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Fungus and Termite Damage in Buildings

By CARL HARTLEY and WILLIS W. WAGENER,
of the U. S. Bureau of Plant Industry

Editor's Note:—The paper on "Termite and Fungus Damage in Buildings," by Mellen C. Greeley, A. I. A., published in the March number of THE OCTAGON, was submitted to the authors of the paper which follows. In turn, both articles were submitted to Mr. George M. Hunt, in charge of the Section of Wood Preservation, of the Forest Products Laboratory, Department of Agriculture, Madison, Wisconsin. His observations will be found at the conclusion of this section.

The Institute takes this opportunity to thank Mellen C. Greeley, A. I. A., Dr. Hartley, Mr. Wagener, and Mr. Hunt for their valuable contributions to a subject which, apparently, is of great interest to the architectural profession in a large number of states. Requests for more than a thousand reprints of Mr. Greeley's article have been filled. In anticipation of like interest in the papers appearing in this number, reprints have been ordered which will be available on request, and without charge except for large quantities.

THE writers have been given the opportunity to supplement the excellent article on the above subject by Mr. Greeley in the March number of THE OCTAGON.

The rots, due to fungi, are emphasized in the present paper, not because of any failure to appreciate the importance of termites, but because the writers are engaged in the study of fungi. Only a termite expert would presume to add materially to Mr. Greeley's treatment of the termite phase of the subject.

The technical facts so far as they are known are better presented in bulletins already existing than they can be here. Well-illustrated publications are available on building rots in general,* on decay in mill construction,† and on termite injury.‡ The termite shields mentioned by Mr. Greeley are described in detail in publications by Dr. Snyder of the U. S. Bureau of Entomology.‡ The best contribution that can be made here will be to present a general picture of the situation with respect to the organic enemies of wood in construction, and discuss briefly some of the fundamental factors affecting the fungi.

The ordinary mould fungi, although some of them grow luxuriantly in sapwood and discolor it,

so far as we now know have little or no effect on the cell walls of wood and need not be considered here. On the other hand, the wood destroying fungi, of which there are some dozens of fairly common species, grow not only in sapwood but also to a considerable extent in heartwood of all but the most extremely durable species. They corrode the cell walls or dissolve some of their essential con-

*Humphrey, C. J. Timber Storage Conditions in the Eastern and Southern States with Reference to Decay Problems. U. S. Dept. Agric. Bull. 510. May 17, 1917.

†Humphrey, C. J. and L. E. Miles. Dry-Rot in Buildings and Stored Materials and How to Combat it. The Alabama Polytechnic Institute, Extension Service, Circular 78. Feb. 1925.

‡Hubert, Ernest E. The Cause and Control of Decay in Buildings. Univ. Idaho Bull. 24, no. 2, Jan. 1929.

†Hoxie, F. J. (Inspection Department, Associated Factory Mutual Fire Insurance Companies.) Decay of Wood in Industrial Buildings, 1930.

‡Snyder, T. E. Preventing Damage by Termites or White Ants. U. S. Dept. Agric. Farmers' Bull. 1472. 1926.

Snyder, T. E. Termites in Buildings. U. S. Dept. Agric. Leaflet No. 31. June, 1929.

Light, S. F., Merle Randall, and Frank G. White. Termites and Termite Damage. Berkeley, Calif., Agric. Experiment Station Cir. 318. August, 1930.

stituents thus affecting the mechanical properties of the wood. Wood that has been recently infected may still be normal in all the easily determined characteristics, such as color and density, and may be scarcely reduced in resistance to compression parallel to the grain, but in certain other qualities may be measurably injured. Infected wood may become brash and lose most of its resistance to impact bending before it shows any signs of infection that superficial examination would detect. The decay fungi in their early development rarely produce fruiting bodies and cause no such mechanical signs of their presence as do the wood-tunneling insects, with the result that incipient decay often goes unrecognized.

As Mr. Greeley has indicated, the moisture content of wood is the most important of the easily controlled factors that govern decay liability. No decay is believed to take place in wood that does not have at least 20 per cent of moisture (oven dry weight basis). Many fungi can persist in air-dry wood in a dormant state for months or years ready to start growth when supplied with moisture, but it is probable that for most of the fungi from 21 to 25 per cent is a minimum for actual growth. It is only at high humidities or low temperatures that wood in equilibrium with air will contain more than 20 per cent of moisture. If wood is thoroughly air-seasoned to start with and protected from water or excessive humidity, it is permanently safe from attack by most fungi. The only exception to this occurs in the so-called dry rots. This term is technically limited to the work of two notorious fungi, *Merulius lachrymans* and *Poria incrassata*, which can bring water with them from some source of moisture. This water-conducting ability makes them the most dangerous of the structural fungi. Strictly speaking there is no such thing as a dry rot in wood. On the contrary when the causal fungi are at the height of their activity, such decays are very moist and it is only after fungus action has nearly ceased and the contained moisture has had a chance to evaporate that the decay assumes the dry, rectangularly checked form from which its common name is derived.

Whereas most fungi can attack only wood that has retained its moisture after it has been put into the building green or has absorbed water from leaks, stagnant damp air, moist soil or cold surfaces on which it has condensed, the water-conducting fungi, starting at a source of moisture, can extend rapidly into comparatively dry wood. Dry rot has been known to reach the third floor of a building in regular occupancy. The moisture that appears in wood infected by these two fungi may be in part absorbed from the air as Mr. Greeley suggests, but is probably supplied in the main by transportation through the strands of fungus threads extending from the water supply at the

point of origin or from wood in which they are already working actively. Water is formed in the decay process through the oxidation of the wood substance by the fungus, and there is evidence to indicate that once these fungi are actively established in a closed situation where the evaporation loss will not be great, conduction of water from the original source may be cut off and the fungi will still be capable of progressing for a time by means of the metabolic water resulting from the breaking down of the wood. This is one reason for the recommendation that in treating an active case of dry rot in a building all wood to well beyond the limits of the decay should be removed. However, a source of moisture must be available before these fungi can get an active start in the first place. Because of their water-conducting ability, it is necessary for the safety of the entire wooden structure that no part of it be in direct contact with the soil or with moist concrete unless it is heartwood of a highly durable timber species or has had pressure treatment with an efficient wood preservative.

The increase in the menace from fungi and termites mentioned by Mr. Greeley is traceable to a number of different causes, some of them connected with changes which have taken place in the character, distribution and use of our lumber supply. For example, with the passing of the virgin forests over large parts of the country an increasing proportion of the lumber used is sapwood. It is well known that even in timber species with extremely durable heartwood the sapwood is not strongly resistant to either termites or decay and it is therefore not surprising that the greater use of sapwood should be accompanied by some increase in damage.

Changes in architectural styles have tended to provide another source of increased hazard, particularly from decay. Whatever the architectural or other shortcomings of the nineteenth century American wooden house, in most parts of the country it was built well off the ground and was provided with plenty of underneath ventilation. The trend in recent years toward Old World exterior design based on types built directly on the ground with stone, tile or earthen floors has resulted in a general lowering of first floor levels so as to bring them as close to grade as possible. With this has come the substitution, for the piers that formerly served as foundations in the Southern States, of solid foundation walls which interfere with ventilation under the lower floor.

Coupled with the later trends in house design has been the extensive use of stucco and waterproofed building papers in sections of the country where wooden exteriors were formerly the rule. If building paper was used at all in the older construction it was likely to be of the familiar gray felt, non-waterproof type, employed solely to reduce air leakage. Perhaps because the newer type of construction

allows less ventilation of the wooden members of the wall, there seems to have been more trouble in stucco houses than where siding is used. Moreover the use of large or conspicuous ventilators at the ground floor level is not in harmony with good stucco design from the standpoint of appearance and in consequence the tendency is to cut such ventilators to a minimum or to place them where they will be inconspicuous with their ventilating efficiency left as a secondary consideration. The effectiveness of such ventilators as are present is often reduced by stucco dash splattered over the screens, or by the close planting of shrubbery in front of them.

Even within the house chances for evaporation of excess moisture are being reduced through the wide adoption of cemented linoleums and similar waterproof floor coverings. Cases are known in which buildings have been used for years without any trouble from decay as long as the floors were not covered but in which rot developed rapidly as soon as cemented linoleums were laid. This is an argument not against linoleum, but for attention to subsurface moisture conditions when linoleum is to be used.

The reduction in opportunity for evaporation from walls and floors has assumed an added significance in those sections of the country where the use of unseasoned or partly seasoned lumber for framing, subfloors and sheathing has become common practice. Under this development, green lumber can be laid down on the job cheaper than the seasoned product. There is also a tendency to leave dry lumber exposed to rain after delivery, or to use subflooring for concrete forms before it goes into the building, practices which probably result in considerable moisture pick-up in some cases. In using wood that is not air-dry, the builder is gambling that sufficient drying will occur during handling and in the course of erection to render it safe from decay. The fact that he does not always win adds just another source for the increase in decay liability.

Not the least of the losses from the organic enemies of wood are traceable to the increase in speculative building. Too often the builder is more interested in cost cutting than in the permanence of his structures and oversteps sound building practice in the attempt to get a few more dollars of profit. It is the hidden details which offer the best chance for slighting and short cuts and it is these same hidden spots which are most likely to be the site of fungus attack.

Looking at the matter from another angle we can say that the difficulties are chargeable in some degree to a lack of knowledge on the part of architects, builders and the general public of the chance of injury to wood and to other building materials of organic composition from the activity of fungi

and insects. It might improve the situation if the courses in biology at colleges that feature architecture or engineering were to include wood-tunneling insects and wood-rotting fungi among the organisms used as illustrative material. No animals could be more interesting than the termites with their social organization and complex symbiotic relationships. These practically important organisms might prove quite as valuable for general educative purposes as lichens, diatoms, or starfish. In default of such assistance from biology, the architect's professional training might conceivably include a little special instruction as to how wood is decayed and how termites and powder post beetles live and work.

A good builder is rarely guilty of putting in direct contact with soil untreated wood of any but the most extremely durable species, but many are content to leave it separated from soil only by a layer of stucco, or actually to imbed floor stringers in concrete that is in contact with soil.

An altogether inexcusable fault is the leaving of piles of wood trash under the building in contact with the joists, and wooden concrete forms still in place where they can serve as a convenient route through which fungi and termites can get up from the soil into the building. No wood trash should be left under the building.

Incipient decay present in the lumber when it is delivered on the job and originating in the logs or from improper seasoning or yard storage conditions of the lumber has undoubtedly played a part in subsequent fungus development in erected buildings. Although there has been a decided betterment in lumber yard storage practice during recent years, some room for improvement still remains. Studies are now under way in cooperation with the American Pitch Pine Export Company on the surface treatment of logs and freshly sawed lumber to prevent sap stain, and as an important by-product of the studies it is expected that the treatment will also reduce the chances for the establishment of incipient decay infections during the period of seasoning and storage. Not all traces of early stages of decay which may be found in lumber are necessarily dangerous. The true "sound red heart" of pine and other softwoods is an example. This is due to the incipient attack of a specific fungus, *Trametes pini*, that works in the living tree but does not ordinarily continue to develop after the lumber has been properly seasoned. Such lumber, while reduced somewhat in strength, is perfectly suitable for certain purposes. The ordinary sap stain, due to fungi very different from those that cause decay, is believed to have little if any weakening effect. The failure to differentiate between different kinds of fungus defects has sometimes caused the needless rejection of lumber; but lumber suspected of fungous infection should be accepted only after inspection by someone familiar with the different types.

Treated lumber suitable for small house construction is not yet obtainable in all parts of the country. The National Committee on Wood Utilization, the American Wood Preservers' Association and cooperating agencies are making an effort to improve this situation by prevailing on distributors to stock lumber treated with standard preservatives, and have already met with some success in Ohio.

On most of these points the remedy is obvious and the chief need is a campaign of education. There are, however, a number of respects in which present knowledge is not an adequate basis for setting up positive recommendations. Decay has been little studied from the standpoint of the small house or building and there is a danger that we may go too far in setting up safeguards and thus jeopardize their chances for being put into general practice. Prevention practices must be both inexpensive and simple. On a number of points the basic facts are not yet sufficiently determined to permit recommendations that meet this requirement.

As examples of subjects on which further information is needed the following may be mentioned:

(1) What indications of fungous infection are proper causes for rejection of lumber?

(2) Minimum requirements for safe ventilation of basements and under houses in different types of situations. A ventilation ratio which proves to be entirely satisfactory for one region or set of conditions may be very inadequate in others and no authoritative data exist on which to set down rules.

(3) The effect of chemical disinfection of underlying soil or concrete on the incidence of decay in wood above. It is entirely probable that trouble with floors laid on concrete can be easily and cheaply prevented by a proper antiseptic in the concrete.

(4) The relations between the soil-nesting termites and decay fungi. There sometimes appears to be a connection between the activities of the two.

(5) Better information on the origin of decay infections. There is still some question as to how the majority of infections are brought about, whether by wind-borne spores or the fungus, by vegetative spread in wood or soil, by direct contact of sound with infected wood or by other means.

(6) Determination of representative moisture contents actually present in the wood of different parts of a building and closer definition of the maximum safe moisture content of wood from the decay standpoint. Preliminary studies of this sort are now under way by the Forest Service and Bureau of Plant Industry.

(7) There is still some question as to what preservatives can be used safely and effectively in dwellings, and an effective technique is needed for protecting ends of treated timbers that are cut on the job so that untreated cores are exposed.

(8) Further experimental study on the control of decay infections by heat or by the in-place appli-

cation of toxic substances. Dry heat has been used successfully against *Merulius lachrymans* infections, while steam has been employed with striking results in killing infections in the roofs of oil storage tanks.

The elimination of infections that have already gained a foothold in buildings is also in need of attention. There are too many cases on record of householders and even professional builders who have made repeated attempts to exterminate either termites or the dry-rot fungi, only to have the attack promptly renewed and extended and the whole process in need of repetition. As an extreme example, a hardwood floor replaced after attack by a dry-rot fungus in a new brick school building in Texas was ruined in six months. The residence mentioned in Mr. Greeley's first paragraph is a particularly interesting case. There is need of field follow-up studies to determine the cause of these failures. Our present knowledge leads us to believe that any infection can be definitely stopped at the first attempt if the right methods are followed. The principles are known but the details evidently require further attention.

We know that the cases of trouble that are reported are usually from buildings where certain precautions have been neglected; but we know also that there are great numbers of houses in which some of those same precautions have been ignored, and which nevertheless have given decades of creditable service without any termite or fungous injury. The cases of acute injury from dry-rot fungi are particularly difficult to trace to specific malpractices, since the hazard from these fungi is somewhat like fire hazard; there are many houses whose construction would seem to lay them open to such attack, but the damage is concentrated in a few. What is needed is a survey, in which both termite and fungous investigators take part, in consultation with architects, engineers, and builders, and supported by supplementary laboratory studies. These should be extensive enough to enable us to say for each of the several important regions of the country what malpractices are really dangerous enough to deserve stress. For a successful campaign of education, or for improvement of municipal building codes, we must know what precautions are unnecessary and can be omitted, as well as what to emphasize. Building rots are not now being studied anywhere in the United States. The termite problem is being investigated comprehensively only as it affects California, on funds from California sources; termite study on a comparable scale is badly needed in other parts of the country.

The writers wish to join Mr. Greeley in avoiding the appearance of pessimism. Wood is the natural building material for many purposes, and particularly in small dwellings and farm structures generally it is expected to remain so. In millions

of buildings in the United States it has given thoroughly good service for long periods of time. The cases of real trouble, while numerous enough in the aggregate to require attention, are relatively infrequent when the whole number of structures is considered. There is every evidence that wooden

construction can be made safe without any undue expense or sacrifice of aesthetic values. Investigation in the direction of simplifying safeguards, and followed by an educational campaign, should reduce the insect and fungous hazard to negligible proportions.

Comments on Preceding Papers

BY GEORGE M. HUNT
of the U. S. Forest Products Laboratory

AFTER having read Mr. Greeley's article which you enclosed and the manuscript of the article by Dr. Hartley and Mr. Wagener, it seems to me that there is very little I could add to the discussion of decay and termite damage and their prevention that would be of interest to your readers. Mr. Greeley points out the necessity for sanitation, care in selection and construction and the provision of safeguards that are necessary for the protection of buildings in termite infested territory. If his recommendations, which are substantially those of the U. S. Bureau of Entomology, are followed with care I think there is little likelihood of serious damage by termites. Similarly, Dr. Hartley and Mr. Wagener show how decay may be avoided. Fortunately the methods that are effective against one are for the most part effective against the other.

Suitable preservative treatment will undoubtedly protect wood in buildings from termite destruction and decay but throughout most of the United States it is at the present time not very practicable for a man to secure properly treated wood in the sizes and small quantities needed for residence construction. It is a simple matter for large consumers like railroads, other public utilities and the like that use large quantities to secure treated timber especially suited to their needs, either from their own treating plants or from commercial treating plants. It

is not easy, however, for the small consumer to secure the kind and quantity of treated material he needs for there is as yet, except in very few cases, no provision for the retail distribution of well treated lumber. In a few cities in Ohio the National Committee on Wood Utilization with the cooperation of wood preserving companies and lumber dealers has made treated lumber available in retail lumber yards. I believe treated lumber can also be obtained at a few retail yards in St. Louis, in southern California and Florida and perhaps a few other places but thus far this opportunity is very limited. Until adequately treated lumber becomes more generally available to the house-builder he cannot make much use of it.

Lumber can, of course, be dipped or brushed with preservative by the contractor as the building is constructed but treatments of this kind are very superficial in character and cannot be counted upon for much protection even when conscientiously made. In some cases, no doubt, the treatments would not even be conscientiously made. For these reasons therefore it seems to me that the principal hope for both termite and decay prevention in small buildings at the present time lies in observing the precautions discussed by Dr. Hartley and Mr. Greeley rather than in relying upon preservative treatment.

The Proposed Florida Building Council

BY FRANKLIN O. ADAMS, A. I. A.

Editor's Note:—At the April meeting of the Board of Directors, Mr. Adams, who is Regional Director of the South Atlantic Division, discussed the program of the proposed Florida Building Council. He outlined the purposes of such an organization on a state-wide basis, and the advantages which should accrue therefrom to the building industry, and to owners. The statement here printed is commended to the chapters of the Institute as an example of good leadership in the building industry.

AMONG all the commodities which men purchase for business or personal consumption there are few which he does not have an opportunity to see at the time he places his order, or at least before he is called upon for payment. All the commodities are produced and sold in accordance with certain well defined and recognized stand-

ards. Of the commodities whose values are not determinable at the time of purchase may be named lottery tickets, speculative stocks, boom real estate and buildings. Even buildings which are purchased after completion all too frequently have actual values bearing little relation to apparent values. This is easily possible because many of the crucial ele-

ments which go to make up the real value of a building are concealed within the fabric of the structure and their worth as an integral part of the building must be assumed. Yet, in spite of this uncertainty of value in the building itself, the structure is in fact an aggregation of a great number of elements which have been manufactured in strict accordance with recognized standards and have values fully justifying the assumption of honesty. These standards have been determined by such agencies as the federal Bureau of Standards, The American Society for Testing Materials, the Underwriters Laboratories, and by national organizations of manufacturing groups. In the purchase of such material, certification may readily be had of its adherence to these standards. Further, these materials are manufactured not only in accordance with predetermined standards but in accordance with the recognized laws of economics, and are marketed at a price which insures a reasonable profit to the manufacturer. For this reason investment in the securities of these manufacturers is rated among the safest and soundest obtainable.

What then places investment in buildings upon such an uncertain speculative basis? The material delivered on the ground, either through inspection or certification, has an easily determinable value, and yet the building, on completion, often does not. The agencies responsible for these materials have performed their tasks well,—each has completely discharged his obligation, attained his objective and has secured a fair profit for his effort. There are many other agencies involved, however, who contribute toward the culmination of the project. These may be divided roughly into two classes, first, those whose interests cease with the completion of the building; and second, those whose interest continue, more or less, throughout the life of the building. The first class would include the contractor, the subcontractor and the mechanics who participate in the process of assembling this vast aggregation of materials into the completed building. The second class would include the owner, the source of finance, insurance underwriters and the real estate operator, in whose business the building frequently becomes a commodity. The operations of these groups have never been subjected to standardization or a centralized direction and control, except through certain general laws on the statute books. In fact, each agency operates independently in accordance with certain practices which have grown up in its own particular field without regard to their effect upon the ultimate value of the building. As a general rule these practices actually tend toward the disruption of building as an industry because they prevent its establishment upon the sound business principles of safety and profit to all concerned. Among them may be mentioned unsound practices of finance, incompetent plans and specifications, bad systems of credit

and many others involving improper competition and methods of construction. Before building can be put upon the same sound business basis that is enjoyed by most other industries it will be necessary to substitute for these evil practices others that will more nearly insure that great prerequisite of all business,—safety and profit. This can hardly be done where the various agencies involved, in spite of this strong common interest, proceed independently in handling matters which depend for satisfactory results upon strict coordination. Efforts have been made in the past toward such coordination through alliances between two or more of the agencies involved, none of whom have been directly interested in the behaviour of the building after its completion. No certainty of results along these lines can be expected without the participation of all the agencies interested in building.

Appreciating the necessity for some scheme of coordination that will not ignore any of the various interests affected, certain statewide building organizations in Florida have agreed to attempt to form a sort of building directorate, or clearing house, to be known as The Florida Building Council. Equal representation is being extended to all of the building interests which have statewide organizations. These will include architects, contractors, subcontractors, material dealers, labor, finance, real estate, insurance, and possibly ultimately such other organizations as those of building inspectors, building exchanges, hotel men and others. The Council will be made up of two representatives from each of the supporting organizations who shall, while members of the Council, be held to represent the industry as a whole and not the self-centered interests of any individual organization. The Council will be advisory in character, carrying no obligation back to the supporting organizations other than such as may be accepted by them. The authority of the Council must, therefore, depend upon the actual value of its findings and recommendations. The work of the Council will be done through committees, the personnel of which is not confined to the Council but selected for special ability in the field of that committee. The findings of the committees are to be submitted to the Council for its study and decision, its final recommendations being issued to the industry and to the public. Through one of these committees it is hoped to set up for general acceptance and adoption a series of standards for each of the operations incorporated in the average building project. Through another committee it is hoped to establish a system of grading so that any operation, carried through from financing to completion in accordance with the accepted standards, may receive certification to that effect. Through the value of this certification to insurance underwriters and real estate men, and especially to the all powerful money sources, it is hoped to encourage and even, to a cer-

tain extent, enforce adherence to these standards upon the part of all responsible operators, thus making the much sought after distinction between responsibility and irresponsibility in the building field. Through still another committee it is hoped to interest both the operators and the general public in a sincere effort to put building on a safe and profitable basis and to acquaint the public with the fact that

the industry is making a real effort to discharge its obligations to the public in the matter of building integrity. Through other committees it is hoped to solve problems of employment, apprenticeship, craftsmanship, materials and climatic conditions, to encourage and guide home industries in the building field, to secure wise and helpful legislation and, generally, to stimulate conservative investment in building.

Meeting of the New England Division

REPORT BY GEORGE H. GRAY, REGIONAL DIRECTOR

THE third conference of the New England Division was held on June 6th and 7th. The delegates assembled in Hartford at ten thirty on Saturday morning, many of them having come that morning from Providence and Boston—all by motor. One group left Boston on Friday evening and put up for the night at Springfield, about an hour's drive due north of Hartford, in the beautiful valley of the Connecticut River.

Up to the present, our New England conferences have been casual, without permanent organization, brought about by the initiative of the Regional Director of the Institute, and assembled on the invitation of the Chapter to which he belonged. The first conference, and a very delightful one it was, took place in Providence under the direction of Mr. Jackson and as guests of the Rhode Island Chapter; the second conference was in Boston, under the direction of Mr. Maginnis and as guests of the Boston Chapter and the Boston Architectural Club—a most edifying and enjoyable occasion.

In planning for this third conference, we endeavored to retain, so far as possible, the characteristics of the previous conferences which made them such delightful and profitable experiences. We did not, however, allow ourselves to be handicapped by precedent and so attempted to introduce new features which might add to the interest and value of the occasion, chief of which was holding the conference on a week-end. This made possible the second innovation, namely, adequate time for the study of new buildings of unusual interest. The usual deliberations on ways and means of making our profession a more potent factor in the development of our civilization, we did not, however, forego.

Our system of studying new buildings has recently been termed "The Clinical Study of Architecture"—and to this we immediately turned. So, we went through the Bushnell Memorial Building, which one of the party jestingly referred to as "A Colonial exterior with a jazz interior." The exterior is very dignified—an interesting and free

adaptation of English Georgian done in local water-stuck brick, skillfully worked into interesting patterns with limestone trimming. The building exists mainly to house a large auditorium suitable for symphony concerts, operas and civic gatherings of a formal nature. It seats three thousand, three hundred people. In accoustics, lighting and general stage equipment, it is the last word; nor is there any compromise in sight lines. The technical requirements were so exacting that Mr. Corbett (when speaking for his firm who designed the building) stated that they did not feel justified in compromising the form of the room to meet the requirements of a traditional Georgian interior. The outcome is a hall which is purely functional in form, with appropriate modernistic decorations. The lighting is all indirect and synthetic, so that the color of the walls and decorations may be changed at will by the throwing of a few levers on the elaborate switchboard. In the clinical discussion which followed around the dinner table that night, it was evident that conservative New England opinion was not generally sympathetic, though a number of favorable opinions were expressed, notably by Mr. Bogner of the faculty of the Harvard School of Architecture. The criticism and comments were searching but friendly. It is wholesome for us to frame into words our judgments and opinions and submit them for the criticism and judgment of others. If anyone finds himself growing old or otherwise stale, let me suggest this mental diversion for his rejuvenation and refreshment.

We next visited the Hartford County Court House, designed by Smith and Bassette of Hartford in association with Paul Cret. Mr. Bassette generously accredited the design to Mr. Cret who counts it among his very best works. It came in for almost universal praise.

Following this a lunch was served at the Hartford Club. After a few words of welcome by his honor, the Acting Mayor, the Regional Director introduced the President of the Institute, Robert D. Kohn, who opened the discussion on "The Federal

Building Program", giving a summary of the situation up-to-date. The first major building outside of Washington to be designed by an architect in private practice is the Hartford Post Office. Mr. T. Merrill Prentice, whose firm is doing the work, read an interesting paper on the procedure of handling government work. He described the requirements as very technical and exacting, but probably no more so than are required by thoroughness in handling so many buildings scattered all over the country, involving so many technical requirements of many bureaus. Their contacts with the Department have been most agreeable and he had nothing but praise for the personnel with whom he came in touch. They have now progressed to the point of submitting working drawings and specifications. They feel that they have lost no time up-to-date and anticipate promptness in getting the building underway. All this was very encouraging news to the delegates, some of whom had misgivings as to the hopelessness of getting involved in bureaucratic red tape.

Public Information was the next topic for discussion. The missile that hit the bull's eye was the comment that the preparation of material for the public press was a matter calling for technical training, and it would be wise for all chapters to submit material to Mr. Grady, official publicist for the Institute, and for awhile, at least, work under his tutelage. The Regional Director stated that he had turned the publicity for the conference over to Mr. Grady, who had handled it most satisfactorily.

The afternoon was spent in visiting the new home office of the Aetna Life Insurance Company, under the guidance of Mr. Parker, secretary of the company, and Mr. Arrington, of Mr. Rogers' office. This company had the vision to buy a large tract of land allowing for grass, shrubbery and trees surrounding the lower stories and yet plenty of space for recreational facilities (tennis, and the like), and also for building horizontally rather than vertically. Conspicuous among their requirements was space for the medical department. Could it have been that the medical department put its finger on the sore spot of our American cities, that diseased condition of congestion resulting from the crowding together of tall office buildings? Cafeterias, lounge rooms, a theatre-assembly hall, infirmary for the workers; a beautiful suite for the directors; excellent lighting and heating for all, admirably worked out by Mr. James Gamble Rogers.

The next item on the program was the group of buildings for the progressive school and junior college known as Avon-Old Farms, designed, built and donated by Miss Theodate Pope, a member of the Connecticut Chapter. As this has already been well illustrated in the architectural magazines (*The Architect*) we will not go into detail, more than to say that the buildings are built almost entirely of

local materials and that they began with a carpenter shop and a forge in which all the metal work and wood work was produced (even hardware and lighting fixtures, doors and much of the furniture).

A long and strenuous day was delightfully broken by Provost and Mrs. Kammerer's thought and hospitality in serving cold lemonade and sandwiches.

Avon is a short way out of Hartford and the cavalcade of automobiles continued from there through the quaint old Farmington to New Haven. Here most of the members put up for the night at the Lawn Club, a much admired new building by Douglas Orr, where the dinner meeting was held that night and another again the next day.

At the dinner that night the subject of "Registration" was briefly covered in a few remarks by Mr. Kohn and a letter which he read signed by Mr. Charles Butler and Mr. Brockway, endorsing registration and licensing of architects as a result of years of close contact with its workings.

A permanent organization was effected by the adoption of the following resolution:

Resolved, That the New England Division of The American Institute of Architects establish a permanent organization to consist of an executive committee composed of the presidents of the Institute chapters in the region, the regional director, one former Institute director from each of the chapters other than the one of which the regional director is a member, and the secretary of the chapter of which the regional director is a member; that the regional director be chairman of the committee and be authorized to appoint on the committee those members representing the former Institute directors; that the duty of this committee shall be to cooperate with the regional director in bringing about a closer understanding and bond of fellowship between the chapters in all matters properly coming within the scope of the Institute.

The next morning the delegates assembled at 10:30 in front of the Sterling Memorial Library, Yale University, James Gamble Rogers, architect. After genially submitting to the press photographer, they were introduced to the distinguished librarian who prepared the programme for the building—Dr. Andrew Keogh—who described in detail the history and requirements of the buildings. Mr. Isbell of Mr. Rogers' office supplied the technical details. A hasty view was had of the Harkness Quadrangle, some of the new Colleges (the Yale term for "houses", the modern substitute for the dormitory), the new Law School, and other recent buildings. The Library and the Harkness group was a challenge to conservative New Englanders and a challenge also to the modernist. The round robin discussion at lunch culminated in a vigorous statement by Mr. Austin, of Boston, to the effect that a munificent donation calls for a munificent building, that the building was a well-planned and imposing monument, subject to criticism in detail only; that he would welcome more stone in Boston, as he was

tiring of brick on every hand. It was generally agreed that the criticism which had appeared in various publications had been exaggerated and misleading.

If our guests got as much pleasure and enlight-

enment out of the exchange of ideas and the stimulation of studying good architecture in good company, as they seemed to, then the Regional meeting was a great success. This they said, and we are pleased to believe them.

With the Editors

The American Architect.

Public Schools and Architecture—Benjamin F. Betts.

Can there be doubt in anyone's mind that the place to begin educating the public on the value and importance of good architecture is in the public schools? Boys and girls, the school children of today, are America's future citizens. They are a group that will exert a powerful influence on tomorrow's architecture. What wonders could be accomplished if we could only inculcate in their minds a few fundamentals of what good architecture can mean to them!

The idea should present no insurmountable difficulties if properly approached. Present day school buildings commonly include assembly rooms or auditoriums, equipped with facilities for providing illustrated lectures. It should not be difficult to arrange for one or more talks before a large group of students during the school year. A few carefully prepared lectures as a beginning could contribute much toward molding public opinion and the public's attitude toward architecture. Eventually the program could probably be expanded to include other activities, as educators become convinced of the value of the idea as a means of preparing children to cope with some of life's problems.

The reason why so many people today accept and erect buildings of inferior design is because they were never told the difference between good and bad architecture. Had today's adults been told a few facts that would have made them think and made them understand architecture, present conditions everywhere would be far different. The public wants beautiful buildings that satisfy its needs. But, since the public does not understand that better buildings can be had, nor how good buildings are obtained, it accepts what it is given.

The time is ripe to carry architecture's message to the people through the public schools. Today people are building better houses and are more interested in architecture and decoration than at any previous time in the history of America. Our people are becoming more appreciative of good art. They are in a receptive mood, eager to be told what is good and how it can be obtained. A powerful way to carry this message to them would be through their own children who are attending school.

Architectural history and the ability to distinguish the orders of architecture—Romanesque from Gothic architecture—should not be made the objective of teaching the subject in the schools. The history of architecture should be incidental and if touched upon at all might well be used to demonstrate how the life and social conditions of nations have been reflected in their buildings.

The objective to be attained in the presentation of architecture to school children should be the development of an appreciation—an understanding—of good architecture. The value of good architecture to communities and to individuals could be emphasized as well as the contribution that good architecture makes to the happiness, well being, and increased enjoyment of the nation and its people, through good housing.

The history of architecture is filled with romance and thrilling episodes that would enthrall youthful minds. Children thirst for knowledge. Why not tell them about the making of building materials, how they are used and why? They are at an age when they can be easily made to understand the difference in purpose and function of the architect, the engineer and the contractor. As a matter of fact, the field is so full of possibilities to capture the youthful mind in a way that it could never forget, that it would require a nice selection and careful discrimination of what to present and what to leave out.

But, the facts properly presented would mean that today's children would reach maturity with an understanding of the fact that "A good building is the product of a good architect, a good contractor, and good craftsmen using good materials." Tomorrow's adults would have a much finer conception of what architecture means and what good architecture can do for them than is the case today.

The Architectural Forum.

Scope of Architectural Education—Kenneth K. Stowell.

The unique position the architect should maintain in the building industry as the coordinator of effort calls for a man of deep social consciousness, great breadth of vision, extensive technical knowledge, executive ability and unquestioned integrity. The education of such men is the responsibility of

the architectural school. The present system of education of architects was devised when the problems of architecture and building were less complex than at present, and the greatest need then seemed to have been aesthetic. The schools are still engaged largely in training designers or draftsmen rather than fitting men for leadership in the industry.

This larger function of the architect entails so much that fear will undoubtedly be expressed that the art of architecture will suffer if architects assume a larger rôle. Yet most of the troubles of the building industry may be traced to the lack of leadership. As long as architects are looked upon as the artists who are "hired to draw the plans," so long will architects continue to complain of low fees and the usurpation of work by others, with the resulting poor design. There appears to be an opportunity for the architectural schools to train architectural executives who will be better able to accept the responsibilities of leadership and the wider function which the present status of the industry demands. The schools can also continue to educate experts in plan and design, or others specializing in architectural engineering, both of which would be benefited by contact with the broader training and fuller understanding brought about by educational methods designed for the correlating executive-architect.

The Architectural Record.

The Institute Convention—Parker Morse Hooper.

Those who attended the sixty-fourth annual Convention of The American Institute of Architects, held at San Antonio, Texas, during the third week of April, returned with the conviction that the Convention had been a distinct success. When it was decided to hold the Convention in San Antonio the architects in Texas asked the Board of Directors that this Convention should be a practical one. And this it proved to be, which was a pleasant surprise to many who had anticipated, in view of the business depression, that little of practical value would be accomplished.

But whether or not the crisis served as a spur to action, or whether it was due to the fact that this Convention was mainly one of younger members of the Institute, many of whom came from the smaller cities and towns, and who are apt to be more intimately interested in the practical problems affecting professional practice than are the more specialized architects of the large cities—in any case, there was evident a new spirit; a desire to take practical steps to shoulder the responsibilities of leadership in the profession, in active cooperation with other interests of the building industry. To many delegates this was a welcome change from previous Institute conventions. Often in the past there were complaints

of the meetings being somewhat too formal, too much given over to generalizing about art, and too indifferent to the basic changes in economic and social currents; changes which, in the minds of many observers, bid fair to affect profoundly the building industry as they have affected other industries of the nation in recent years. Along with any prospective changes in the building industry, we must expect, of course, similar changes in the practice of architecture.

Architecture.

From The Editor's Diary.

In connection with the recent notes in these columns regarding Raymond Hood's conviction that the architectural student should be taught to model as soon as he is taught to draw, the following observation is interesting. Stephen Burnham in "This Our Exile" has a Princeton architectural student say: "In architecture you have, or you're supposed to have, an idea in three dimensions; so you spend seven or eight years learning how to translate it into two, just so some one else will understand how to put it back into three."

There is much talk these days of the desirability of passing out government jobs to individual architects, rather than have the work done by one of the several government architectural departments. It brings up the same difficulty that occurs constantly in the matter of State work. Most of the buildings thus designed—hospitals, institutions for the insane, prisons, postoffices—depend for their success upon an accumulated mass of technical data which is in the hands of the federal and state architects, and is not easily available to the private practitioner. It is quite likely that passing out these jobs would result in more individuality of design, but it is also as likely that the buildings would not fulfill their utilitarian requirements nearly so well. This prompts the question whether it might not be possible for government architectural agencies to confine their work to research and the tabulation of data—a constantly changing accumulation—leaving the actual design of the buildings to individual practitioners who would be guided by the technical information thus made available.

Pencil Points.

The Architect and the Producer—Ralph Reinhold.

There are in the neighborhood of eight thousand offices in the United States maintained by practicing architects. There are about thirty-five hundred producers of building materials of all classes doing a national business and about as many more important firms offering their products over more restricted areas.

So we have on one side of the fence, so to speak, eight thousand architectural firms who must select the various materials and items of equipment going into their buildings from this army of approximately seven thousand producers. It can be seen at a glance that millions of contacts between these two great armies are necessary each year. The architect and the important men in his organization need, and in the conduct of their work must secure, a tremendous amount of information about the various products offered for their consideration. The producers must maintain contact with the architect's offices if their goods are to be bought and used.

Now how is this tremendous business being handled today? The plain fact of the matter is that there isn't any standard practice. It is pretty much a catch-as-catch-can proposition. And it is undoubtedly true that the present methods, or rather lack of methods, breed a good deal of irritation, misunderstanding, and even hard feeling on both sides. The architect complains that he is hounded to death by the inopportune and even unintelligent calls of representatives and salesmen and these same representatives and salesmen retaliate by saying that they do not get a square deal from the architects. It should be noted that there are many exceptions to this general state of affairs. Some manufacturers work with the architects in the way the architects like to be worked with, and some architects' offices are so organized as to handle the calls of sales representatives and promotion men in a manner entirely satisfactory to the producers. All we need in order to clarify and improve the present situation tremendously is to get more architects and more producers to handle their affairs as they are now being handled by a minority.

Southern Architect and Building News.

Editorial—Ernest Ray Denmark.

Architectural criticism when it comes from a layman may or may not be of any intrinsic value but when such criticism comes from a mind so rich as that of H. L. Mencken it is not without merit. Whether we agree with him or whether we don't makes not the least difference, so far as its value to the profession is concerned. Disregarding the personal element which we should not in this instance, the worth of the criticism is measured by the fact that several hundred thousand people in this country read Mencken wherever and whenever they find him. That perhaps three-fourths of the time they disagree with him has no bearing in this case. Every one who reads this able critic is made to think and therein lies a rich contribution to the cause of architecture as set forth in his recent utterance through *The American Mercury*. Mr. Mencken says:

"Save in Germany and Scandinavia the New Architecture seems to be making very little progress. The traces of it that are visible in the current Amer-

ican skyscrapers are slight, and there are so few signs of it in domestic architecture and ecclesiastical architecture that when they appear they look merely freakish. A new suburb built according to the plans of, say Le Corbusier, would provoke a great deal more mirth than admiration, and the realtor who projected it would probably be badly stuck. The advocates of the new style are full of earnestness, and some of them carry on in the shrill, pedagogical manner of believers in the Single Tax, the World Court or the New Humanism, but they do not seem to be making many converts. Not many persons have been persuaded that their harsh and melodramatic designs are either logical or beautiful, or that the conventions they denounce are necessarily meaningless and ugly.

"The Eighteenth Century dwelling-house has countless rivals today, but it is as far superior to any of them as the music of Mozart is superior to Broadway jazz. It is not only, with its red brick and white trim, a pattern of simple beauty; it is also durable, relatively inexpensive, and pleasant to live in. No other sort of house better meets the exigencies of housekeeping, and none other absorbs modern conveniences more naturally and gracefully. Why should a man of today abandon it for a house of harsh masses, hideous outlines, and bald metallic surfaces? And why should he abandon its noble and charming furniture for the ghastly imitations of the electric chair that the Modernists make of gas-pipe? I can find no reason in either faith or morals. The Eighteenth Century house fits a civilized man almost perfectly. He is completely at ease in it. In every detail it accords with his ideas. To say that the florid chicken-coops of Le Corbusier and company are closer to his nature is as absurd as to say that the tarpaper shacks behind the railroad tracks are closer to his nature.

"Nor is there any sense in the common contention that Gothic has gone out, and is now false. The truth is that St. Thomas's Church not only represents accurately the mysticism of Ralph Adams Cram, who designed it, but also the evil conscience of the rich Babbitts who paid for it. It is a plain and highly intelligible signal to the world that, at least on Sundays, those Babbitts search their hearts and give thought to Hell. It is, in its sordid surroundings, distinctly otherworldly, just as Bishop Fulbert's cathedral was otherworldly when it began to rise above the medieval squalor of Chartres, the otherworldliness is of the very essence of ecclesiastical architecture. * * *

"Of all forms of visible otherworldliness, it seems to me, the Gothic is at once the most logical and the most beautiful. It reaches up magnificently—and a good half of it is palpably useless. When men really begin to build churches like the Bush Terminal there will be no religion any more, but only Rotary. And when they begin to live in houses as

coldly structural as step-ladders they will cease to be men, and become mere rats in cages."

Michigan Society of Architects Bulletin.

The Institute Convention—Frank Eurich.

Your delegate was requested by the President to render a report of the second afternoon session of the recent A. I. A. convention at San Antonio, which dealt with the general subject, "Newer Aspects of Land and Building Developments".

The President also suggested that the report embrace some personal observations of this most colorful and delightful convention, which those who were permitted to attend, will remember with the keenest pleasure.

It is generally conceded, I think, that if the San Antonio gathering was perhaps not the largest, nor yet the most brilliant, it was, in many respects, the most important, and, certainly the most human gathering of architects in the recent history of the Institute. There were serious, everyday, practical problems of nation-wide importance to the profession to be dealt with; perhaps the most difficult and vital problems which an Institute convention ever faced. As a rule, conventions are terribly serious affairs. Despite the grave problems confronting it,

however, it is a pleasure to record that the San Antonio gathering did not take itself with such fearful, deadly seriousness as one might be led to suppose.

The convention did, of course, produce the usual crop of more or less irrepressible individualists, who love to bask in the limelight, and who can always be counted upon to take themselves with the utmost seriousness.

It was refreshing to observe that in the face of depression and hard times, even architects have apparently not lost their sense of humor. This became evident quite early in the sessions, when speakers were heard to remark "once I had a client" or, looking hopefully towards the future, "In a year or so, I hope to have a client!"

Frequently, in the midst of the most weighty discussions—the convention fairly gasped with delight when it had an opportunity to laugh,—when a speaker cracked a joke, or, when Bill Warren, of Birmingham, Alabama, electrified the first afternoon session with his famous "The rough element riz up" story of the South, and then privately assured a few listeners that every time any of these blankety-blank fellows from anywhere else mentioned their home town—he intended to come back with something just as strong about Birmingham!

Notice—Policy on New Registration Laws

Six months ago the Chapters were asked to withhold the introduction of proposed legislation for the registration of architects, pending the outcome of the work of the Joint Committee on Registration Laws for Engineers, of which Past-President D. Everett Waid is Chairman.

That Committee has made progress in its conferences with the representatives of the engineering professions, but no final conclusions have been reached.

The Executive Committee of the Institute, at its last meeting, having before it inquiries from several

Chapters which contemplate the introduction of registration laws for architects, took action as follows:

Resolved, That pending a formal agreement by the joint committee representing the architects and engineers—as to the functions of each profession—the Institute Chapters be requested to refer to the Secretary of the Institute any proposed legislation for the registration of architects arising in their jurisdictions, whereupon the Secretary shall consult with the several Committees of the Institute concerned and advise the Chapter as to the procedure to be followed.

FRANK C. BALDWIN,

Secretary.

Student Competition—Brooklyn Chapter

The Brooklyn Chapter held its annual meeting at the Crescent Athletic Club, Brooklyn, Monday, the 25th of May, and awarded prizes in competition of its student affiliates in the sixth annual competition calling for "A Parkway Bridge".

First prize—\$75 was awarded to Robert Hillier.

Second prize—\$50 to Robert Edwards.

Third prize—\$25 to Hamilton Reese.

Frederick Amundsen won the Chapter's \$50 scholarship award for his execution of "A Gas Fill-

ing Station", for upper classmen in the department of architecture of Pratt Institute. First honorable mention was won by Hamilton Reese. Lester B. Pope, chairman of the education committee of the chapter and instructor of Pratt Institute, made the presentations.

Following the annual reports of officers and committees the membership committee reported a present membership of one hundred and two, exceeding last year's number by nine.

Applications for Membership

June 27, 1931.

Notice to Members of the Institute:

The names of the following applicants may come before the Board of Directors or its Executive Committee for action on their admission to the Institute, and, if elected, the applicants will be assigned to the Chapters indicated:

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| <i>Albany Chapter</i> | - - - - - | JOHN M. RYDER |
| <i>Boston Chapter</i> | - - - - - | HARLAND A. PERKINS |
| <i>Brooklyn Chapter</i> | - - - - - | CHARLES G. RAMSEY |
| <i>Cincinnati Chapter</i> | - - - - - | STANDISH MEACHAM |
| <i>Madison Chapter</i> | - - - - - | BERNHARD J. DOCKENDORFF, ALBERT EDWARD PARKINSON |
| <i>New Jersey Chapter</i> | - - - - - | JOSEPH SANFORD SHANLEY |
| <i>New York Chapter</i> | - - - - - | HAROLD REEVE SLEEPER |
| <i>San Diego Chapter</i> | - - - - - | FRANK L. HOPE, JR., LILIAN J. RICE |
| <i>Toledo Chapter</i> | - - - - - | THOMAS D. McLAUGHLIN, LYNN TROXEL |
| <i>Virginia Chapter</i> | - - - - - | RAY OSBORNE BRANNAN |
| <i>Wisconsin Chapter</i> | - - - - - | ELLIOTT BUTLER MASON |

You are invited, as directed by the By-laws, to send privileged communications before July 27, 1931, on the eligibility of the candidates, for the information and guidance of the members of the Board of Directors in their final ballot. No applicant will be finally passed upon should any Chapter request, within the thirty-day period, an extension of time for purpose of investigation.

FRANK C. BALDWIN,
Secretary.

 Members Elected from May 1, 1931, to June 22, 1931

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| <i>Albany Chapter</i> | - - - - - | AUGUST LUX, WORTHINGTON PALMER |
| <i>Boston Chapter</i> | - - - - - | C. PARKER CROWELL, WALTER S. LANCASTER, MAURICE P. MEADE |
| <i>Chicago Chapter</i> | - - - - - | PAUL T. HAAGEN, JOHN W. OGG, HAL PEREIRA |
| <i>Detroit Chapter</i> | - - - - - | W. E. N. HUNTER |
| <i>Georgia Chapter</i> | - - - - - | McKENDREE A. TUCKER |
| <i>Iowa Chapter</i> | - - - - - | E. R. SWANSON |
| <i>Minnesota Chapter</i> | - - - - - | FLOYD W. BROWN |
| <i>Montana Chapter</i> | - - - - - | GLENN GORDON COTTIER, NORMAN BRADLEY DeKAY, C. J. FORBIS |
| <i>New Jersey Chapter</i> | - - - - - | EDWIN R. CLOSS, EDWARD C. EPPLE |
| <i>New York Chapter</i> | - - - - - | WALTER THOMAS WILLIAMS |
| <i>North Texas Chapter</i> | - - - - - | WALTER ARTHUR GRAY |
| <i>Northern California Chapter</i> | - - - - - | NEWTON ACKERMAN |
| <i>Philadelphia Chapter</i> | - - - - - | GABRIEL MASSENA |
| <i>Washington State Chapter</i> | - - - - - | N. LESTER TROAST |



