many other Gothic Revivalists in England and America, was grandiosely spiritual in his allegiance to the style, attaching to it an almost moral significance. So great was his fervor that he insisted, for instance, on building St. Thomas Church, except for the roof truss, entirely out of masonry in the traditional manner, without the aid of structural steel—though, due to a miscalculation, steel had to be added later to keep the north wall from collapsing. Goodhue seems to have been a little more easygoing in his approach, regarding Gothic as one alternative among many, rather than the ultimate way. When the firm of Cram, Goodhue and Ferguson was dissolved in 1914, just as the major part of St. Thomas Church was being finished, he went on to design buildings in various other styles, including the exuberantly "Spanish" theme building for the Panama-Pacific Exposition in San Diego and the starkly pre-Modern Nebraska State Capitol in Lincoln. Because Goodhue became one of the most original of the established architects in the early 20th century, and because part of the originality of St. Thomas Church consists of the bold and chunky massing characteristic of Goodhue's work, it is hard to resist thinking that he had the upper hand in the building's design, even though custom says otherwise, possibly because at the time the building was built Cram was the more fashionable architect.

In any case, the design problem was this: how to provide seating for a large number of people (as well as space for offices and other parochial activities) on a relatively small urban site, and how to make a building that, from the outside, could remain a firm presence in the city even as its surroundings changed, as they inevitably must. The solution to the first part of the problem is straightforward if somewhat unorthodox; the main interior space of the building extends from virtually the front of the site to the very back, and it is shifted off center to the north, leaving just enough room for offices and a chapel with a gallery above on the south (53rd Street) side. The most memorable feature of the interior, which is otherwise dignified in a solid and rather plain way, is the enormous reredos above the altar at the (geographical) west end; it was designed by Goodhue and Lee Lawrie, a versatile artist who was also responsible for some of the best Art Deco sculpture in Rockefeller Center, and its ivory-colored stone contrasts with the warmer and darker sandstone of the rest of the interior.

Though all of the figures conform to a carefully planned iconography, the reredos as a whole reads most strongly as a rich and delicate texture. In architectural terms the most instructive thing about it is that it is an object lesson in making virtue of necessity, for the sense of depth and lightness created by the multitude of niches and canopies in the reredos betrays the fact that, with the exception of three windows high above the floor, this end of the building is actually a blank wall that abuts the building next door, formerly a house and now the Museum of Modern Art. Similarly the north wall is blank, though that fact is obscured by the much more dominant clerestory windows set some ten feet back from the lot line, and identical to those on the south side of the nave. Thus there is a good deal of seeming here—architectural dishonesty, some would say—because what is in fact a symmetrical space set off center in an asymmetrical plan and walled in on two sides by adjacent buildings is made to feel central and unencumbered.

The asymmetrical plan which is a peculiar feature of the interior also plays an important part in solving the second part of the design problem—making a building that can
hold its own in the changing urban scene. When seen in elevation or as in the large photograph on page 115, the façade of St. Thomas Church seems truncated and almost bizarre—two-thirds of a Gothic façade, consisting of a massive and rather stubby tower and a more delicately ornamented "central" portal and rose window. The building, of course, has almost never been seen this way, except by an architectural draughtsman, or by an adventurous architectural photographer, and the knowledge that it would not be must certainly have been one of the justifications for designing it this way. Normally, when the façade is seen straight on, the observer is at street level and fairly close by; from this vantage the projecting portal with its deep-set doors and wide stairs dominates, obscuring the eccentricity of the rest. When the building is seen from any distance at all, it must be from some point up or down the avenue, and from such an angle the tower—which is designed for solidity rather than for graceful height, in what would be futile competition with its neighbors—becomes by far the most dominant element.

Why, nevertheless, does it make any sense at all to organize a building in this way, except for the fact that such an organization reflects to some extent the arrangement of the spaces inside? The answer to this question, insofar as it suggests a general attitude, has important implications for urban design, because, unlike many buildings, St. Thomas Church is not composed around itself, nor indeed is it composed with any detailed regard for its immediate neighbors (all of which, incidentally, have changed since the building was built). Instead the exterior of the church allies itself with the most basic and almost certainly the most permanent feature of its surroundings—the city block and the city street. The outsize proportions of the square tower make it seem to the eye to mark the corner of Fifth Avenue and 53rd Street as surely as it marks the corner of the building, and the rest of the façade, not stopped by a second tower on the north, makes a gesture of continuity with its other neighbors on this side of the block.

It is interesting to note that in the late 1950s the architects and owners of Canada House (now called the Mutual Benefit Life Building) paid careful attention to St. Thomas Church when they designed and built their new building immediately to the north on Fifth Avenue by Echoing the church's color and by silhouetting it against a plain and windowless south wall. Such urban courtesy is certainly not to be discounted, since it is rare, but one can't help wondering whether or not in this special case, where the older building is so strong, such courtesy was even required—and whether in fact it would not have been better simply to respect the format of street and sidewalk and façade (as the St. Thomas Church does) rather than to set the building back behind a small plaza (which is what happened with Canada House). Perhaps the architects mistook the older building for an elegant curiosity to be treated with delicate respect, rather than a fundamentally urban piece of architecture able to hold its own among its neighbors, as long as they respected the same rules. This is a mistake that is easy to make, but it is worth correcting, because St. Thomas Church in its close allegiance to the structure of the city and in its manifest concern for the way a building is perceived by people (rather than for some abstract formal clarity in the architect's mind) tells of a kind of architecture that is radically different from much that we have become accustomed to.—Gerald Allen

Building renovation and the corporation image

There is a lot of current discussion about recycling of the built environment, and there is also much said about improving the visual prestige of businesses. In tradition, the two concepts have seldom mixed—possibly due to the lack of image projected by "remodeling." Two completed projects, on the next pages, illustrate that apparently diverse goals can be met simultaneously—and in both urban and rural locations.—Charles Hoyt
Smith, Hinchman & Grylls headquarters: staying downtown with style

The original loft building (below) was stripped to its concrete frame and sheathed in an almost-all-glass curtain wall on the two street sides. The architects designed the innovative glazing support details (right). Once-scattered divisions are housed on intermediate floors (typical floor plan, right), executive offices are on the top (fifth) floor and services and potential rental are on the ground level. Interior spaces include executive reception (opposite page, top), typical drafting room with felt banner dividers, and a hallway.

Reuse of existing structures can fulfill a broad range of motives, and here is a case in point. The architect-client wanted to consolidate its scattered operations in a manner that would make the most economic sense and to still stay in central Detroit. SH&G’s late chairman, Robert Hastings, was convinced that the resurgence of the city was just beginning, and that the firm’s members should “be at the heart.” They are, and they have a glistening reminder to the public of their presence.

SH&G began their new headquarters in 1971 by purchasing a 120,-000-square-foot loft building the firm had designed in 1910, and which met their program requirements of location, sound structure and floor area (three floors can be added in the future). Purchase price plus extensive renovation costs were estimated to total considerably less than the
cost of a new building—final costs were $31.66 per square foot. The first renovation procedure involved stripping the building to its concrete frame, retaining only stairwells and a freight elevator. The new plans were organized around the existing ability of respective floors to accommodate each of the firm’s three working divisions. In a typical plan (opposite page) division executives are housed in offices on the north wall, and the large drafting rooms face the river views to the west. The columns—which were of various sizes and alignments—were furred out. Hung ceilings and carpeting were installed (the original wood floor could not be saved). An on-going art acquisition program has provided works of which the architects are duly proud. The artists include Motherwell, Frankenthaler and Lipshitz.

The most dramatic change is the essentially all-glass skin on the two street facades (a pre-energy crisis decision). The architects designed a tubular aluminum structural system to hold the glazing away from the exposed building frame. Five-foot by seven-foot sheets of bronze-tinted plate glass are held to polished aluminum supports, without spacers, by silicone sealant. The x-shaped clamps held the glass while the sealant was curing, and provide extra support and a strong detail. Heating and cooling are provided by a variable volume system which utilizes light fixture heat in the winter, and the building’s square shape coupled with two solid walls greatly reduce potential heat transfer. SMITH, HINCHMAN & GRYLLS HEADQUARTERS, Detroit, Michigan. Owners, architects and engineers: Smith, Hinchman & Grylls Inc.
Harvey Hubbell headquarters: re-use on an idyllic site

The 30,000-square-foot building above is twice the size of the structural shell of the original building used as its core, and—because of the sensitive design work of architect Bruce Campbell Graham—this virtually new headquarters provides a fine corporate home in an invigorated relationship to the spectacular wooded site. The original structure (center of plan above) was well designed by architects Orr-deCossey-Winder Associates for a previous corporate client. It fitted the new owner's needs because it occupied an ideal position overlooking a man-made pond and was partially shielded from a major highway on the opposite shore. Both public visibility and internal tranquility were available at the same time. Many typically high expenses for suburban site work had already been made.
Despite the advantages, the original building lacked the floor area and operational arrangement that the new owner required. Expansion beyond the existing structure was complicated by the precipitous grade changes and a desire to maintain the site’s natural beauty. Accordingly, an analysis of user needs dispersed the required new construction’s bulk in multiple locations. Two new pavilions were built—for a computer center (top of plan) and for the chief executives (bottom). The original building had been placed at the crest of the spine of a hill parallel to the pond shore, and the new pavilions minimized visual impact and maintained original floor levels by following this crest. A new service room and entry (top of plan) was built at the basement level and this new construction extended the building’s visual base (photo above).

Only the shell of the original building was maintained. Offices here were expanded by bringing the exterior solar glass walls out to within four feet of the roof edge (the original walls had been recessed 18 feet), and the new offices were widened beyond the 12-foot structural bays by overlapping the offices behind (see plan). This unique new plan configuration provided a high percentage of corner offices and there were numerous studies of the consequent effects of the sun and of privacy considerations before the solution was settled.

Landscaping was designed to bridge the transition between building and the natural surroundings. The clients were concerned with preservation of the local countryside character and appreciated landscape architect A. E. Bye’s recommendations to restore the existing hemlock...
forest and provide new planting of native materials such as mountain laurel, rhododendron and partridge berry. Bye is an advocate of the natural approach, and he feels that client acceptance is no longer unusual. He stresses ease of maintenance as a practical factor, and indigenous plantings are brought to the building edge.

The original building (left, below) had open parking and a flight of stairs to the entrance. The new owner’s requirement of covered parking produced the first seen of the changes (below and left): a raised approach road following an adjacent hill slope to a handsome entrance court both over the parking. Cars are now largely hidden, and the building entrance is much more formal—in keeping with the headquarters’ expanded function. A unifying metal fascia has replaced the original detail between roof and exterior scuff. New sitework has included sub-grade power lines and revitalization of native planting which has been continued into the central court (opposite, above). Stairs from the parking level to the entrance level are seen at the right.

The central court (above) was enlarged by placing the surrounding glass walls in a position six feet in back of the original location at the edge of the roof. The result was a better proportioned exterior space and the ability to alternately widen and contract the surrounding corridor—providing separated secretarial positions and spatial variety (see plan, page 122). The court design included a new pool and indigenous planting growing from sod sections transferred from the nearby forest.
The future of the office building

by Jonathan Barnett, A.I.A.

Jonathan Barnett, a frequent contributor to Architectural Record is the author of the recent book: Urban Design as Public Policy.

It is not a bad rule of thumb, in a society that changes as quickly and drastically as ours does, to be a little suspicious of anything that seems definite, fixed and immutable. As soon as everyone has convinced himself that something is a certainty, it has a way of turning out not to be true any longer.

Keeping this rather cynical little axiom in mind, it is time architects took a good look at the way office buildings are designed. If ever there was a building type about which there seemed to be general agreement, the office building would be it. In London and Paris, New York and Tokyo, San Francisco and Sydney, the same building appears again and again, with variations only in the choice of materials and the proportions of the facade. Everyone has felt that such buildings are practically inevitable; and all over the world people shake their heads and mutter, in many different languages and accents, that, while they don’t quarrel with the idea of progress, it is a shame what is happening to their cities.

Now the energy crisis is beginning to make people wonder about these buildings. Does it make sense to have so much glass, and to rely so completely on artificial climate? Whatever made architects design them that way in the first place?

When we stop to think where our ideas about the office building come from, it looks as if Ludwig Mies van der Rohe had a lot to do with them. Starting in the early 1920’s, Mies made drawings of office buildings that were considered revolutionary statements at the time, but which look reasonable, even commonplace today: simple industrial structures, both inside and out, whose regular bay system creates large, undifferentiated spaces that can be partitioned in a number of ways.

We still call such buildings “modern,” although the first drawings were done a half century ago; we also call such buildings “Miesian” although many of the examples designed by other architects are not at all the sort of building that Mies really had in mind.

Mies was interested in the art of elimination: the quality of the single flower instead of the massed flower arrangement; but his art turned out to be very sympathetic to those who were more interested in a beautiful balance sheet than a beautiful building.

It is one thing to choose an ascetic life, it is another to inhabit a world where many interesting and attractive alternatives have been eliminated.

Mies’ original, simplified vision of the office building, made more workable by improved artificial lighting and climate control, and more explicit as Mies had an opportunity to see some examples built, has ended by becoming a stereotype. It is even hard to imagine
that there could be any other kind of office building. But the Miesian formulation, applied universally, is really a drastic oversimplification, both of the nature of office work, and of the relationship of such work to the rest of our society.

There are, of course, some well-known, non-Miesian ways to build office buildings but they have not caught on and swept the world as Mies' ideas have. Frank Lloyd Wright saw office work as a communal experience, which should be housed in a way that celebrated the spirit of group endeavor. The office buildings for the Larkin Soap Company, and the S. C. Johnson Wax Company, were done for firms that were able to accept, at least partially, Wright's ideas about society. Such buildings would appear, however, to be more closely related to large Japanese corporations, than to the much more impersonal, and interchangeable, corporate life in the United States which Mies' buildings represent so perfectly. Wright also designed buildings, like the Price Tower in Bartlesville, Oklahoma, which combined offices and apartments in a single structure. Except for the lower two floors, however, all the office space takes the form of individual, or executive offices, with no large "pool" areas devoted to clerical work.

Alvar Aalto designed a very successful office building for the Finnish equivalent of our Social Security system, where the spaces are closely adapted to the many different types of work that go on there. But Aalto was dealing with an institution that did not expect to grow or change substantially.

The undifferentiated loft space of Mies' formulation seems to have considerable advantages of flexibility over the alternatives suggested by Wright or Aalto, which is why they have been so widely accepted.

Those who are worried about the boredom and lack of incentive felt by many workers today wonder if a new corporate structure, based on identifiable groups working towards a definable result, would not be more efficient—as well as more desirable—than training people to do isolated, repetitive tasks. The most obvious application of such thinking is to change the nature of the assembly line, as the Saab Company says it has done in Sweden; but there are many changes that could be made in office work that would have a similar effect.

It is a good question whether our places of work are impersonal and interchangeable because they express the institutional life of our society, or whether the nature of the office building has influenced the corporate structure. Are architects in a position to help change the nature of our institutions by suggesting new kinds of space for them to occupy?

It may be that the architect has no such power and that, in any case, undifferentiated loft space is an appropriate working environment; certainly many architects themselves prefer to live and work in lofts.

There are some indications, however, that other people are not as fond of lofts as architects are. Within loft buildings, experiments with "office landscape" indicate a dissatisfaction with the usual impersonal and hierarchical arrangement. Office landscape does present some real advantages to corporations with large clerical staffs that are subject to frequent changes in the size and organization of various departments; but the freedom created is superficial. The cards have been shuffled but they are still the same cards.

It is also rather strange, you must admit, that the executive floors of large loft buildings, those inhabited by people who have the authority to control their surroundings, so often drip with chandeliers suspended through hung ceilings, and are filled with classic columns, Georgian door surrounds, paneling and other accoutrements of a "high status" environment. Do these interiors represent inchoate bad taste, or an unfulfilled hunger for something that the architect has not provided in the building itself?

Perhaps it will be the "energy crisis" rather than inchoate longings for different surroundings that will make a departure from the office building stereotype a necessity. We are all beginning to question the propriety of creating such totally artificial environments at a time of increasing demand on energy sources and increasing environmental pollution.

It seems likely that office buildings in the future will not look the same on all four sides, and that sun control will once again be an architectural determinant.

In the meantime, architects are already helping to change the relationship of the office building to the rest of the city, and, in the process, have begun to move away from the Miesian concept of the isolated, rational structure devoted solely to office work.

In the old commercial centers of cities, stores, offices, warehouses and factories, apartments and houses mingled together. The kind of office space in early office buildings was quite compatible with the size and shape of other uses. In Europe, in particular, it was not unusual for a single building to house office suites, hotel rooms and even apartments, as well as shops on the ground floor.

The loft office building with its ever larger floors was much less compatible with other uses, and the artificial lighting and climate required made the buildings too costly for most other occupants in any case. Only the highest paying tenants could afford the ground floor space, and no one thought of using the upper floors for hotels or apartments.

When big office buildings occurred at intervals among other commercial buildings, the situation described by Mies in his drawings, the office building functioned reasonably well as a unit of the city. As office buildings began to take over the downtowns of cities, however, their limitations became apparent.

Publicists for a new office building, after they finish explaining how all the components,
stretched out end to end would reach to South America or the Moon, are fond of describing office buildings as small cities in themselves. Many office buildings indeed house the equivalent of a small city’s population, but they do not have the amenities and services that small cities need.

One or two big office buildings in a downtown or a suburb can be absorbed easily enough, but a suburb full of corporate headquarters, or a downtown with a dozen high intensity buildings, create all kinds of new demands. Traffic congestion increases, utilities must be improved, police and fire services must be strengthened. Where should employees eat lunch, where can they shop? In the suburbs, there may not be anywhere close by, and many corporate headquarters buildings have had to include shops and elaborate eating facilities. Downtown, the old locations for shops and restaurants may have been displaced by the new office buildings and the parking they require.

Large concentrations of office buildings do appear to make economic sense, as demonstrated by the enormous growth of downtown office activity in the last dozen years. Suburban office concentrations also make economic sense, but both are inefficient in comparison with a new kind of urban center that is in the process of being invented.

Urban designers and entrepreneurs are discovering that office space should be related to a matrix of shops, restaurants, entertainment, exhibition space, and hotel rooms, and that all of these elements, in turn, are more successful if there are residences nearby.

John Portman, the architect and real-estate developer, is one of those who has seen most clearly that downtown requires a variety of uses in order to keep its vitality. The Peachtree Center in Atlanta, which Portman designed, and which he has initiated and to a large extent financed himself, combines the country’s second largest merchandise mart (after Chicago) with hotel rooms, office space, restaurants and shops. The principal architectural experiences are not the facades of the buildings, but the huge interior court of the hotel, the concourse system with its garden courtyard, and the roof-top restaurants.

Other urban renewal projects, whether private or government supported, have been planned to include a variety of uses and to introduce some of the amenities of a suburban shopping center into the downtown. Until recently, however, such developments have remained an amalgam of conventional building types. The Galleria complex in Houston, the Carlton Center in Johannesburg, the I. D. S. complex in Minneapolis, or Portman’s Embarcadero Center in San Francisco and Renaissance Center in Detroit all represent steps in the evolution of a new concept of downtown, with the concourse system becoming the controlling element in the design and the office building a subsidiary part.

While developers have been discovering that this kind of integrated urban development made sense, cities have been trying to encourage it in order to preserve their competitive position against the newer suburban centers.
However, urban development of this nature is contrary to some of the conventional wisdom about the separation of land uses embodied in zoning controls. The special zoning districts created in New York City were needed to preserve a healthy variety of land uses in the congested central areas of midtown and lower Manhattan. Without special legislation, the legitimate theaters would have been obliterated by office buildings; without the Fifth Avenue Special Zoning District, office development might well have killed the effectiveness of Fifth Avenue as a shopping street. The Zoning District mandates or encourages greater complexity of uses: major retail shopping, large covered spaces, and apartments as well as office space.

The Fifth Avenue zoning district in effect requires architects to invent a new building type which combines apartments and offices in a single structure, and which gives over the lower floors to high-intensity retail uses. The John Hancock Tower in Chicago represented an important step towards this new kind of building, and was one reason why urban designers in New York City felt that it would be practical to specify combined residential and office uses in the Fifth Avenue Special District.

The architects of the John Hancock Building in Chicago were, by coincidence, the architects for Olympic Tower, the first building to be constructed in the Fifth Avenue special district, although it was the New York office of Skidmore Owings and Merrill that did the New York building, not the Chicago office.

The architects of Olympic Tower have elected to conceal the building's complexity behind a facade that is similar to a conventional office building, but the section shows the relationship between apartments, offices, shopping and a major galleria space. No doubt, only a small number of people working in this building will actually live there as well, if only because the apartments will be very expensive. The principle is an interesting one, however: living over your place of work is a good way to cut down on commutation time.

Still another interesting example of the building that combines several different downtown uses in one structure is Water Tower Place in Chicago. It is located opposite the Hancock Building at the head of North Michigan Avenue, and was designed by Loebl Schlossman Bennett & Dart and C. F. Murphy Associates. There are only two floors of offices: the major ingredients are a multi-storey shopping center, a hotel and apartments.

Another multi-story downtown shopping center will be located on the lower floors of the hotel that John Portman has designed and is developing on Times Square in New York.

The great spread of urbanization since the end of World War II has already destroyed the traditional difference between city and suburb. Many new relationships are possible, and many new types of buildings will be needed to house them. As the context for office space changes, we can expect to see major changes in the concept of the office building; and the design of the connections between office space and other activities, both inside and outside the building will become as significant as the design of the building itself.

Above: Olympic Tower under construction on Fifth Avenue in New York; left: the John Hancock Building in Chicago. Both buildings combine large amounts of office space and a significant number of apartments in a single structure, and both were designed by Skidmore, Owings and Merrill. The Fifth Avenue Building follows the provisions of a special zoning district that encourages the construction of mixed-use buildings and mandates the retention of the retail frontage on Fifth Avenue.
The Sea Ranch is a second home development on a 10-mile section of the Northern California coast, spectacularly scenic and exceptionally masterplanned to retain as much of its original character as possible. The first buildings at the Sea Ranch—condominiums by Moore Lyndon Turnbull Whitaker, and hedgerow houses by Joseph Esherick and Associates—established distinctive criteria for design. In the years since, the criteria have some times been understood and used by other architects, but sometimes—at peril to the whole development when the resulting houses are on the open meadow—ignored. Simplicity and a strong relation with the site are the essence of these criteria, and they are expressed very differently for the different types of site: open meadow, exposed to view from the highway and from the hills; and forested hills. These two houses, on their very different sites and in their very individual ways, reflect these essentials and belong, as they should, to the land.—Elisabeth K. Thompson
... a house on the meadow between the hedgerows

A house on the meadow at the Sea Ranch is a highly visible object, exposed to view from the hills and from the highway that separates meadow and hills. In such an open landscape, the size, form and color of a building are unusually important since they determine the degree of contrast between building and land.

The two buildings that make up this unpretentious weekend house are simple in form and color, and, in their straightforward use of rough-sawn stained wood, have the pleasant indigenous look of an old weathered barn. The smaller of the two buildings, now used as a studio-study and a garage, served as living quarters while the main building was under construction. The two principal requirements of the clients were simplicity and privacy for themselves and their three teenage children. Locating the bedrooms at either end of the big room was a logical — though to the clients, unconventional — way of obtaining privacy, but the clients readily accepted it and found that it worked out well not only for the family but when the house is rented, as it often is, since two couples can occupy it and still have privacy. Guests are provided for in the main building; for an overflow number, window seats convert to bunks, and an aerie above one of the bedrooms can be used for sleeping. The big room, with a view to the ocean at one end and an open kitchen at the other, is the gathering place for everyone. With commendable understanding of the character of the place, the owners have allowed the indigenous wild grasses to grow up to the buildings.

The openness of the meadow and its nearness to the ocean were deciding factors in selecting this site for the house. (The owner is from Wyoming, and used to great open spaces.) Even when other houses are inevitably built around and near this house, some of the feeling of openness will survive because there is no break—as would have happened with more formal landscaping—between house and land. The wide deck on two sides of the big room is directly accessible from both bedrooms as well as from the living room. The high ceiling over the big room is wood sheathed; drywall is used for interior partitions.
...a house under the trees in the hillside forest

On the hills at Sea Ranch, most house sites are out of view among trees and bushes, although some—on the slope of the hill facing the ocean—are in plain view of the meadow. Up on the hill, however, sites tend to be shady, with sunlight filtered through the trees, so that daylight in the houses must be designed for. Since houses on the hill are so little exposed to general view—in contrast to those on the meadow—forms are often more complex. The overriding character is, nevertheless, simple. The owners of this house, a retired couple, had lived for several years at the Sea Ranch in one of the “Binker Barns” designed by William Turnbull and Charles Moore (RECORD HOUSES of 1973, pages 74-5), and had learned to know and appreciate the exceptional quality of the original Sea Ranch buildings and to want the same quality in their new house. The house is simple and unpretentious, reminiscent of the Sea Ranch vernacular but individual in its handling of details and forms. The sloping site allowed for placement of garage, shop and storage under the main house with a minimum disturbance of grade. This gives living areas just enough elevation to afford some view of Black Point and the ocean and, through the trees, of a meadow on the south. Guest rooms are separate from the main house in a compact and appropriately simple unit on the same level as the house. The main living space is open and light, with large windows on two sides and additional light from a monitor window above.

The sculptural forms of the charred remains of old tree stumps, retained and incorporated into the design, are a feature of the entrance to the house. Logs of various lengths, set vertically beside steps from driveway to entrance, further emphasize the woody character of the place. Very few living trees were removed to make way for the house, so during most of the day, sunlight reaches the house through the trees. To bring in as much daylight as possible to entry and dining area, a kind of "light tower" was placed over the entry (across page, top and bottom). Light from its high monitor window (see opposite) bounces against the opposite wall and ricochets across to dining area.
According to Douglass, omnicenters will be built in the suburbs as well as in the central business districts and will appear most frequently in cities with populations of 100 thousand to 1 million. He cites as the principal reasons for their emergence, the scarcity and high cost of suitable land, and the need for shopping centers to be more competitive in terms of the range of facilities and merchandise offered. The United States now has more than 14,000 shopping centers and the average consumer (back when he had gas and thanks to our well-developed highway system) had a choice of several which were convenient to his home. Now he must be more selective as the centers become more competitive. Douglass believes that only the small neighborhood centers (similar to Meadow Mall in Simsbury, Connecticut included in this study on pages 150-151) which are essentially supermarkets, will continue to survive.

He makes a strong economic and social case for the downtown omnicenter. He points out that these centers, if successful, as he believes they will be, provide employment and increase the tax base. The suburban omnicenter promises less obvious long-range benefits which are equally interesting. Because of stronger community resistance to shopping centers by citizens who now know what the word “ecology” means, and tougher Federal environmental regulations, the medium-sized center has become more and more difficult to build. The number of undertakings will diminish and land will be available for other uses. The suburban omnicenter has the advantage of using valuable land intensively. Its concentration of activities should encourage the development of public transportation in suburban and regional areas.

Douglass’ predictions of financial success for the downtown shopping mall within an omnicenter are supported by current reports from Broadway Plaza designed by Charles Luckman Associates for the Ogden Development Corporation.

The omnicenter can be a financial success right from the start
Except for the fact that architect Charles Luckman calls Broadway Plaza a megastructure rather than an omnicenter, as a new building type it fits the general category defined by Lathrop Douglass. Its astonishing success should help bring about Douglass’ long-range forecasts. According to Charles Luckman Associates, the original predictions for the volume of pedestrian traffic and retail sales made three years ago for Broadway Plaza have turned out to be a gross underestimation. In April 1971, Economic Research Associates estimated that an average of 18,000 persons would pour through Broadway Plaza daily. The actual average has been 40,000 persons, and this is with the office building less than one-third occupied.

Over 4,500 cars enter the Broadway Plaza
As the site plan (left) indicates, the megastructure comprises an entire city block. Shown above is the principal entrance to the 50-foot-high two-level mall, which also appears in the photo of the hotel (opposite page bottom). The entire complex, including the office tower, can be seen in the bird's-eye photo (opposite page top). As the section (below) indicates the complex has four interconnected levels: "A" and "B"—the two lower levels—house the hotel meeting and banquet facilities, the employee facilities, subterranean parking, loading and storage areas and the central mechanical plant. The garden and plaza levels interconnect the mall, department store, office tower and hotel.
The skylight galleria roof is supported by visible trusses. Escalators and stairways lead from the plaza level of the galleria down to the garden level which opens onto the lobby of the Hyatt Regency (below left). According to architect Luckman: "Everything about the project was designed to provide an open, warm, inviting place for people. Extensive use of brick and wood throughout the two-level galleria, interior trees and flowering plants, benches, the fountain, the wide open store fronts, the flow of each element into the others—all were instigated by a desire to make this a hospitable place that says 'please come in and stay awhile.'" Daylight penetrates to the garden level and pool through the broad and spacious stairwell.
parking structure daily and more than 50 per cent of this traffic comes from outlying suburban communities, including San Gabriel Valley, San Fernando Valley, Palos Verdes and West Los Angeles. The department store’s sales in December 1973 were 212 per cent over projections. Sunday traffic brings an average of 31,000 persons to Broadway Plaza and as a result the department store is open for business every Sunday as are most of the other shops in the retail concourse. The owners believe the gasoline shortage is boosting downtown trade, due to the availability of bus transportation to and within the central city. In addition, Broadway Plaza merchants are profiting from the new Sunday bus fares which permit passengers to go anywhere in Los Angeles for a single 10 cents fare. All of the retail tenants report business volumes far in excess of projections and complain that their most serious problem is keeping enough stock on their shelves.

Since opening, the Regency Hyatt Hotel has exceeded projections in all areas of operation—greater percentage of rooms occupied (56.9 per cent since opening last August with many days of more than 90 per cent), higher room rates (average rate of $30.25), and food and beverage sales (total from August to November of nearly $1 million). The total dollar volume for the hotel during the month of November was $747,000, of which $457,000 was derived from food and beverage sales. Previous projections did not anticipate achieving $400,000 in food and beverage sales until the end of 1974.

Lunch business is booming. The lines are already too long from the customer’s standpoint averaging 300 to 400 feet in length outside the more popular restaurants. Approximately 5,000 lunches are served on an average day throughout the complex.

Based upon its high volume of business, Hyatt has requested the owners to study and consider the addition of a third major restaurant and lounge area. The hotel banquet and catering services are also experiencing a far greater volume than had been anticipated. Preliminary “lost business” studies (banquet and meeting rooms all booked) indicate additional meeting and banquet space will be requested. Hyatt is projecting 80-85 per cent occupancy and has heavy convention bookings through June 1975.

The owners and their architects believe that Broadway Plaza’s success already is having a dramatic effect on downtown Los Angeles and will probably influence the future of other downtowns as well. The Plaza is making it evident to retailers that there is a downtown market in Los Angeles larger than most believed until now. It has been forcefully demonstrated that the increased rents which must be paid in a downtown complex are offset by greater sales volumes. Broadway Plaza proves that if a developer spends the money to create a public space downtown where people want to be, and if the architects and planners make
A shopping mall within an urban complex in Springfield, Massachusetts is the first step toward a two-level city.
Baystate West was designed by Edward Catalano with Pietro Belluschi as consultant in association with Crawley Cooper, Paul Shimamoto, Fred Taylor and Peter Sugar. It includes a two-level shopping mall and parking for 1,200 cars within an urban complex which includes a 270-room hotel, a 30-story office building, sunken gardens, paved areas, a swimming pool, fountain and a private club pavilion. The complex is joined by two enclosed bridges to two older department stores.

The shopping mall itself is formed by three artificially lit interior courts interconnected by short and narrow streets. Two larger plazas contain escalators which join up with the bridges to the older stores. The interior court (above) is square and uses mirrors as reflective surfaces. The 10-foot square cube, proposed and designed by architect William Wainwright who served as a consultant to Catalano and Belluschi, is made of reflective acrylic plastic. It slowly rotates reflecting the dynamics of the spaces which surround it (see cover).
vided for the organization and display of a great variety of merchandise, and the freshness with which Harper & George have revived the idea of a farmers' market and designed a restaurant, rather than in the development of urban design concepts per se. Crown Center as a whole is a satellite rather than an integral part of downtown Kansas City and functions as a rival center in a Kansas City grey area rather than as a reinforcement of the downtown core. Its links with downtown are by automobile and bus only.

All three of the shopping malls just referred to and described in this study represent a high degree of commitment on the part of their developers to the idea that money can still be made in downtown retail. The spatial and functional complexity of all three required a high degree of programming and design skill on the part of their architects. No one of them, however, had the advantage of being designed within a long-range urban design framework of the kind which the Philadelphia Planning Commission has been developing since the end of World War II and of which Market Street East is a key element.

No one of them is part of a network of parks and squares linked by bicycle and pedestrian greenways to museums, landmarks and other places of historic interest. None is directly accessible by interurban train or subway. For these reasons, there are limits to the degree to which any one of them can truly revitalize the downtown areas of which they are a part. Shops, cinemas and restaurants opening off air-conditioned skylit malls which are linked up to parking garages fed by multi-lane expressways and crowned by towers agleam in the sun do not a city make—public relations claims to the contrary. People need a broader choice of leisure time activities than these highly sophisticated omnicenters offer. A person with a few hours off should be able to do more than shop and eat in a downtown mall. The shopping mall, although an essential element in a lively vibrant urban scene, must become part of a larger and more accommodating public environment. After 14 years of struggle by enlightened architects, planners and public officials, just such a mall is about to get underway—at Market Street East in the heart of Philadelphia.

The spine of Market Street East was established by William Penn
In 1683 when Penn laid out Philadelphia between the Delaware and the Schuylkill Rivers, he began with two intersecting axes—Broad Street running north and south and Market Street running east and west. At their intersection he placed a square, which was later to become the site for City Hall, and he placed four other squares in each of the quadrants formed by the intersecting axes.

This basic configuration, as Edmund N. Bacon, former executive director of the Philadelphia City Planning Commission, was one of
A large specialty store which does not departmentalize its merchandise but groups it by "mood or lifestyle" (opposite page, bottom left) is a shopping village (right), a modern-day farmers' market (below) and a restaurant with seven cuisines (left) are the major elements in the new retail complex built by Hallmark Cards, Inc. for Crown Center.

The retail complex is an L-shaped, three-level structure with 400,000 square feet of space designed by Edward Larrabee Barnes who also serves as master planner of Crown Center. The interior of Hall's, the large specialty store, was designed by Paul Laszlo Associates. The portion of the retail complex known as West Village (right) was designed by Francois Dalle-Molto and Joseph Baker. It consists of cubical boutiques made of steel, plywood and glass arranged on two levels within a 32-foot high, two-story shell in which piping and ductwork is exposed. The farmers' market, called the "The Market Place," covers 18,000 square feet and includes, in addition to the market stalls, a variety of special stores. Harper & George designed the restaurant and the market.

The Crown Center retail complex also includes 44 independent retail outlets. Among these is a general store (opposite page, bottom right).
the first to point out, is the fundamental design idea which has influenced the subsequent growth of the city.

As far back as 1947 it was apparent to Bacon that a commercial link combining shops, office buildings and hotels, needed to be created between City Hall and a group of three department stores—Gimbels, Lit’s and Strawbridge & Clothiers—five blocks to the east between 7th and 9th Streets on Market Street. Between City Hall and the stores was a five-block strip of urban blight interrupted on the south side of Market Street by John Wanamaker’s, the famous PSFS building and Slenlenburg’s and on the north by the Reading Railroad station.

By 1960, Penn Center, the linear multi-level development to the west of City Hall was virtually complete and it was time to think of the spine to the east. The first scheme was devised by Willo von Moltke who was then on the staff of the planning commission. He called for a linear three-story retail element. The lowest level was to be one story below the street and approximately one story above the platform level of the subway running under and in the same direction as Market Street and the commuter train tracks parallel to Market Street to the north. It was to serve as a commuter concourse for both the trains and subway. At various points along the spine this lower level would be open to the sky, at others it would be covered by medium-rise commercial buildings. The two upper levels were also to have shops and there were to be six levels of parking above that. Off-street truck loading was to come in at the second level and a bus station was planned for the third.

This scheme was soon abandoned when economic analysis established that the three levels of retail activity provided more linear feet of shop frontage than the area could support and the interweaving of the public infrastructure—pedestrian concourses and bus, truck, train and subway access—with retail and office space which would be paid for by the private sector made it too difficult to sort out the financing.

In 1963 Romaldo Giurgola was invited by the city to study the problem. He first proposed that a single, air-conditioned, glass-roofed, shop-lined pedestrian spine be constructed one level above the street, bridging the cross streets. This esplanade would interconnect by means of escalators the subway, bus station and parking. Access to the medium-rise structures was to have been at street level. This scheme failed because the department store executives accustomed to certain tried and true merchandising techniques, did not want their stores to be entered at the second story.

In 1964, Giurgola tried again. This time he put the mall level back to one story below the street. The north-south streets became bridges and a six-story air-conditioned mall was created, lit by a great diagonal skylight. Skidmore, Owings & Merrill were then engaged by the

Philadelphia’s Market Street East Transportation Mall Center, conceived in the 1960’s and long on the shelf, will soon commence construction, in block by block increments.

The development of Market Street East, covering a seven-block area extending from City Hall almost to Independence Mall, has been a long-range goal of the Philadelphia City Planning Commission and has been under study for many years. Its current form is the work of Bower and Fradley, building on concepts developed by Willo von Moltke, Romaldo Giurgola and Skidmore, Owings and Merrill successively. The shopping mall will be part of what Bower and Fradley describe as “a unique urban mini-city containing most of the major uses found in a city core. The goals of the project are to reverse the decline in downtown retail activities; to help the center city capture a major share of the anticipated office demand through 1983; to complete the interface of Philadelphia’s potentially superb transit system; and to create a humane pedestrian environment for business, shopping, working and entertainment.”

Market Street East is to be built on a transportation hub which includes commuter railroads, a high-speed inter-city rail line, subways, buses, streetcars and the automobile. This network will be tied together by a three-level pedestrian walkway system through an air-conditioned skylit shopping mall. The base formed by the mall and commercial space will be surmounted with a major air rights development of office and hotel space.
The mall level and the street level of the three-level pedestrian mall (both shown below) will be lined with shops. The office-level lobby (not shown) is not part of the shopping mall since the number of elevators it will require to serve the projected 10 million square feet of office spaces above will utilize all of the lobby areas not required for horizontal circulation. The mall, or "people street" as Edmund Bacon calls it, will be built independently of the shops which will align it and will be principally funded by HUD monies, with a commitment of funds by the city. The retail space as well as the offices and the two hotels above will be built incrementally by private developers. The work of Bower and Fradley, who have been appointed by the Redevelopment Authority as coordinating architects for Market Street East, has been limited to the design of the pedestrian mall.

A catalyst for carrying the mall design to the completed working drawing stage for the first two blocks has been the construction of a new building—1234 Market Street, designed by Bower and Fradley—between the landmark PSFS building and the John Wanamaker Department Store, connecting them both below and above the street. Here the three-level concept of Market East was successfully carried through. The strongest impetus, however, has been the decision of Gimbel's to build a new department store on an adjacent block within Market Street East. The first phase of construction will be for the two blocks between 8th and 10th Streets.
Philadelphia Redevelopment Authority to further clarify the idea.

Since government funds were unavailable to construct the public infrastructure, interest on the part of private developers lagged. Market Street East lay dormant until 1969 when a new structure to be called 1234 Market Street was designed to be constructed south of Market Street between John Wanamaker's and the PSFS building near City Hall. The work of Bower and Fradley and now nearing completion, it puts in place the first increment of the Market Street spine. Although it is not a part of the projected spine itself which will be to the north on the opposite side of Market Street, the new building establishes a three-story mall with a main level one story below the street. An underpass below the Market Street subway has been constructed to link the new building with Market Street East and a bridge spanning 13th Street links it with Wanamaker's. In the process of designing 1234 Market Street, Bower and Fradley strongly reinforced the Market Street East concept and literally brought it back to life. The Redevelopment Authority rewarded them by naming them coordinating architects to continue the work and bring the Market Street East design up-to-date.

**Market Street East as now projected is bigger and more complex**

Bower and Fradley began work on a project of much greater magnitude than originally conceived. In the years between 1960 and 1969, economic projections for Market Street East had pushed the square foot total of required office space drastically upward from the 3 million proposed in the SOM studies to 10 million. Allowable office building heights went from under 30 to over 40 stories. The projected number of people expected to pass through the complex daily increased to 82,000 with 65,000 arriving during the rush hours. Fifteen percent of these are expected to arrive by car, and the rest by some form of mass transit. The complex has been designed for 16 hours a day of commercial activity.

Market Street East is becoming a major transit arrival point comprising a fully automated high-speed line from New Jersey now in operation, a link-up between the Penn Central and Reading railroads, a high-speed line to the airport, improved subways and an upper level bus system connected by overhead ramps to the Vine Street expressway to the north.

It had become clear by this time to the Redevelopment Authority that the project had to be built in stages to meet changing market demands and that it had to be articulated into elements which could function separately before all the components were in place. The portions of Market Street East which were to be built by government funds (HUD and the city) will pay for the pedestrian spine and it is hoped that the Department of Transportation will come up with in excess of $100 million for a new commuter railroad station, a vital part of the proj-
Now communities are resisting new shopping centers, zoning is stricter, and design has to be better

Recreating "downtown" in Columbus, Indiana
The idea of expanding the functions of malls is beginning to take hold among the developers, architects and planners of shopping centers of...
Although the high-rise "omnicenters" shown on the preceding pages appear to be the trend of the future, and the medium-sized regional shopping center may not survive as a type, small neighborhood centers such as Meadow Mall in Simsbury, Connecticut will continue to be built. In contrast to the omnicenters, these small shopping centers get little, if any, design attention. Meadow Mall is a distinguished exception. Designed by architects Gwathmey Siegel and about to go ahead, it is a handsome structure which will house a mixture of commercial and office spaces organized around a covered mall.

The solution meets strict design criteria imposed by the local zoning commission and planning commission, including considerations of traffic circulation within the site, location, amount and access to parking, traffic load or possible circulation problems on existing streets and the location and type of display signs and lighting, loading zones and landscape.

Parking for the facility is disposed to the rear of the site and is landscaped to minimize its view from neighboring sites. Site lighting is designed to eliminate the problems of glare and light spill off onto adjacent property. The lighting fixtures will be of the low bollard type. A low and discreet sign will be located at each entrance.
all sizes and types in every kind of location. Cesar Pelli, partner-in-charge for Gruen Associates, Inc. architects of Courthouse Center in Columbus, Indiana (RECORD March 1973) includes in this project a so-called "civic space," as well as a mall. Says he: "The usual modern shopping center is a completely introverted environment. It tries to connect in the most direct form possible the automobile to its air conditioned walkways. These ordinarily redirect the customer back to his own car, when he has completed his shopping. By placing such a center downtown, people are physically brought back to downtown, but in every other respect are isolated from it by the self-sufficient center. The problem of revitalizing all of downtown Columbus needed something more. . . . The civic space is conceived as a focal point for the entire community. It is a space designed to attract and be of use for many more occasions than shopping and at the same time is designed to draw people from the shopping center and bring them to the street itself. The civic space should become the place to which everybody in Columbus will gravitate. It should function as a modern American equivalent of the Italian piazza." Unlike most downtown shopping centers, Courthouse Center respects existing street patterns, and the scale of such nearby landmarks as the Bartholomew County Courthouse, a red brick and limestone structure built in the 1870's and one of the most beautiful buildings in Columbus. Courthouse Center also interconnects with and continues the pedestrian colonnade designed as part of the facade of the new post office by Kevin Roche and John Dinkeloo.

Within the civic space a number of community activities are taking place including dances and benefits, exhibits and concerts. It includes a stage for lectures, puppet shows and small plays. Exhibition spaces have been included for art, crafts, technology and science and flower shows. There are conference rooms for small banquets, gatherings and lectures. The civic space is not only used for special occasions, large and small, but is also an everyday part of the citizen's life. A large central clock serves as the focal point and meeting place. An information board contains directories, information about events in Columbus and surrounding areas, television screens for tapes, closed circuit TV for events of public importance, screens for slide and motion picture projection, and an illuminated news strip tied into an international news service. Architect Pelli believes that by concentrating so many community activities into one place, a magnet has been created which will bring people of every age and interest to downtown Columbus.

A shopping center brings unforeseen benefits to Monroeville

Even the best developers, architects, planners and programmers cannot foresee and plan for all the uses to which their projects will be put, but if they pay some attention to how people actually do behave in their buildings, plazas and malls, they may become more aware of human needs which they have not considered, and apply this knowledge constructively in all their work.

The Monroeville Mall in suburban Pittsburgh, for example, has become a means of salvation for heart patients living nearby. Every morning more than a dozen of them drive to the shopping center and walk at least four or five miles in the mall. To circle back from Gimbel's at one end to Joseph Horne's at the other a mere fifteen times adds up to five health giving miles on a level surface. Within the mall the air is clean and at an even temperature and there is no wind, not even a breeze. At the end of their exertions the heart patients enjoy a cup of coffee together, bringing a little business to the mall's coffee shop, and some sense of community into their lives. And from time to time they make other purchases.

Whatever one may think of the fact that sidewalkless, parkless, sprawling suburbia offers people nowhere to walk or run, the fact remains that Monroeville Mall has by happenstance become a slow motion jogging track, serving an unexpected human requirement.

This five-year-old shopping center is one of the largest in the country. It has 1.25 million square feet of leasable space, three big stores and 120 shops of various sizes. Besides providing heart patients with a place to exercise, like many other malls it has a skating rink which is heavily used. Unlike most shopping centers whatever their size, however, Monroeville Mall has a full-time ministry. Since no one foresaw this, no interfaith chapel was included at the time the complex was built and spiritual counseling takes place in a so-called "talk shop" booth located in the mall, or if the problem seems to warrant, in the minister's office.

The ministry sets up dances for singles in the mall's community room, and formed an organization for old people known as the Vintage Club which also meets in the community room. According to James G. Driscoll, writing in the National Observer, the ministry at Monroeville Mall sponsors seminars and classes in transactional analysis, parent effectiveness, psychological stress in family life, and "Passover, Lord's Supper, Eucharist—What's the Difference?"

If the notion of a shopping mall as a place for ecumenical discussion is an astonishing one, it is because we are insufficiently aware of how poorly our newer suburbs are serving traditional, but nevertheless, essential human demands. It is clear that in Monroeville, if it weren't for the shopping center, it would be just that much tougher to walk, run, meet people and share important human concerns.

The optimistic can take hope in the realization that even though the athletic, community and spiritual happenings within a shopping mall may seem feeble indeed compared to what they can be and often are in real cities and towns, a start is being made.—M.F.S.
Flexible electrical distribution for changing spaces

The growing application of open planning and flexibility concepts in office buildings and schools has encouraged the development of a number of new systems using power/communication columns and/or ceiling raceways to: 1) provide convenient access to electrical and communication services; 2) allow rearrangement of furniture and partitions while still providing access to electrical services; and 3) make it possible to easily move lighting fixtures or to replace them with other types.

And now, the lighting flexibility capability of one new system has attracted the interest of chain-store planners because of the ease of changing lighting to match changes in merchandising.

In the school field, one of the outgrowths of Toronto's Study of Educational Facilities (SEF) school systems project (RECORD, October, 1970) was a technically-sophisticated electric-electronic subsystem. This above-ceiling plug-in system made possible easy relocation of service columns and lighting fixtures. A similar system (RECORD, August, 1973) has been designed by a Boston consulting electrical engineer who was a consultant on the first schools in the city's BOSTCO project (Boston Standard Components System) which used SEF components.

Recent code changes made possible much more economical electrical flexibility

Since 1971, the National Electrical Code has permitted unsupported 6-ft lengths of flexible metal conduit, or prewired armored cable (BX) for taps from the outlet boxes to the lighting fixtures—allowing a degree of freedom for location of lighting fixtures in a suspended ceiling. Furthermore, the NE Code was changed in 1971 to allow the use of surface raceways (i.e., sheet-metal channels with covers) in nonair-handling plenums, and electrical taps and splices within the raceways. This meant that power/communication poles and columns could be installed in open-plan spaces on a modular basis corresponding to the layout of metal raceways above the ceiling. A proposed change for the 1974 NE Code allows "listed" over-ceiling metal raceways in air-handling plenums. This change would significantly enlarge the applicability of raceways above accessible suspended ceilings because the plenum space above these ceilings is often used by mechanical engineers for returning room air to air-handling units and to exhaust-air systems.

Speed of change is further enhanced by the use of plugs and quick disconnects

Electrical tap connections from power/communication poles and columns to raceways or junction boxes originally were—and still often are—made by hard wiring (i.e., wire-to-wire contact achieved by using wire connectors).

Toronto's SEF program introduced the use of plugs and receptacles for connecting service columns and lighting fixtures to electrical distribution boxes above hung ceilings. These plugs and receptacles had special configurations for the different voltages used for lighting, power, and low-voltage switching.

The following three pages show three different approaches that permit quick-change electrical connections for power poles and columns, and for lighting fixtures. These particular systems all provide access to power and communications wiring within the hung-ceiling space or at the ceiling surface.

One of these is a plug-in-type system that was developed in response to a chain-store company's need to have a quick, convenient way to change residential lighting fixtures in their ceiling display areas. The problem was solved by a manufacturer who had been supplying the store chain with its own building lighting fixtures. His answer was a plug-in-type raceway. As now marketed, the system is comprised of a prewired extruded aluminum raceway containing receptacles, and having an integral vertical fin to which is riveted a T-bar for supporting the ceiling tiles or panels of a suspended ceiling.

A different approach is used with another manufacturer's raceway in cases where there is no suspended ceiling. An exposed raceway is ceiling mounted at convenient spacings, and the prewired power columns are connected electrically by conventional plugs to raceway-mounted receptacles.

With the third system, the manufacturer relies on conventional branch-wiring methods—i.e., conduit and junction boxes—above the ceiling, but provides a twist-lock fitting for quick connect-disconnect. The rigid metal conduit and junction boxes are installed on a modular basis. Then, for each power pole, a length of flexible metal conduit is hard-wired to the junction box at one end; and, on the other end, it has a female quick disconnect that is joined to a male disconnect at the power columns. When only partial-height power columns are used, the flexible metal conduit is enclosed by a flexible tube connector.
A quick-disconnect device, used with conventional wiring methods, makes it simple to move power columns

The power columns of this system can be easily relocated without expensive electrical changes because of the quick disconnect feature. Full-height power columns contain up to three power lines plus other low-voltage systems (telephone, clock signal, speakers, etc.). Screen-mounted power columns have one incoming power line plus additional low-voltage systems. Connect-disconnect fittings have different configurations for 120-volt, 15-amp power supply to duplex outlet service and for 120-volt, 15-amp switch leg.

For full-height power columns, the prewired flexible conduit length in the plenum gets fed to the columns via notched ceiling tile. For partial-height columns, the flexible conduit hangs free in the space, covered by a flexible hose. The flexible hose can be expanded by twisting to fill the hole in the ceiling trim space (see detail drawing below).

The degree of modular flexibility is determined, in part, by the spacings of junction boxes in the ceiling plenum. Flexible conduit in the ceiling space can be as long as it needs to be, as long as it is supported every 4 ft (NE Code). Manufacturer's cost figures indicate little or no premium, under favorable circumstances, for typical office modularity.

The manufacturer chose the wiring method described because it believed this approach could achieve wide acceptance among code officials and electrical inspectors.

Flexible metal conduit (1) is connected electrically to a junction box in the ceiling, and has a female connector at the other end which joins a male connector on conduit within the power column (2). The screen-mounted power column (3) and (4) uses a flexible tube to enclose the flexible metal conduit which hangs in space and has access (5) to the plenum through notched tile.
Dual-function raceway works as a ceiling T-bar and has plug-in receptacles for lights and power poles

Early application of this plug-in raceway system was in office buildings. Prewired lighting fixtures are quickly installed, as are power/communication poles. The prewired raceway (which comes in 12-ft lengths) combines the main T of a lay-in acoustical ceiling with branch-circuit wiring. The raceway has integral receptacles to receive the plug-in heads, and a splice box is provided to connect secondary feeders from panelboards to the raceways.

During construction the ceiling trades generally put in the wires that support the T-bar ceiling and the raceway. Electrical workers hang the raceway temporarily with the wires, and make the electrical connections. Then the ceiling trades twist the support wires permanently.

The first application of this system in the store field was by Sears in its prototype-store program now underway. Under the direction of Sears corporate architect, Wesley King, the Chicago office of Skidmore, Owings & Merrill developed a modular approach consisting of a precast concrete shell enclosing 30- by 40-ft steel-framed bays, roof-mounted hvac system, prewired ceiling electrical distribution, and extensive use of HID downlighting. Two stores have opened: Cumberland Mall in Atlanta and Granite Run Mall in suburban Philadelphia.

The system also will be used in a J. C. Penney store in Harper Woods, Michigan.

The raceway-T-bar system (1) uses plug-in power heads to connect lighting fixtures and power poles. Department store installations (2) and (3) are growing because of the ease of rearranging lighting fixtures or replacement with other types. Initial cost compares favorably with conventional wiring because electrical contractors can save on field labor installing the lighting.
Power poles plug into an exposed overhead raceway for easy mobility in a variety of high school spaces

The architect for Severna Park School in Annapolis, Maryland, Arthur M. Love, used an exposed overhead raceway system for electrical flexibility because he eliminated a hung ceiling to keep costs down. The raceways, exposed ductwork and roof decking are all painted a dark blue-back so that all the elements blend together visually. Over 400 power poles have been installed for classrooms, library, home economics, and elsewhere. At the library, the poles supply power for cove lighting at study cubicles, as well as for audio-visual equipment.

The overhead raceway is the divided type that normally carries power wiring in one channel and communications in the other. While communications wiring is not yet in use in this school, it can be installed at a later date—there is a hole in the device plate to bring communications wiring down into the pole.

A convenient method for anchoring the poles in place was devised: The overhead raceway has a built-in steel stud protruding downward. A metal sleeve built into the top of the pole slides over the stud (a tight fit); then, the pole is tightened in place via manipulation of the pole’s adjustable stanchion which has a carpet gripper on the bottom.

The poles were prewired with TW insulated wire, and the plug-wired end merely comes out the top end of the poles.

Power poles plug into an overhead exposed raceway (1) in the Severna Park School. Ductwork also is exposed as is the underside of the roof deck—all painted dark. The power poles provide convenience outlets on a modular basis in classrooms (2) and in the library (3). In this space the power poles also are connected to the lighting fixtures of the carrels.
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Automatic transfer panel on standby unit

With the introduction in January of a complete line of automatic transfer panels, the company now offers matched component standby power systems comprised of generator set (such as the 7.5 kw unit shown), controller and automatic switch-gear. Circuit breaker transfer panels are rated from 30 to 2000 amperes and high interrupt contactor panels are offered in models rated 30, 70 and 100 amperes. The panels automatically activate the generator set. The company’s standby systems are available in numerous generating capacities and voltages, fuel choices, cooling options and accessories, with generator sets ranging up to 500 kw. • Kohler Co., Kohler, Wis.

Emergency standby unit battery-operated

A complete, self-contained emergency standby power source for medium requirement service has been introduced for private homes, stores, offices, small plants, schools, etc. Unlike generator systems, the SPS system requires no engine installation, fuel or exhaust venting because it uses heavy-duty industrial grade lead-acid storage batteries. All elements are mounted in a storage rack measuring 3 by 3 by 5 ft. Models are available to provide 250-watt loads for 36 to 100 hours. Maximum load is 3000 watts. Additional batteries can be added to extend operating time. • Mule Battery Co., Providence, R.I.

New generator added to standby system

A 25 KVA (25,000 watts at unity power factor) power plant for either standby or continuous duty has been recently developed by the company which draws attention to a newly designed generator in all standard one- or three-phase voltages up to 600 volts. Higher voltages are available to meet unique specifications. Voltage regulation is certified as two per cent standard and general regulation throughout the load range is said to be normally better than one per cent. The generator is powered by a four-cylinder, four-cycle air cooled V-465-D engine, and the machines are available with a variety of both engine and generator controls including manual transfer from commercial power to the generator or automatic transfer as illustrated. • Katolight Corp., Mankato, Minn.

Diesel, dual fuel total energy engines

Shown is one of the company’s diesel and dual fuel engines for standby and total energy uses. This company’s engines are recommended as prime movers for large industrial and commercial total energy applications. The engines are designed, according to the company, for maximum mechanical energy from every Btu of fuel consumed, and lower weight per hp means less cubage where space is limited. The engine power generation equipment is available in ratings of 478 to 3125 kw. • Colt Industries, Beloit, Wis.

Standby-continuous duty engine-generator

Designated the DES-550 and DES-500, two high-power engine-generator sets have been added to the company’s line of diesel electric systems. Both units are recommended for standby, emergency and continuous-duty applications. The DES-550 model, with a standby rating of 550 kw and a continuous-duty rating 475 kw, has a 840 hp turbocharged/inter-cooled V-12 as a power source. The 750-hp turbocharged-only DES-500 unit delivers 500 kw in the standby mode and 425 kw in continuous-duty applications. Optional accessories permit parallel operation of two or more generating sets. • Allis-Chalmers Corp., Harvey, Ill.
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For more information, circle item numbers on Readers Service Inquiry Card pages 245-246.

ELASTOMERIC ROOFING / The Chem-Ply roofing system is said to differ from a conventional four-ply, hot roof in that the Chem-Ply roofing sheet provides the waterproofing protection while in conventional roofs hot asphalt or pitch is the waterproofing agent. The Chem-Ply roofing is reinforced with a heavy glass fabric which remains dimensionally stable over a wide temperature range and eliminates stresses and strains normally developed in other roofing systems. A specification manual is available. • The Celotex Corp., Tampa, Fla.

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SOLID WASTE TRANSFER / The illustrated publication describes solid waste transfer systems in detail and provides approximate requirements and costs for transfer facilities of various capacities. In addition, a hypothetical case study is presented with the necessary data and calculations to assist the reader in estimating his present cost of operation to that of a solid waste transfer system. • The Heil Co., Milwaukee, Wis.

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FINNISH BIRCH PLYWOOD / The characteristics of Finnish birch plywood, Blockboards and Laminboard and the advantages of using them in such applications as concrete formwork, structural and high fashion interior panels, are described in two new booklets now available. One brochure illustrates system details; the other describes grades, thicknesses, finishes and other pertinent details of Finnish birch-faced products for walls and partitions, display stands, shelving, cabinetwork, doors and other interior and exterior applications. • Finnish Plywood Development Assn., Falls Church, Va.

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WHITEPRINT/BLUEPRINT / The literature gives complete operating instructions for a machine that features freedom from ammonia fumes found in conventional blueprinters. Features of the machine including variable speed control, minimum-maintenance design, and complete mechanical and electrical specifications are also described. • Teledyne Retolite, Stirling, N.J.

Circle 403 on inquiry card

CEILING SYSTEMS / A guide to gypsumboard products to assist architects in specifying lightweight construction materials for use in residential, commercial and institutional wall and floor/ceiling systems features descriptions, specifications and application details for 19 gypsumboard products and 10 joint system materials. Technical data is also included for sound control and fire resistance properties. The catalog features Shaft Liner, a gypsum board particular for enclosing elevator shafts and other vertical openings, and Errite Panel, a vinyl-surfaced gypsumboard in 30 colors, simulated wood-grains, patterns and textures. • Georgia-Pacific Corp., Portland, Ore.

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AUTOMATIC TRANSFER PANELS / A 12-page catalog describes the new line of automatic switchgear for standby power systems introduced in January. Designed for matched component reliability with standby generator sets, the transfer panels are offered in three contactor models rated 30, 70 and 100 amperes and 13 circuit breaker models rated 30 to 2000 amperes. Each model is UL-1008 listed and CSA approved and has a lockable NEMA I enclosure. • Kohler Co., Kohler, Wis.

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SPIKE GRID CONNECTORS / Available is a product design and specification sheet describing the firm's line of spike grid timber connectors and installation tools. Complete information on sizes manufactured and method of use is presented. Spike grid connectors are available in three different types for use in the construction of pole frame buildings, docks, wharves and highway and railroad trestles. The products also have wide application in transmission tower construction. • TECO, Washington, D.C.

Circle 406 on inquiry card

SHUTTERS, DAMPERS / A new, simplified 16-page bulletin shows a broad line of shutters, dampers and stationary louvers, featuring both steel and aluminum construction. • ELCO Shutters & Mfg. Co., Batavia, Ohio.

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FIRE RETARDANTS / The four-page folder shows how architects and builders, using Pyresole fire-retardant treated wood products, may now add one more story and 25 per cent more area under the existing building codes for certain types of commercial structures, according to the company. • J. H. Baxter & Co., San Mateo, Cal.

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ACCESS SYSTEM / A new specification data brochure for a card-controlled access system includes applications, encoding, explanation of operation, interfacing with alarm system, exclusive features and functions, and detailed architectural and engineering specifications for standard and optional units. • Mosler Safe Co., Hamilton, Ohio.

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SIGN LIGHTING / A new 4-color brochure about sign lighting luminaires contains complete application data, comparative photographs, and technical information about the products. • J. H. Spaulding Co., Cincinnati, Ohio.

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CURTAIN WALLS / A new 24-page brochure includes 12 pages of details of basic design concepts for non-load bearing exterior walls. Among the new details in the brochure are those for a truss stud assembly for exterior masonry veneer with a concrete frame. Included in the five pages of tables are those detailing physical properties and limiting heights of studs. • United States Gypsum Co., Chicago, Ill.

Circle 411 on inquiry card

MUNICIPAL MAPPING / "Municipal Mapping—Color and Economy" is the title of this 16-page brochure. In reproductions of three actual city maps—one of the basic topographic type, one for district planning, and one for urban renewal—the brochure shows step by step each map was made from the original aerial photography to the final multi-color version. • Keuffel & Esser Co., Morristown, N.J.

Circle 412 on inquiry card

APPLIANCES / A new 40-page publication detailing appliances, room air conditioning and other electrical equipment provides product specifications and dimensional drawings of built-in dishwashers, food waste disposers, trash compactors, refrigerators, washing machines, dryers, packaged terminals and built-in room air conditioners, and a complete line of free standing and built-in ranges. • General Electric Co., Louisville, Ky.

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PLASTIC DRAINS / Plastic commercial grade roof and floor drains are available in gray PVC with 2, 3 and 4 in. solvent weld hub outlets (roof) or in gray PVC or black ABS with 3 or 4 in. solvent weld hub outlets (floor). The new drains can be utilized with any type of floor or roof. *R & G Sloane Co., Woodland Hills, Cal.

HARDWOOD PLANTERS / The planters are of walnut veneer with a natural oiled finish, and can be supplied in squares or rectangles, with or without metal liners for use with artificial or live plants. *McDonald Products Corp., Buffalo, N.Y.

SEATING SYSTEM / An English-designed institutional line of polypropylene seating in wide use throughout Europe is now being manufactured and marketed in the United States. SIT 70+ is a comprehensive line of chair and tables for indoor and outdoor use. The basic chair shell from which the seating system is derived is a molded polypropylene. The chairs are fade-resistant because both color and an ultra-violet stabilizer are pre-blended in the polypropylene mix before the shells are formed. More than 18 variations of the chair are available, including stacking, ganging, tilt and swivel pedestal versions, bar stools, armchairs, tablet chairs, and concourse units. *Restall Design Group, Los Angeles.

AUTOMATIC DRINKING VALVE / An automatic drinking valve system especially for dogs features a patented pivoting stem drinking valve. Surface tension allows a drop of water to remain at the edge of the valve, quickly teaching the animal where to find water. When the dog begins to drink the initial supply of water, the valve pumps more. The entire system meets the requirements of the ASTM standards and the portable water standards of the National Sanitation Foundation. *Long Environmental Systems, Gambrills, Md.

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DAMAGE-RESISTANT CEILING / A rough surfaced, damage-resistant acoustic lay-in panel called Armatur has been developed for exposed-grid ceilings in schools and other buildings where damage might occur. The surface is said to be so tough that a force of 20 in. pounds dropped by an impact tester made only a slight dent that was virtually invisible. All that is required for installation is the company's impact clip and a standard 48 in. concealed tee spline. • Armstrong Cork Co., Lancaster, Pa.

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SNAP-ON BASE MOULDINGS / A plastic support is nailed just above the base of the wall, using an enclosed "spacer" as a guide. Then the skirting is clipped on. No adhesives are necessary. The clip-on skirting is made of both hard and soft PVC plastic. The soft plastic on the bottom is meant to assure good contact with uneven floor surfaces. • Bendix Mouldings, Northvale, N.J.

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WALL PARTITIONS / Since pressurization pushes the panels against the floor, the weight is said to be completely removed from the support track which replaces the ceiling system T-bar and is suspended from the solid roof structure. The track has flanges to accommodate the ceiling tiles, giving the installation a finished appearance. • Richards-Wilcox Mfg., Co., Aurora, Ill.

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PLYWOOD DOORS / The precision-milled, economically priced units are complete with matching jamb and trim. Said to be strong and durable, Ready-Pack is light in weight and comes in colors and textures designed to blend well with all architectural styles. Actual installation on the job site has been clocked at less than ten minutes, with no mortising or routing required under standard conditions. The doors have an expandable jamb design which allows them to adapt to varying wall thicknesses, are hinged to the jamb by a pair of brass mortise hinges, and are pre-bored to accept a cylinder lock. Units come in standard 1 1/4 in. thickness and 6 ft 8 in. height, with numerous widths. • U. S. Plywood, New York City.

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TENNIS STORAGE / An 18-compartment locker specifically designed for storage of tennis clothing and equipment is a completely assembled, all-welded unit requiring less than 7 sq ft of floor space. Constructed of heavy-gauge steel, the lockers are fully ventilated to insure proper drying of contents. If desired, doors may be ordered with built-in, factory-installed key locks at additional cost. • DeBourgh Mfg. Co., Minneapolis, Minn.

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REFRIGERATOR / The Gastronom system provides food service with its own tray size—a 20 by 24 in. module size. It economizes and speeds up food-service production because the same size tray is used from the refrigerator to oven to serving counter, permitting a smooth efficient flow pattern that eliminates food transfer from one size tray to another. The Gastronom models feature urethane insulation, top-mount grilles removable without tools, and are available in stainless steel or aluminum. The cabinets are 30 in. deep with heights ranging from 84 to 88 in. (including 6 in. legs as standard). • Foster Refrigerator Corp., Hudson, N.Y.

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ARCHITECTURAL RECORD April 1974

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In the case of the masonry wall, cooling equipment with a two-ton capacity can handle the heat gain. But with the double-plate glass wall, about 143 tons of cooling capacity will be needed.

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This means that the masonry wall is about 450% more efficient, on the average, than the glass wall in reducing heat loss.

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Lennox blower-powered air blenders (ZDB) give you individual zone control from a central single zone unit...with constant air volume to the space. Use them as cooling/ventilating or combination heating/cooling units. The central unit supplies conditioned air to a central supply duct. A thermostatically controlled blower-powered air blinder in each zone pulls air from the duct and discharges it into the control zone. It takes only the amount of cool air needed to satisfy cooling demands—the balance of the constant volume is recirculated air.

The POWER SAVER II application works well on all types of large stores, schools, restaurants and factories with ceiling plenums. Supermarkets can take additional advantage of the heat reclaim/heat reject capabilities by capturing the condenser heat from refrigerated fixtures.

Find out how this new energy conservation idea from Lennox can help you. Write Lennox Industries Inc., 470 S. 12th Ave., Marshalltown, Iowa 50158.

**Nifty problem-solving ideas from Lennox.**

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More and more builders are siding with prepainted galvanized steel.

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BERLIN STEEL WAS IN BUSINESS SEVENTY THREE YEARS BEFORE THEY SPECIFIED JOIST GIRDER FOR THE FIRST TIME. ELEVEN DAYS LATER, THEY DID IT AGAIN.
Joist Girders. The advantages they had over I-beams were more than enough for Berlin Steel to specify them for the Sage-Allen Department Store they were building in West Hartford, Connecticut. So much why joist girders are easier to specify and erect. By explaining that the simple span design of joist girders make ponding calculations easy. And shorten design time.

By telling them about the larger bay areas possible with joist girders. And by talking about the fewer foundations and columns needed with joist girders than with I-beams.

Then came the subject of the advantages joist girders offer after they’re erected.

And to explain that topic Vulcraft talked about the modified Warren truss configuration used in joist girders. And that it gave joist girders a high strength to weight ratio.

They mentioned further, that bar joist erection was faster. Because top chord panel points show joist location, eliminating a lot of measuring. Finally, the matter of ducts, pipes and conduits came up. And Vulcraft explained how these things go right through a joist girder. Something no one can say about an I-beam.

What it all added up to for Berlin Steel was a change. A change from I-beams to another roof-framing system. A roof-framing system that was more economical and easier to erect

more, that eleven days later they specified them again. Only this time for National Plastics and Plating Supply Co. in Plymouth, Connecticut.

Where did Berlin Steel learn about those advantages? From meeting with Vulcraft. The people who knew as much about joist girders as Berlin did about steel fabricating.

And the first thing the Vulcraft engineers did was show Berlin Steel

Joist girders have a simple span design. Which explains why ponding calculations are easier. And why design time is shortened.

Joist girders have a modified Warren truss configuration using bar rolled double angle sections for top and bottom chords and single and double angle sections for web members. What that means is a high strength to weight ratio.

Joist girders need fewer foundations and columns. Which means less work for you and larger bay areas for your clients.

Joist girders have top chord panel points that show joist location. Which makes a lot of measuring unnecessary.

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for anything over 10,000 square feet.

It wasn’t surprising to Vulcraft, though. Because architects and engineers all over the country are discovering the advantages joist girders have over I-beams.

Vulcraft

If you’d like more information about how joist girders can work for you, send for Vulcraft’s Joist Girder Specification Guide. Just contact your local Vulcraft sales office. Or write P.O. Box 17656, Charlotte, N.C. 28211. Or call (704) 366-7000. You’ll find a few things even Berlin Steel didn’t know. Until they asked.


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