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THE MAGAZINE OF, FOR AND BY ARCHITECTS

VOLUME V
NUMBER I

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ONFUSING SLOGANS ARE CURRENT ABOUT THE RELATIONSHIP BETWEEN CONSTRUCTION AND ARCHITECTURE. ... IT IS NEEDLESS TO SAY THAT EFFICIENT CONSTRUCTION IS THE FIRST REQUISITE OF GOOD ARCHITECTURE, BUT LET US NOT BE SO FOOLISH AS TO IDENTIFY THE TWO AND EXPECT THAT CORRECT CONSTRUCTION WILL AUTOMATICALLY LEAD TO GOOD ARCHITECTURE.

WILLEM MARINUS DUDOK
ARCH’S mail included two pages torn from the previous magazine, with a critique from Architect Stephen Tracy of Windsor, Vermont. The criticism compared the inspired aphorism of Frank Lloyd Wright with the trite “dictionary page-turning” of my editorial. The evaluation is valid and is more often repeated than rebutted.

However . . .

It might be assumed that each word, irrespective of complexity, is placed in the dictionary in response to a specific need and that recognition of its role should be mitigated only by the ability of an audience to comprehend.

His ability to simply present profundities is shared by Mr. Wright with few. This competence usually concerns itself with the elicitation of sympathetic emotional response and is more poetic than precise. Beyond these rarities the average magazine article is aimed at the eighth grade intellect.

At the opposite end of the semantic spectrum is the involved terminology of the professions. Here precision of expression often exceeds the potential of any lexicon and demands the coinage of new words.

This magazine is addressed to architects. One supposes them closer to the professional than to the eighth grader.
ON SMALLER BUILDING WIRE

THWN-THHN SMALL DIAMETER BUILDING WIRE

A. L. Gibson attended Providence College, Providence, Rhode Island, graduating with a Bachelor of Science degree in Chemistry in April of 1943. The following month he was employed by the United States Rubber Company, Wire and Cable Division, Bristol, Rhode Island as a rubber chemist, holding this position until April of 1949.

He then accepted an offer of employment by the American Steel and Wire Division of United States Steel Corporation at their Electrical Wire and Cable Division in Worcester, Massachusetts. This position was that of Plastics Chemist and covered all research and evaluation on the thermoplastic materials used in the manufacture of electrical wire and cable manufactured at this plant.

In March of 1956 the writer was employed by the Plastics Department of the E. I. du Pont de Nemours and Company as a Technical Representative in the Wire and Cable Industry Group. He is a member of the "Wire Association," and an associate member of the "International Association of Electrical Inspectors."

During his ten years with du Pont, he has been concerned with new developments, involving the use of thermoplastic materials, as insulating and jacketing materials for electrical wire and cable.

This particular article involves a subject, (building wire) which the author feels is of vital importance to those who will ultimately be concerned with its use.

t is generally well-known that the building industry is literally gigantic, to the extent of some 80 billion dollars overall. In the various areas making up this vital portion of our economy, electrical wire and cable occupies a very critical position from the standpoint of performance and economy. In no other area are the specifications more critical and the demands more rigorous.

Since we will be dealing here with one particular segment of the wire and cable industry, namely, industrial building wire rated at 600 volts, some background is in order.

With the year-to-year rapid growth of the building industry as a whole, plus the growing demand for more low voltage circuits per unit, the building wire volume has multiplied drastically. Since this is an item controlled by the Underwriters' Laboratories, the testing organization for the National Electrical Code, the annual footage of building wire labelled by U/L provides documented information concerning growth in this area. For instance, in 1956, some eight billion conductor feet of building wire were labelled. Each year has shown a substantial increase, and, in 1965, approximately fifteen billion conductor feet were labelled. This growth is expected to continue.

In designing wire and cable constructions, be they the relatively simple low voltage wires, all the way up to the more complex high voltage cables, there appears to be a tendency to over-design. It has been found, for instance, that on a particular wire size calling for an insulation thickness of 7/64", that 3/64" would be more than adequate, both from an electrical and physical test standpoint. Now, does this necessarily mean that we have not progressed at all in this vital area of wire and cable? Certainly not! We will agree, however, that effective communications, by which progress is transmitted to those who will benefit by it, may leave something to be desired. This article is hopefully aimed at a very vital group of people, intimately involved with the building industry, whose prerogative it is to decide what should be used for the best combination of "quality and economy."

Prior to and during World War II, building wires consisted basically of rubber compositions, for the most part, made up of reclaim rubber and a very small percentage of natural or synthetic. The National Electrical Code designated this Type R-60°C, the numerical portion pertaining to the service temperature for which it was rated. The shortage of natural rubber, plus heavy priority on the synthetic, resulted in a finished building wire which filled a drastic need commercially, but required extreme care in manufacturing and installation.

Where particular properties were anticipated, or to simply insure longer life, the following types were ultimately listed by the National Electrical Code:

Type RW, 60°C —
Moisture resistant
(dry and wet locations)

Type RH, 75°C —
Heat resistant
(dry locations only)

Type RHW, 75°C —
Heat and moisture resistant
(dry and wet locations)

Type RHH, 90°C —
Heat resistant
(dry locations only)

These types were of higher quality than the Type R, in that they contained no reclaim rubber and possessed much better physical and electrical properties.

Thermoplastic insulated building wire, consisting of an insulation of polyvinyl chloride, was also developed. It was listed as Type T around 1946 by the NEC. Shortly afterwards, thermoplastics were listed as follows:

Type T, 60°C —
Flame retardant
(dry locations only)
Type TW, 60°C —
Flame retardant, moisture resis-
tant (wet and dry locations)
Type THW, 75°C —
Flame retardant, heat and mois-
ture resistant (wet and dry locations)
(Each of the above constructions
involved insulation of PVC only.)
It was here that the trend toward
smaller building wires began in ear-
nes. For instance, in sizes #14 - 10
AWG, Types RW, RH, RHW and
RHH require a 3/64" wall of insula-
tion, while Types T and TW allow
2/64". Type THW, however, still re-
quires 3/64". Over a period of time,
the thermoplastic types have gradu-
ally supplanted the rubber. The latest
figures compiled by the National Elec-
trical Manufacturer's Association in-
dicate that about 90% of the building
wire used now is thermoplastic and
10% rubber.
The latest and most dynamic step
in building wire design resulted in the
two following types, both listed by the
NEC:
Type THWN, 75°C —
Flame retardant, heat and mois-
ture resistant (wet and dry
locations)
Type THHN, 90°C —
Flame retardant, heat resistant
(dry locations only)
Here, the small diameter theme was
made the foremost consideration,
but, at no sacrifice in properties. The
design consisted of a reduced insula-
tion of polyvinyl chloride, plus a
very thin jacket of nylon resin, hence
the "N" in THWN and THHN. The
net result was a building wire having
the smallest diameter, size for size,
plus an excellent combination of elec-
trical, mechanical and chemical prop-
erties.
Both Type THWN-60°C and Type
THHN-90°C were subjected to severe
Fact Finding Investigations, con-
ducted by the Underwriters' Labo-
atories, and, as a result of same,
included in the Code, the former in 1962
and the latter in 1965.
The ultimate test in small di-
ameter, high quality building wire
had now been realized. The following
table will best show a size comparison
amongst the various types in the cir-
cuit size #12 AWG.

<table>
<thead>
<tr>
<th>Type</th>
<th>Temp.</th>
<th>Insulation</th>
<th>Jacket Diameter</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>RW 75°C</td>
<td>0.048</td>
<td></td>
<td>0.019</td>
<td>0.179</td>
</tr>
<tr>
<td>RHH 90°C</td>
<td>0.048</td>
<td></td>
<td>0.019</td>
<td>0.179</td>
</tr>
<tr>
<td>THW 75°C</td>
<td>0.048</td>
<td></td>
<td>0.019</td>
<td>0.179</td>
</tr>
<tr>
<td>THWN 75°C</td>
<td>0.015</td>
<td>0.004</td>
<td>0.021</td>
<td>0.122</td>
</tr>
<tr>
<td>THHN 90°C</td>
<td>0.015</td>
<td>0.004</td>
<td>0.021</td>
<td>0.122</td>
</tr>
</tbody>
</table>

Types THWN and THHN emerged
the smallest, by far, of all the ap-
proved building wires, and amply
demonstrated their properties via the
Fact Finding Investigations.
With small, high quality, Code-ap-
proved wires such as these available,
the next logical step requires a look
at the National Electrical Code 1965,
Chapter 9, which involves conduit
fill, or, as the tables are headed,
"Maximum Number of Conductors in
Trade Sizes of Conduit or Tubing."
Here we see that there is a difference
based on whether we are involved
with "New Work" or "Rewiring."
Without getting too involved in this
area, it may suffice to say that, in
the present Code, full advantage
of the small size THWN and THHN is
not possible in "New Work" instal-
lations. The same number of conduc-
tors per conduit are spelled out in
the "New Work" Table I, for all
types of building wire, regardless of
size. However, in "Rewiring" appli-
cations, the number of conductors al-
lowed per conduit, is based on the
finished diameter of the particular
wire, itself, and here we can see the
tremendous advantage of using Types
THWN and THHN. The following
shows a compilation of allowable
conduit fills, both New Work and
Rewiring, for typical rubber and poly-
vinyl chloride building wire types,
compared to THWN-THHN. This
information is taken from Tables I,
IA and IB of Chapter 9 in the 1965
National Electrical Code.

NEW WORK

<table>
<thead>
<tr>
<th>Conduit or Tubing</th>
<th>#12 AWG</th>
<th>11/4&quot;</th>
<th>2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduit</td>
<td>Conduit</td>
<td>Conduit</td>
<td></td>
</tr>
<tr>
<td>Type RW</td>
<td>5</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>Type RHH</td>
<td>5</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>Type RHW</td>
<td>5</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>Type THW</td>
<td>5</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>Type THWN</td>
<td>5</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>Type THHN</td>
<td>5</td>
<td>15</td>
<td>34</td>
</tr>
</tbody>
</table>

REWIRING

<table>
<thead>
<tr>
<th>Conduit or Tubing</th>
<th>#12 AWG</th>
<th>11/4&quot;</th>
<th>2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduit</td>
<td>Conduit</td>
<td>Conduit</td>
<td></td>
</tr>
<tr>
<td>Type RW</td>
<td>5</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>Type RHH</td>
<td>5</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>Type RHW</td>
<td>5</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>Type THW</td>
<td>8</td>
<td>24</td>
<td>53</td>
</tr>
<tr>
<td>Type THWN</td>
<td>18</td>
<td>51</td>
<td>114</td>
</tr>
<tr>
<td>Type THHN</td>
<td>18</td>
<td>51</td>
<td>114</td>
</tr>
</tbody>
</table>

It can be seen above that the re-
rewiring advantages of Type THWN-
THHN are most substantial and it
should be mentioned that these ad-
vantages apply over the full range
of wire and conduit sizes.

Another factor comes into play here
also. It could be that the electrical
designer may also be interested in
increasing his power level as well as
the total number of circuits. Again,
by using larger sizes of THWN-
THHN when rewiring, he can in-
crease his current carrying capacity
and still use the original conduits.
Whenever the possibility arises
whereby more conductors are to be
put into a conduit, a particular air
of anxiety is noted in certain quar-
ters. I am sure all of you have seen
wires whose insulations have been
badly damaged as a result of pulling
into conduit. Also, there is much doc-
umentation on damage in termination
boxes, where crowded conditions ne-
cessitate forcing in additional wires
by various mechanical means. It is
very unfortunate that such damage
many times goes unnoticed until an
electrical failure occurs, and the
wires are removed from the conduit
or box.

It is in this area that Type THWN-
THHN stands out. The tough coating
of nylon resists damage to a high
degree, and, due to its very low
coefficient of friction, can be pulled
relatively easily. In order to better
document this advantage, a series of
conduit pull tests were conducted
under the jurisdiction of the Under-
writers' Laboratories. Different sizes
of Type THW (all PVC) and Type
THWN-THHN were pulled through
conduits, and the pounds pull noted.
Of all tests run, Type THWN-THHN
showed much less pull was necessary
for each setup. The most graphic ex-
ample of the advantage shown by the
nylon came in the pulling of sizes
500 MCM. First, 20 (50% conduit
fill) 500 MCM Type THWN-THHN
conductors were pulled through a six-
inch steel conduit without difficulty
or damage. Secondly, 14 (40% con-
duit fill) 500 MCM Type THW con-
ductors were pulled into a six-inch
steel conduit. There were four 90°
bends in the conduit, and the Type
THW hopelessly jammed in the third
bend. It was necessary to disassemble
the test rig in order to free the tables.

On examining the Type THWN-
THHN after the pull, there was no
damage whatsoever to be noted. In
order to strike a proper comparison
on the above pull tests, no pulling
compound was used in either case.

The documented high quality of the
Type THWN-THHN construction
suggested the possibility of obtaining
additional approvals on the design.

(Continued on Page 29)
FROM THE ENGINEERS

FULL-TIME COMFORT for BUILDING OCCUPANTS

Herbert Livingston Laube, B.Sc., in M. E., Iowa State, has devoted his career exclusively to climate control since 1924. After 2½ years with The Parker Ice Machine Company, San Bernardino, California, he joined what, in 1930, became Carrier Corporation. In 1934, he was elected Vice-President of its International Division becoming Vice-President of its Engineering Division in 1942. Mr. Laube resigned from Carrier to become President of Remington Corporation in 1946. In 1964, Remington was acquired by The Singer Company, becoming, in combination with Electromode and Easy-Heat/Wirekraft, its Climate Control Division in 1965, at which time Mr. Laube assumed the position of Senior Consultant. Mr. Laube is a long-time member of the American Society of Heating, Refrigeration and Air-Conditioning Engineers.

URING the past five years, it has become an increasingly accepted fact that all-electric decentralized air-conditioning systems, incorporating both heating and cooling, are hard headed business propositions.

Owners of apartment houses, motels, office buildings and other multi-oomed structures have installed such systems for just two reasons: they are income producing and income preserving.

The less they cost, the more income they produce and preserve provided, of course, that they please the building occupants. But occupants differ. Clothing differs. Health differs and so does activity. Therefore, to assure the full-time comfort of people living or working in the building, the following requirements are mandatory:

1. The occupant must be in complete control of his environment while occupying the conditioned space.
2. He must have a choice of either heating or cooling available to him, preferably throughout the year, but absolutely during the changeable weather of spring and fall.
3. He needs an adequate supply of ventilating air, preferably under automatic control.
4. His comfort conditions must be maintained at a sound level well below the speech interference level.

Let us, therefore, compare central and decentralized systems to see how they measure up to these requirements.

Despite increased sophistication — which has often resulted in increased complication — central systems do not provide full-time comfort. No simple system that heats with hot water and cools by circulating chilled water through the same pipes can give the occupant a choice of heating or cooling. More complex systems may be able to do so, but high operating costs often result in cooling systems being stopped too early in the fall and started late in the spring. In any event, many of these complex systems are technically so bewildering that, according to one survey, five out of six such installations are improperly operated.

Another important consideration is that office building central systems are usually shut off at the end of the working period and in consequence occupants working at other than normal hours often do so in discomfort. But, perhaps, the biggest inherent drawback with central installations is that failure of one small component can stop the entire system.

The decentralized system, however, does satisfy the four essentials of full-time comfort. Provided good judgment is used in the selection of equipment, such systems operate quietly, provide proper ventilation, assure a room-by-room choice of either heating or cooling, and are under the complete control of the individual occupant.

Because the combustion process cannot practically be decentralized, fuel-fired systems are, of necessity, central systems. It follows that fully decentralized comfort systems are feasible only where electricity is the sole source of energy.

In the past, many architects and their consulting engineers shrugged off consideration of an all-electric comfort system because "operating costs will be too high." But let us look at this argument for a moment.

Let us consider the first-cost involved in a 20-story office building of 90,000 square feet in a 5,000-degree day location with absorption-type water chiller. Its 2-pipe central induction system requires 300 tons of cooling and a heating capacity of 4,400,000 btuh. The alternative all-electric decentralized system is automated. Since the life expectancy of both systems is the same, a 20-year amortization period will be used in the first-cost comparison that follows:

First-Cost, Gas Absorption System $322,200
First-Cost, All-Electric Decentralized System 172,800

Difference in Favor of All-Electric $149,400
Annual difference
Annualized Difference (Interest 4½%, 20-year amortization, 3% for taxes and insurance) . . . in favor all-electric $16,957=18.8¢ per sq. ft./year

Note that the interest rate used was 4½% and not 7%.

The decentralized incremental system was first placed on the market eleven years ago as a semi-central system: central heating with decentralized cooling. Reported operating costs in high rise office buildings during the cooling season only were under 10¢ per square foot per year, including maintenance. This was in cities in which the average cooling costs for central systems were running over 25¢ per square foot per year . . . a saving of 13¢ or 57%. By going all-electric, it was known that another 15¢ could be saved in fixed charges, making a total of 32¢. It was intended that this saving would subsidize the cost of electric heating, and after applying this figure to the 20-story building previously mentioned, this was the result:
Gas-Fired

Gas for heating, 41,000 therms at 6¢  $ 2,460
Gas for cooling, 73,900 therms at 6¢  4,434

Incremental 1,600 Kwh at 1.5¢  3,585
Incremental 605,470 Kwh @ 1.5¢  9,082

Electricity for heating

Electricity for cooling

Incremental 215,600 Kwh @ 1.5¢  3,934
Incremental 427,400 Kwh @ 1.5¢  6,411

Water Expense (including treatment) 871

Operating Engineer (8 hrs./day only) 7,800

Rental value of equipment space

1,600 sq. ft. @ $3  4,800
4,820 3,672

Maintenance (using historical average values) 5,320

$33,004 $19,165

Operating Cost Difference in Favor of All-Electric $13,839
Fixed Charges Difference in Favor of All-Electric 16,957

TOTAL ANNUAL DIFFERENCE IN FAVOR OF ALL-ELECTRIC $30,796
OR 34¢ PER SQUARE FOOT PER YEAR

Nineteen cents of this saving is in fixed charges, which leaves 15¢ saved in operating costs, about the same as experienced with decentralized as against centralized systems for cooling only. Thus, in this case, decentralized electric heat costs no more to operate than centralized wet heat. It is significant that at that time, the electricity rate was higher and the gas rate lower than the rates available today in many parts of the country.

One obvious reason for the lower operating cost of the automated all-electric system is that it saves the pay of the operating engineer, but the main reason for the economy is energy utilization. It costs money to generate, move, transfer and lift BTU's and, obviously, the more energy you need, the greater the cost.

Generally speaking, the total energy requirement of central systems in large buildings is three to four times greater than that of all-electric decentralized systems. Why? The all-electric decentralized system eliminates partial load and standby losses. Each BTU moves an average of 2 feet instead of an average of 250 feet for a central system in a 20-story building. Transfers of energy from one medium to another in an all-electric system total three. A central system has a total of seven transfers. The power required to lift BTU's from the evaporating temperature of the refrigerant to its condensing temperature is much less in an all-electric decentralized system.

In addition to full-time comfort at minimum cost, there are bonus advantages. For instance, unlike a central system, failure of one element affects just one small area, not the entire building. The system is easier to install than any other and is a great deal easier to maintain. Added to that, and bearing in mind the government interest in these two subjects, the all-electric system does not use increasingly scarce water. Neither does it contribute to air pollution.

A word on the cost of heating domestic hot water electrically. Two years ago, the first automatic peak load control was installed in a 160-room high-rise motel in Niagara Falls. This new invention has been installed in other buildings since and invariable made the cost of electrically heated domestic hot water directly competitive with gas.

The all-electric incremental system of air-conditioning provides the operator with a wide variety of control choices. Some of the more popular include an automatic re-start of heating to prevent freezing of plumbing fixtures if the equipment is shut off in winter; central control panel for use, say, at the front desk of motels. When a guest checks out, this air-conditioning equipment can be switched off from this panel. Central triple Overriding Dual Control or T-O-D-C for short to automate systems in office buildings or schools. By simply pushing a button, the after-hour occupant overrides the central control and re-starts his decentralized equipment without the wasteful operation of other unwanted equipment in the building.

Benefits to the Architect

There are many direct benefits to architects in the all-electric incremental system of air-conditioning. The design restrictions imposed by systems requiring pipe grids, extensive duct work, machine rooms and smokestacks are removed. Since no cooling tower is required, the need for reinforcing the roof and designing a cooling tower cupola is eliminated. The floor-to-floor distance in office buildings may be reduced by 11 inches or more without reducing ceiling heights. But, perhaps, one of the most important considerations is that the installation's first-costs can be much more accurately estimated than can those of traditional central systems. An added benefit is that with the reduction of first-cost figures, more budget money is released for other purposes.

In the past, some architects have been reluctant to permit the breathing wall construction this system requires because it was felt that louvers encourage rust streaks on the facade of the building. If your engineer will discriminate in the choice of equipment, you won't have them. Benefits to the Consulting Engineer

This, then, brings us to the consulting engineer. A survey conducted last year by the Electric Heating Association shows that he is already concerned for fear that the decentralized all-electric concept will reduce the size of his fees. Where this happens, it is a profitable paradox. Why? Because, with just a little experience with this new system, the engineer's contract execution costs will, henceforth, be reduced much more than it should be necessary to reduce his fee. This is because, with the same crew, he can handle about three times the amount of business in terms of air-conditioning capacity than otherwise.

This is the direct result of the many man hours saved in load calculations, equipment selection, drafting time, wiring layouts, specification writing, coordination with the structural engineer, job supervision and system balancing.

There is one activity, however, in which the consulting engineer should not attempt to save man hours. This is in quality auditing the equipment he specifies. With increasing price competition, we find all equipment subject to a greater degree of "design brinkmanship." The spectrum of quality of all-electric decentralized equipment is even broader than that of central system components. Thus, the consulting engineer, to protect the interest of both the architect and his client, is obligated carefully to examine both the job requirements and the available equipment, before deciding what to specify.

During the past quarter century, vast technological progress has been made and in the light of these discoveries, it has become necessary to change cost relationships. Every day new developments clamor for the attention of those best qualified to adopt them and, perhaps most im-
NE of the happy happenings of the year occurred in the Massachusetts State House on March 7 when A.R.A. President John Hallman became a member of the Massachusetts State Board of Architectural Registration. In itself this was a fortuitous occasion but its true circumstance is better contained in a comparison with four years ago when Frank Mahoney, another A.R.A. member, also became a member of the Board. Reference to an article appearing in this magazine in that year would suggest the progress within the intervening time.

It seems symbolic that Governor Volpe swore in Douglas Cole Smith on that same day. Mr. Smith is a personable and competent man and is active in the American Institute of Architects. A gifted Hollywood director could not have better presented the adult relationship which has come to exist between the architectural societies of the Commonwealth.

This “new look” so articulately expressed by Governor Volpe’s evaluation of the man rather than his memberships finds expression throughout the entire northeast. As we have sought the aid of our sister society in the improvement of the architect’s status, so now do they have our assistance in areas where we are strong. This is as it should be.

John’s ceremony was witnessed by many of us for somehow we recognized it as a positive step ahead. Among our other rewards for traveling across the state was an after-ceremony reception which John gave at the Parker House. Here Commissioner DeFalco and other state dignitaries joined us in giving our A.R.A. proxy a proper send-off. One might opine that the unbiased competence of the Governor and of his appointees to the Board prophesy progress for the Bay State.

John knows that for the next five years he can depend upon the best wishes and all possible help from the combined architects of the state — and this is indeed progress.
WHO'S WHO IN A.R.A.

BERNIE HEALY

It is not unique for associations to draw their strength from the efforts of a few. The story of A.R.A. is replete with example. The heyday of Kansas, Missouri, Texas, Illinois, and new California and Massachusetts reflected the dedication of a handful of men. Four such tenacious men have made the Bay State A.R.A. a society of stature. One of these men is Bernie Healy.

Bernie came into the Society in 1962. He, like so many, had found few answers elsewhere and joined us with a determination that he would contribute his bit to provide them. This bit became the proverbial bushel. In his official state capacities which included the presidency, he was diligent in his exploration of inequities and, true to his Irish name, was not hesitant about making himself heard. At regent of the northeast these activities have penetrated the neighboring states. Discriminatory legislation has been repealed and his influence in the shaping of new laws is well known on capitol hill. Few architects will ever know the degree to which they have benefitted by his stubborn determination that wrong, even cloaked in terminology of the professional, is never right.

Healy Associates started in the nadir of the depression and its survival through that unhappy period is as indicative of his professional ability as is his current success. Bernie is a designer-architect with his interest and professional touch extending from the construction right through the decoration of his projects. A variety of public places testify to this ability. Included are many well-known New England establishments. Blue Hill Country Club, Casa Del Corro, Castle Dawn Village and Charles Hotel are the first four of a list too long to be considered here. In the lower lobby of Fonda Del Corro, one of his Framingham creations, Bernie has built an attractive office and drafting room and here the determined four have often met to plot the course of the Society. So well has the address become known that letters with a variety of incomplete addresses have, without difficulty, found their way to this unofficial headquarters.

The "old man" must have set a good example for the three Healy sons, Edward M., Bernard E., Jr., and Lamont have followed in his footsteps. Ed is the principal architect of Architectural Associates and executive vice president of Masiello & Healy, Inc. Bernie, Jr., is vice president in charge of construction of the Alpha Construction Corp., and the director of construction of Architectural Associates. Lamont is a registered land surveyor and a member of the board in Bernie, Sr.'s, enterprises. All three are active in the profession, with Ed also serving as secretary of the state A.R.A. council. Bernie describes his eight grandchildren with grandfatherly superlatives. Lord help the Commonwealth if they all decide to become architects. The distaff side is represented by the most gracious Emeline and together they have missed very few of the national meetings and none of the conventions. Both are true epicureans who have added much to our conviviality from Locke-Ober's in Boston to the Court of Two Sisters in New Orleans to the Top of the Mark in San Francisco. Even Bernie’s moments of festivity and ready wit do not conceal the brain behind it, nor the diligence which has contributed so much to the Society's progress in Massachusetts.

Over a hundred letters have come to the magazine bemoaning the ineffectiveness of a limited membership. Here we have an answer and an example, for the normal membership of his state has been magnified beyond belief by the dedicated efforts of Bernard E. Healy, F.A.R.A.
A.R.A. In Action

Southern California Awards Banquet Gets Off To A Good Start.

The Foss Award Goes To Roger Saccoman.

A.R.A. Greets Governor Volpe.


Turnabout — The Regents Award To Greg and the Tie of the MacGregors To Marion Varner.

Ohio Represented In Melodious Strength. Bruce Huston Directing.
A.R.A. ACROSS AMERICA

Tower of Terpsichore, Western Massachusetts
T. Munson, Architect

Trinity Evangelical United Brethren Church, Lomira, Wisconsin
Frederick W. Raueber, Architect

An Office and Research Laboratory for Wallace & Tiernan, Inc., Hanover, N. J.

Proposed Motor Inn, Bristol, Conn.
Meyer and Kosindorf, Architects.

A Proposed New Office Building for East Orange, N. J.
T. W. Moule, Architect

Masiello & Healy, Architects, Inc.

Chapel Youth Center Facility for Ball State University, Muncie, Ind.

Everett Associates, Architects.
FROM THE PRESIDENT

Never having written a presidential letter previously, I decided it would be helpful to look over those that had been put together by my illustrious predecessors.

It didn't surprise me to find that all my bright progressive ideas had lodging themsefes firmly in the minds of our previous presidents and had been presented by these dedicated members of our society in previous issues of the magazine. Frankly, the basic tenets of our society and the goals towards which we are striving have not changed since their inspirational concept by Wilfred Gregson so I shall pass lightly over these litigious torches and consider this letter a half-way report on my presidency.

Were all filled with the best of intentions and mine were no less so when I assumed the presidency. With Walter Simon's blessings I started somewhat earlier to pick up the threads of office after the last convention. As happens sometime, the heavens open up and the deluge leaves one gasping. The first tidal wave encompassed the vote to change the 1967 convention location. This brought a flurry of calls and mail predicting the dire results from such a maneuver and the hurricane signals flew for almost four months. Happily, order was finally restored, our strongest backers amongst the exhibitors again proved their loyalty and through the almost superhuman efforts of Frank Masciello and "Chick" Beddow we kept our heads above water and made the show.

The success of this convention is assured and I ask all of you to back it to the hilt and attend. It promises to be the best ever.

Blithely, I had hoped to accomplish more than I see to date, but I now realize that progress will be made slowly, but effectively, and I defer to Bob Stickle's wise words "it is my purpose to build soundly on the strong foundations laid by my predecessors."

Membership continues at a steady growth. Various programs have been continued and new ones started. Marion Varner has accomplished wonders in California, other states have established new councils, and the Commonwealth of Massachusetts, my favorite A.R.A. state, has accorded me the signal honor of appointing me to the Board of Registration of Architects.

And to my fellow board members (A.I.A.) I am proving that I do not have horns.

I have established and carried on voluminous correspondence with NCARB, the Royal Architectural Institute of Canada, the Royal Institute of British Architects, the Royal Institute of the Architects of Ireland, the Faculty of Architects and Surveyors. (British) Domestic correspondence is overpowerring and I am gratified that we now have the good right arm of Allen Wherry of Thomas Associates, our Executive Directors, to help relieve the load. There is much more, but space prohibits further enumeration.

Despite my work load, keep your letters and comments coming. Only thus will we be able to develop our programs in your interests.

I was amazed to read in the recent edition of "The American Registered Architect," Volume IV, Number 3, the stand A.R.A. had taken in the recent architect-engineer-planner controversy which occurred after the establishment of a New Jersey Board of Registration for planners. Because of this stand, I must draw two conclusions: (1) That A.R.A., although believing in the integrity and self-respect which should be afforded registered architects in the United States, does not believe the same to be true of other professions and, therefore, is fraudulent in its founding principles, or (2) that the leadership of A.R.A. is misinformed as to the present-day functions, requirements, and capabilities of the planning profession.

Being a registered architect and a member of A.R.A., I reject premise No. 1 because I am fully aware of the work our organization is doing and cannot believe that such an organization could have been founded and recruited membership based on an untruth. I must, therefore, conclude that the architect in general, and A.R.A. in particular, is ignorant of the planning profession and the planning profession function in our modern society.

Being both an architect and a planner, I can perhaps shed some unbiased light on the functions of both architecture and planning and the required abilities of each profession.

Master Planning, or Comprehensive Planning as it is more often referred to today, involves more than the traditional planning concepts taught in architectural schools. Comprehensive Planning involves not only physical planning but also requires an insight and knowledge of social and economic conditions. Planning today, is a fusion of sociology, architecture, law, civil engineering, economics, and many other specialized fields. The knowledge required to practice planning competently and ethically requires specialized education and practical experience in the planning field. Architects, by the mere fact of being graduates and/or registered in one specialized field, do not qualify for practice in another field, although this field may be somewhat related historically. The stand taken by architects and engineers in the Jersey issue — that of not wanting to prove their ability in a particular field and demanding exemption from the State licensing examination — is as ludicrous as requesting, because of architectural registration, to practice dentistry, medicine, or engineering by virtue of having once passed the Architectural Registration Board requirements.

We must also remember that architects and civil engineers shunned planning when that profession was in its infancy and that both professions now feel that planning scope of services are rightfully theirs to perform. The architect does have an important function in the planning process — being trained to think creatively and to formulate physical concepts, however, the total skills required in planning go far beyond this limited ability. The task of planning effectively for community growth and development requires a multitude of skills which must be acquired to some extent before one can call himself a planner. In fact, the skills required generally go beyond one individual's capabilities and will probably result ideally in the practice of planning by a team in future years — a team in which
the architect might very well find himself in a position of coordinator. This place in the planning profession can only be achieved through furthering the architect's understanding of planning and the various elements that are required therein.

A start in this direction has been made by some architectural schools, such as Columbia University which now requires that both planners and architects take the same courses of instruction for the first two years and then go on to their specialized fields.

Only through a mutual respect and understanding of each other's profession can the planner and architect continue to fulfill their function effectively in our complex society.

Very truly yours,
LEONARD SCHICKLER, A.R.A.
Director of Planning

Thank you for your letter of October 18. I should like your permission to use it as written, in the A.R.A. Tribune, for as you know it is our policy to present all sides of every question. It is possible that the article did not express the chagrin entertained by many architects. I do not believe that they object to the establishment of the planning provision nor deny the specialized training required. The objection stems from the fact that the law, in its literal presentation, denies them the right to do work which has always been their province and for which they have been trained. Admittedly, site planning, etc., is a minor part of your general planning prerogatives and it is probable that amendments to the law can resolve this controversial point. — Ed.

We have received a Federal Grant for a project in Education which will bring into the classrooms of America, slides and pictures of the best of contemporary art forms. Among the art forms we have in mind are contemporary architecture and design.

Are there any photographs, or sketches, of outstanding architectural design printed in your journal that you feel are worthy of national attention and could be shown either in the form of small color slides for classroom projection, or large reproductions to young people as examples of the best in contemporary design?

Any help you can give us as to where we could find such material will be greatly appreciated.

Sincerely yours,
LOUIS PENFIELD
Chairman, Art Department
(MRS.) EDITH GREENBERG
Head Librarian

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A MESSAGE FROM THE CONVENTION CHAIRMAN

The 1967 convention promises to be the most interesting ever held by the Society of American Registered Architects. For a variety of reasons Washington was selected for the site, and specifically the Marriott Twin Bridges Motor Inn. It will start on November 17 and continue through the 20th. The management of the hotel will meet all arriving members, guests and exhibitors at the Washington National Airport and will take them directly to the hotel.

The following schedule lists the program and the speakers. Also included are those items of interest to ladies and guests. In this direction, every effort has been made to provide an interesting sequence of days. The convention will offer much of interest to the architect and its success, as usual, will depend upon the number who attend. Certainly the old guard will be with us, as well as many of our stalwart friends. Many of the exhibitors who have attended previous conventions will be joined by those to whom this is a "first." Even at this early date the exhibits promise to be varied and interesting.

The theme of the convention is "The Working Architect" and will be directed toward assisting those who come within this classification. This should mean virtually every American architect. And to all of them we issue an invitation to be present.

Benefitting by the experience of previous years, we are slowing down a bit and providing sufficient time to enjoy all aspects of the conclave. The convention program has been scheduled to avoid conflict with the Society's meetings and specific times have been allocated for the opening and viewing of exhibits. The exhibitors have been invited to attend many of the Society's events. Tours have been scheduled which include the White House and the United States Capitol, where members and guests will be greeted by the Honorable John W. McCormack, Speaker of the House of Representatives. On Sunday, November 19, arrangements have been made for the exploration of the Smithsonian Institute. So limited a list must fail to include many of the anticipated events.

On Monday, November 20, KLM Airlines has made arrangements for a post-convention tour from Washington via New York to Amsterdam, Holland. Details of this tour follow the convention program.

In reiteration, all architects everywhere are invited to be with us in Washington when we assemble and organize our affairs for the coming year, learn from each other, and assuredly have a good time. See you there.

FRANK R. MASIHELLO, JR., F.A.R.A.

MARRIOTT TWIN BRIDGES MOTOR INN
Washington, D.C.

MEN'S CONVENTION PROGRAM
THEME OF 1967 CONVENTION:
"THE WORKING ARCHITECT"

FRIDAY, NOVEMBER 17, 1967:

REGISTRATION
Main Lobby
8:00 a.m. - 7:00 p.m.

OPENING LUNCHEON
(Members, Guests, Wives and Exhibitors)
Persian II
12:00 p.m. - 2:00 p.m.

Welcome Address:
MR. JOHN R. HELLMAN
A.R.A. National President
Opening Address: To Be Announced

EXHIBITS
Commonwealth Room
Exhibit Concours
Exhibit Display Rooms
2:30 p.m. - 5:30 p.m.

FOUNDERS' AND PRESIDENTS' COCKTAIL PARTY
(Members, Guests, Wives and Exhibitors)
Chesapeake Room
6:00 p.m. - 8:00 p.m.

SATURDAY, NOVEMBER 18, 1967:

REGISTRATION
Main Lobby
7:30 a.m. - 4:00 p.m.

CONTINENTAL BREAKFAST
(Members, Guests and Exhibitors)
Exhibitors Area
8:00 a.m. - 9:30 a.m.

OPENING SESSION
(Members, Guests and Exhibitors)
Persian I
10:00 a.m. - 11:30 a.m.

Speaker: DR. LEO S. PACKER
Welcome Address:
DR. LEO S. PACKER
Assistant Postmaster General,
U. S. Post Office Department
"Modern Post Office Design and Future Requirements"

LUNCHEON MEETING
(Members, Guests and Exhibitors)
Persian II
12:00 p.m. - 1:30 p.m.

Speaker:
MR. WILLIAM A. SCHMIDT
Commissioner — Public Buildings Service
General Services Administration,
Washington, D. C.

"What G.S.A. Is Doing to Control Design and Construction to Give Us Better Buildings"
AFTERNOON SESSION
(Members, Guests and Exhibitors)
Persian I .................................. 2:00 p.m. - 3:30 p.m.
Speaker:
MR. LEWIS HOLTZMAN
President, Computer Dynamics, Inc.
"How the Computer Can Help the Small Design Office"
Speaker: To Be Announced
"Report On Government Design Fees"

EXHIBITS
(Members and Guests)
Exhibit Area ................................ 3:30 p.m. - 6:00 p.m.

EXHIBITORS' COCKTAIL PARTY
(Members, Guests and Wives)
Persian II .................................. 6:00 p.m. - 7:30 p.m.

DINNER
(Members, Guests, Wives and Exhibitors)
Speaker:
HONORABLE JOHN A. VOLPE
Governor, Commonwealth of Massachusetts
Chesapeake Room ......................... 7:30 p.m. - 11:00 p.m.

SUNDAY, NOVEMBER 19, 1967:
REGISTRATION
Main Lobby .................................. 8:00 a.m. - 12:00 p.m.

BUSINESS SESSION
(A.R.A. Members Only)
Persian I .................................. 8:00 a.m. - 10. a.m.

EXHIBITS
(Members and Guests)
Exhibit Area ................................ 10:00 a.m. - 12:00 p.m.

COMMITTEE MEETINGS and AWARDS' JUDGING
9:30 a.m. - 12:00 p.m.

GROUP TOUR — SMITHSONIAN INSTITUTE
(Members, Guests, Wives and Exhibitors)
1:00 p.m. - 4:00 p.m.

MONDAY, NOVEMBER 20, 1967:
CONTINENTAL BREAKFAST
(Members and Guests)
Persian II .................................. 8:00 a.m. - 9:30 a.m.

MORNING SESSION
(Members and Guests)
Persian I .................................. 9:30 a.m. - 11:30 a.m.
Speaker:
Vice President, Daniel, Mann, Johnson & Mendenhall, Architects-Engineers
"The Business of Architecture"
Speaker:
MR. ANTHONY MANSUETO
President, McKee, Berger & Mansueto, Construction Estimators
"Controlling Your Building Costs During the Design Stage"

LUNCHEON
(Members, Guests and Wives)
Persian II .................................. 12:00 p.m. - 1:30 p.m.
Speaker:
HONORABLE JOSEPH W. BARR
Assistant Secretary
U. S. Treasury Department
"Economic Growth of the United States"

ANNUAL A.R.A. BUSINESS MEETING AND
ELECTION OF OFFICERS, A.R.A. MEMBERS ONLY
Persian I .................................. 2:00 p.m. - 5:00 p.m.

ANNUAL A.R.A. BANQUET
(Members, Guests and Wives)
Persian Room ................................ 6:00 p.m. - 10:00 p.m.

LADIES' CONVENTION PROGRAM
FRIDAY, NOVEMBER 17, 1967:
OPENING LUNCHEON
Persian II .................................. 12:00 p.m. - 2:00 p.m.

TOUR OF UNITED STATES CAPITOL
2:30 p.m. - 5:00 p.m.
Conducted by:
HONORABLE JOHN W. MCCORMACK
Speaker of the House

FOUNDERS' AND PRESIDENTS' COCKTAIL PARTY
Chesapeake Room ......................... 6:00 p.m. - 8:00 p.m.

SATURDAY, NOVEMBER 18, 1967:
WHITE HOUSE TOUR
9:00 a.m. - 12:00 p.m.

LUNCHEON AND FASHION SHOW
12:00 p.m. - 3:00 p.m.

EXHIBITORS' COCKTAIL PARTY
Persian II .................................. 6:00 p.m. - 7:30 p.m.

DINNER
Chesapeake Room ......................... 7:30 p.m. - 11:00 p.m.

SUNDAY, NOVEMBER 19, 1967:
TOUR — SMITHSONIAN INSTITUTE
1:00 p.m. - 4:00 p.m.

MONDAY, NOVEMBER 20, 1967:
LUNCHEON
Persian II .................................. 12:00 p.m. - 1:30 p.m.

BRIDGE AND TEA
Ladies' Lounge ............................ 1:30 p.m. - 5:00 p.m.

ANNUAL A.R.A. BANQUET
Persian Room ................................ 6:00 p.m. - 10:00 p.m.
AMERICAN REGISTERED ARCHITECTS' SOCIETY
POST-CONVENTION TOUR TO HOLLAND

FIRST DAY
Arrival at Holland's national airport — Schiphol (15 feet below sea level!) and transfer by luxury motor coach through the windmill country to the new Rotterdam Hilton Hotel. Welcome luncheon at the Hotel with wine of Dutch beer. Free afternoon for resting or shopping at the Lijnbaan, Holland's "Fifth Avenue," adjacent to the hotel. Manager's welcome cocktail reception with open bar, hot and cold hors d'oeuvres. Opening banquet with wine and music.

SECOND DAY
American style breakfast in guestroom or restaurant. Departure after breakfast with deluxe motor coach for an all-day "Grand Holland Tour." First stop is at the world famous flower auction in Aalsmeer, center of Europe's flower industry. Then on to Amsterdam for a morning of delightful sightseeing in Holland's capital city. From the center of town, a canal boat ride through the canals to the Amsterdam Hilton's own harbor. Luncheon at the Amsterdam Hilton Hotel. In the afternoon drive through the north of Holland, calling at a cheese farm in the village of Broek in Waterland, and visit the picturesque fishing village of Volendam, noted for its colorfully costumed residents. Via the villages of Edam and Monnikendam, a drive through the fascinating areas surrounding Amsterdam and return to Rotterdam. Dinner dance with wine, flowers for the ladies, at the Rotterdam Hilton.

THIRD DAY
Dutch style breakfast (cheese, meats, breads, jams, marmalade, beverages) in room or restaurant. Morning devoted to motor coach tour and sightseeing of Rotterdam. Includes reconstructed center of the city, old and new sections, Delfshaven from where the Pilgrim Fathers left for the New World, the famous Boymans-Van Beuningen museum, noted for its fine exhibits of Dutch school of painting and a visit to the Heineken Brewery, where a tour and "Beer and Cheese" party will be held. For luncheon to the top of the 416-foot high Euromast, affording a magnificent view of the harbor and the city. Free afternoon for shopping. Prices are among the lowest in Europe and the values are amazing. Cocktail party with hot and cold canapes, open bar, followed by a banquet dinner with wine. The evening is spent in Rotterdam's smartest night club, where international artists perform. Two drinks, dancing and floor show are included.

FOURTH DAY
American or Dutch style breakfast in guestroom or restaurant. Departure after breakfast with deluxe motor coach for a morning excursion through the old Dutch countryside. Call at "Kinderdijk" (children's dikes) with 19 windmills in a row (the interior of a windmill is shown). Crossing the river Lek by ferry. Coffee break at the old Dutch city of Schoonhoven and a visit to the silver factory. Stop at the cheese city of Gouda, with its 14th century town hall, and a visit to St. John's Church with its famous stained-glass windows. After Gouda drive to The Hague and thence to the beach resort of Scheveningen. A "Hollandske Koffiefeest" Luncheon (Dutch Coffee Table, which includes a meat salad, a variety of cold cuts, cheeses, breads, coffee, tea or milk) will be served at the Pier Restaurant 1300 feet out in the North Sea.

In the afternoon a visit to the miniature town of Madurodam with its 2-foot high buildings. Sightseeing in The Hague, passing the Peace Palace, which houses the International Court of Justice, the 15th century Hall of Nations and other highlights. Return via the lovely 17th century town of Delft, noted for its charm. Stop at the "Porcelain Feix," the world famous "Delft Blue" china factory. Banquet dinner at the hotel.

FIFTH DAY
American or Dutch style breakfast. In the morning transfer to the river Maas for a trip by motor launch through the fascinating harbor of Rotterdam, the world's largest. Luncheon at the hotel. In the afternoon free for further shopping or visits to various museums or "just snooping." Dinner at an interesting "atmosphere" restaurant in Rotterdam or surroundings.

SIXTH DAY
American or Dutch style breakfast. After breakfast a drive via the South Holland Islands to the old navy port of Hellevoetsluis, in order to pay a visit to the Delta Works (construction of new dikes to close off the Rhine-Delta from the North Sea). After a visit to the exposition and a stop at the Film Theatre, where a film of the fascinating process of building dikes is shown, a motor launch is boarded for the amazing man-made island. Here a guide shows the immense construction works. Return to the Rotterdam Hilton for a late lunch. The rest of the afternoon is free. Cocktail party with music. Gala Farewell Dinner-Dance with wine and flowers for the ladies.

SEVENTH DAY
Dutch or American style breakfast as before. Transfer to the Amsterdam airport with ample time provided prior to departure for shopping at Schiphol's fabulous tax-free shopping centre. An amazing selection of cameras, watches, jewelry, perfumes, leather goods, liqueurs and toys from around the world at prices often lower than in the country of their origin.
Departure. Tour leaves Monday night, November 20, 1967. Complete price of tour from Washington, D. C. — transfer to New York to KLM Flight to Amsterdam, Holland. Return to John F. Kennedy Airport, New York, November 27, 1967. Tour price $399.00 per person. Basic requirements to visit Holland requires each person to hold a valid passport and show evidence of recent smallpox inoculation. Persons interested in taking part in the Post Convention Tour to Holland, arranged by KLM Airlines, please contact FRANK R. MASIELLO, JR., F.A.R.A.
791 MAIN STREET
WORCESTER, MASS. 01610

Note: There will be a representative from "KLM" to assist those members wishing to attend this tour.
THE "COSARA" TRIP

The initial phase of A.R.A. National "Cosara" Program has now been implemented. The first step was the relocation of our national headquarters and the employment of a full-time administrative director. This has now been accomplished. Mr. Allen Wherry of Thomas Associates, Incorporated, of Cleveland, Ohio, has taken over the helm and already experienced the fast footwork of our executive board at New Orleans May 12th and 13th.

The "Cosara" Program is a long range continuous organization and administrative (revision) formulated by the Committee for Organization of the Society of American Registered Architects. Its goal is to set clear, comprehensive guidelines for running a "tight ship." Briefly, we intend to make every dollar count. Our efforts will be directed where they will be most effective and productive to the welfare of the society and its membership.

The second phase was presented at the last national board meeting and is directed specifically to the immediate increase of state and local chapter growth. The last "Cosara" report detailed the results of pilot programs in a test state. In spite of inadequate funds, the accomplishments in this trial area included the publication of a regular state newsletter, the appointment of two A.R.A. members to the five-man board of registration, extensive coordination of legislative and regulatory state agencies, an open question and answer meeting between the Governor and all registered architects in the state and a request from the A.I.A. State Association that we cooperate on common objectives. The "Cosara" report included a new "lii" for the formulation of new state councils and chapters. It pinpointed the desirability and requirements for the immediate establishment of these state units. The prime funds for founding these new councils must be made available at once. Operating funds should also be regularly assured for continuity.

A complete reexamination of our national operating expenses clearly indicates the need for reevaluation of our dues structure. A major study of these fiscal conditions makes it obvious that an increase in dues has been long avoided, but if we are to succeed this must now be faced.

After much deliberation, discussion and consideration, the executive board at its last session in New Orleans has moved that the executive committee work with the bylaws committee to prepare a report for the next executive board meeting. This report shall be prepared to recommend necessary changes to the bylaws to raise national dues to forty dollars annually, ten dollars of which shall be reimbursed to properly chartered state councils.

This system will correct many inequities within our organization. First, it will eliminate dual collection problems. Secondly, all national members will automatically and proportionately support state councils even if they prefer to be inactive. Thirdly, it will eliminate the deficit at the national level.

The trip awaits you. The ticket is reasonable. Plan on attending the 1967 convention in Washington, D.C. on November 17-20, 1967 to vote for or against (this proposed dues increase) — it's your own decision that counts.

ON SMALLER WIRE—

(Continued from Page 13)

Underwriters' Laboratories performed the necessary testing, and, as a result, the wire now holds a very impressive list of approvals, which lends a great deal of versatility to the design. The following is the total list of approvals now carried by Type THWN-THHN:

1. Building Wire — 75°C wet and dry — NEC, Article 310-2
2. Building Wire — 90°C dry — NEC, Article 310-2
3. Appliance Wire — 105°C
4. Branch Circuit Wire — 90°C — NEC, Article 210-25
5. Fixture Raceway Wire — 90°C — NEC, Article 210-25
6. Machine Tool Wire — 90°C
7. Exposed To Oil — 80°C
8. Cable Conductors in "Continuous Rigid Cable Supports" — NEC, Article 318.

In light of the large number of wire types listed in the National Electrical Code, a particular one which can be used for a number of applications, should be most attractive. Being able to reduce the number of different wire constructions on a given job, is no doubt greatly to be desired. The Underwriters' Laboratories have cooperated in this effort, by allowing multiple marking of Type THWN-THHN. Their recommendation states that the wire manufacturer can, for instance, attach the red building wire label for Type THWN-75°C and Type THHN-90°C. He can then further print on the label, "Also suitable for Appliance Wire 105°C; Machine Tool Wire — 90°C; Branch Circuit Wire — 90°C; Fixture Raceway Wire — 90°C, etc." All in all, this adds up to a number of benefits and economies all along the line.

Finally, with regard to conduit fill in New Work applications, a proposal has been made to the forthcoming 1968 edition of the National Electrical Code. If accepted, there would be more Type THWN-THHN conductors allowed per conduit than of the other approved types. In addition, the proposal is geared to allow an additional 15% capacity for rewiring applications, as against an average 13% for Type THW.

In summation, it would appear that the small diameter, high quality Type THWN-75°C and Type THHN-90°C, possess a most outstanding combination of properties and approvals. In addition, the high percentage of rewiring capacity to be realized through the use of THWN-THHN, adds up to substantial economy. The cost involved in additional conduits and the labor necessary for their installation can be quite high.

FROM THE ENGINEERS—

(Continued from Page 15)

important of all, people have demanded and achieved a higher standard of living. In the light of progress and change, I would like to summarize the case for all-electric decentralized air-conditioning by making the following points:

1. The traditional central system of heating and cooling, when installed in multi-roomed buildings, provides limited comfort at excessive cost.
2. The fully decentralized all-electric comfort system for the same type of building supplies superior comfort at substantially lower cost.
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Our architects' file is broken down according to states and zip coded within each state. Evidently it reaches a large number of new architects for few of our customers fail to return. As contained in one of our advertisements, these customers read like the Blue Book of American manufacturers and include such names as Rohm & Haas, Kiplinger Letters, Dwyer Products, Bumcraft, Time-Life, Architectural Arts, Thermador, Arocks, Sargent Hardware, Encyclopaedia Brittanica, etc. Certainly these people know what they are doing. For detailed information write to

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As an architect registered or its equivalent in any of the United States your signature on the above form confers upon you all of the membership privileges of the Society of American Registered Architects. Each member benefits equally from the number of ancillary services established by the Society. Membership dues are $15.00 per year. A check for this amount, made out to American Registered Architects, should accompany your application.

SUPPLEMENTAL INFORMATION

The following is of value to the Society, but not mandatory, nor has it any bearing on the applicant's acceptance:

EDUCATION (SCHOOL AND YEAR):

TYPE OF PRACTICE: Schools, Church, Commercial, General, etc.

OTHER PROFESSIONAL ORGANIZATIONS:

PREVIOUSLY A MEMBER OF THE ARA?
YEARS IN PRACTICE

MARRIED: CHILDREN: WIFE'S FIRST NAME:

CIVIC CLUBS: ROTARY □ KIWANIS □ OPTIMIST □ LION □ OTHER:

ADMINISTRATIVE (SCHOOL BOARD, CITY COUNCIL, STATE REG. BOARD, ETC.):

SERVICE/STATUS ARMED FORCES:

DATE OF BIRTH:

PLACE OF BIRTH:

ARCHITECTURAL REGISTRATION:

Name of State Date of Reg. Reg. No.

No. and Date Acquired, Other States

N. C. A. R. B. CERT.:

No. and Date Acquired, Other States

(A) □ PRACTICING ARCHITECT (PRINCIPAL OR PARTNER):

Name of Firm and Address

(B) □ EMPLOYED ARCHITECT:

Name of Firm and Address

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DATE Reg. _________ BY _________ ARA REG. NO. _________

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