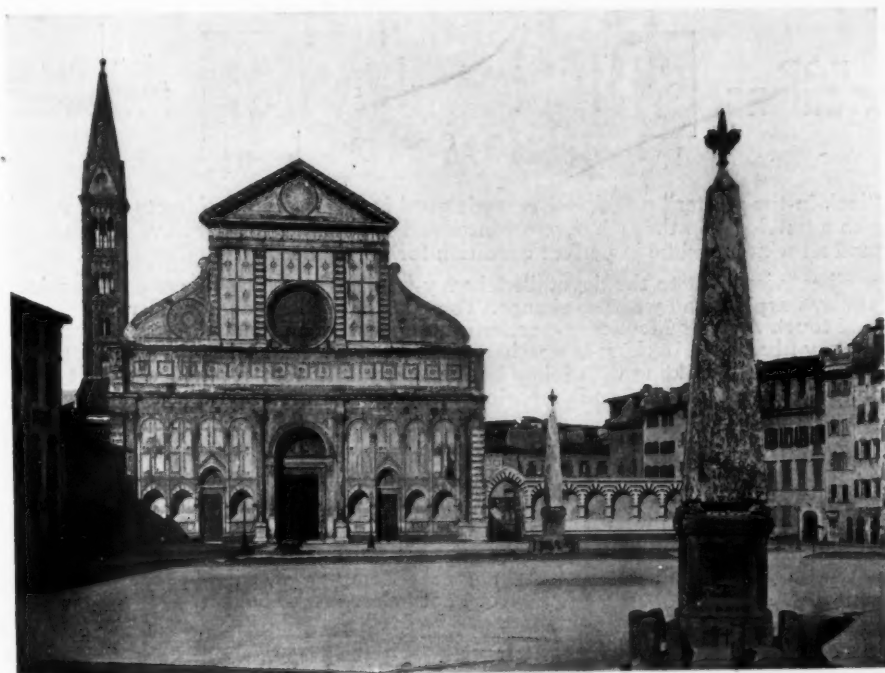


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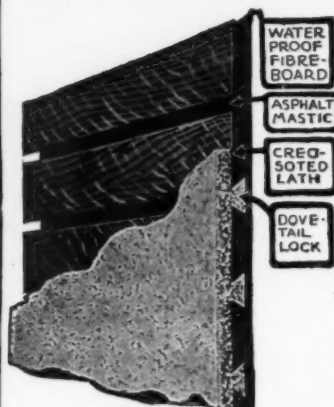
The AMERICAN ARCHITECT



CHURCH OF S. MARIA NOVELLA, FLORENCE, ITALY

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AMONG them are nationally known firms who do not compromise on doubtful construction; state architects; architects of schools, churches, clubs, public buildings, fine residences and popularly-priced homes.

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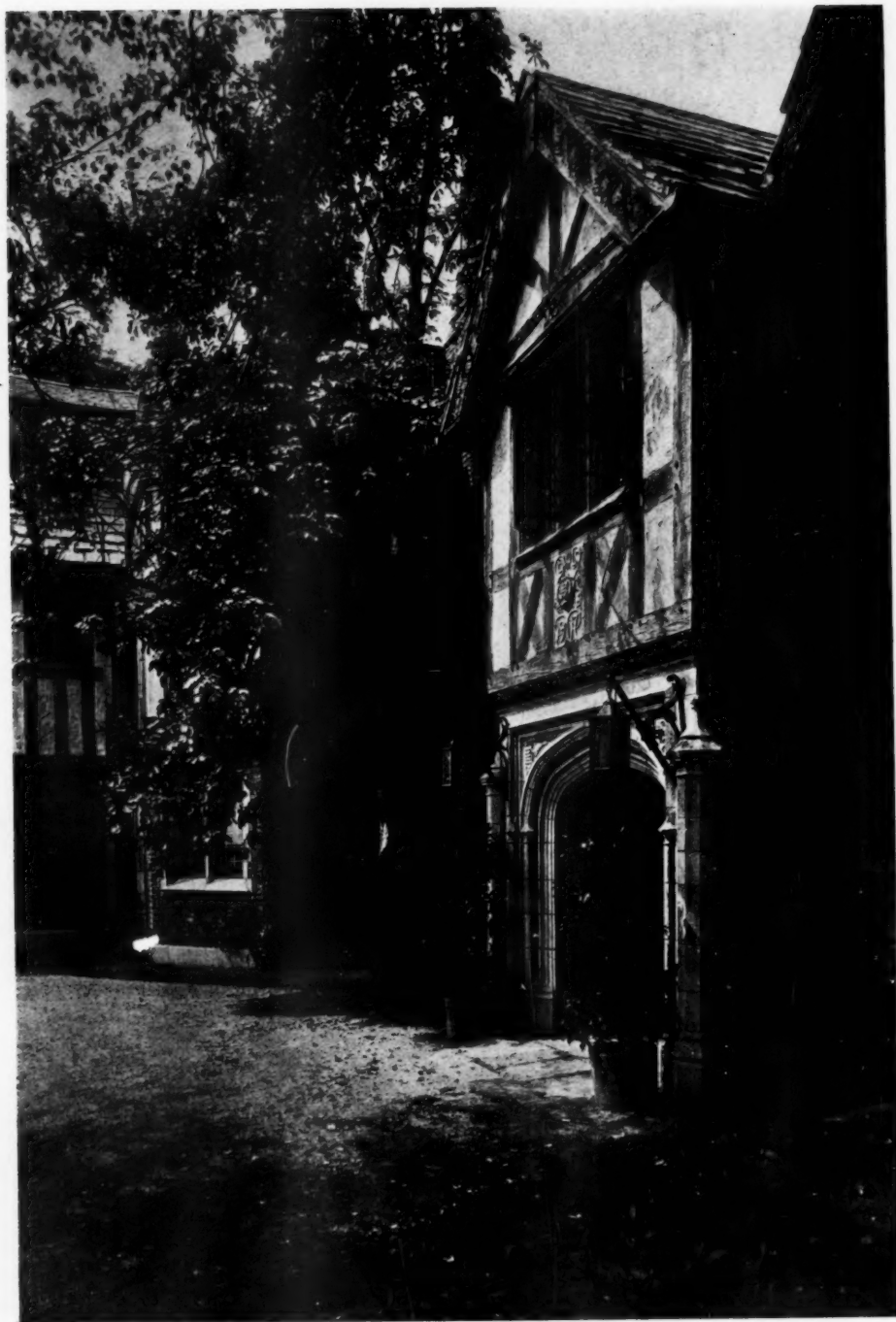
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WEDNESDAY, FEBRUARY 12, 1919

NUMBER 2251

The Future of Government Villages

By CLARENCE WILSON BRAZER

WITH every newspaper containing reports of the proposed action of the Government as to housing operations, and articles inspired by the recent Senate Joint Resolution 194, constructive discussion as to the disposition of these villages becomes more pertinent. This resolution, which would require the cessation of all building not over 70 per cent completed and the cancellation of contracts for furnishings, is particularly aimed at the temporary dormitories and apartments being constructed in the City of Washington between the Capitol and the Union Station Plaza (expected to have been completed last December), as well as those proposed for 2800 Government employees at Twenty-third and B Streets. As temporary accommodations with their furnishings will not much longer be required, it may be wise to cancel such contracts and to scrap the houses not roofed and enclosed. This has generally already been done as we will see later.

When, however, we consider permanent housing an entirely different situation is involved, and radical amendments should be adopted before enacting any such law as the previously mentioned resolution. Should unenclosed buildings not be scrapped and the site be not restored "without trace," these deteriorating skeletons would become a serious detriment to adjoining Government investments. If outsiders were to buy and complete these houses they would reap the advantages of utilities provided, and such breaking into the development by newcomers would greatly handicap good management of the community as a whole. Work which has progressed even 50 per cent could probably be completed for less than it could be demolished and scrapped, including just compensation for cancellation of materials ordered and manufactured.

The well organized and managed U. S. Housing Corporation received its appropriation too late for many of its houses to be occupied before the armistice was signed. At that time, upon interpretation of the law, 55 of its villages were abandoned and contracts were terminated or curtailed wherever there was thought to be no permanent demand for

houses in normal times. Over 30 of the corporation's beautiful plans will probably never be undertaken, and the real estate purchased or condemned will probably be sold. In some instances, within a week of the cessation of hostilities, rafters of unroofed buildings were torn down. Over \$23,000,000 worth of contracts were cancelled with a loss of \$4,000,000, while 14 other housing contracts aggregating \$17,000,000 were curtailed to \$11,000,000. Twenty operations are, unless stopped by the proposed law, to be completed at a cost of \$23,000,000. These are generally of a permanent character and located in cities such as Philadelphia, Erie, Bethlehem and Elizabeth, where there is demand for permanent houses to fill the gap in normal production caused by cessation of private building during the war. Before appropriations were made all these projects were exhaustively investigated and permanent housing only granted where such an investment seemed desirable, therefore the expert judgment of this Corporation, as shown by its voluntary cancellations, should not be lightly cast aside for the purpose of enabling political recoupment for other extravagances. The work under the Housing Corporation awarded upon competitive bids in lump sum contracts, probably will be found to be more economical than the "cost plus" contracts let by other branches of the Government, and with their land, being owned outright by the Government, thus most concern us.

The appropriations for the Emergency Fleet Corporation buildings, on the other hand, were granted earlier and the villages were largely completed under "cost plus" contracts. Few of these have been cancelled, although extensions have been curtailed. The houses are mainly of permanent construction and were financed by Government ten-year, or less, mortgage loans for local housing corporations largely owned by shipbuilders. The land and public utilities are generally owned by the Local Housing Corporation, but the Fleet Corporation agreements provide that it may fix the rental and selling price as long as the mortgage remains unpaid, except that the rents need not be

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less than 10 per cent of the cost of land with improvements, less depreciation. These agreements also require the Local Housing Corporation to sell (subject to 30 per cent or over mortgage to cover excess war cost) to officers or employees of the shipbuilder desiring to purchase lots improved with buildings as herein contemplated, but not more than one lot to any one purchaser except with the approval of the Fleet Corporation. During the mortgage term the Fleet Corporation also has the right to regulate policies determining the health, welfare and housing conditions, and upon release, the public dedication of public buildings, streets and improvements.

Provision is also made for assumption by the Government of losses due to excess war cost "*in no event exceeding 30 per cent*" of appraised value of the property at a period between 2 and 5 years after peace is declared. In such an appraisal it is conceivable that the increased value of land might offset the decreased value of the building. While authentic figures are not available, it is possible that original appropriations, based on estimates necessarily higher than normal, will be exceeded by from 30 to 60 per cent! Must the worker forever pay rent based on the excess war cost over and above the 30 per cent maximum to be written off by the Government? Failing to collect such high rents, will the village become deserted or the Local Housing Corporation bankrupt?

This matter of normal cost is of prime importance. Until the whole excess cost is written off by the Government, the properties cannot become stabilized so that the worker will know the price he must pay to own his home, or upon which his rent must be based to produce the normal income and maintenance charges. This will have a most important bearing on readjustment, and should not be delayed any longer than necessary.

In Philadelphia over 2000 houses of the commonplace two-story box row type were built for the Fleet Corporation by lump sum contract and occupied by Hog Island war workers. Soon after the armistice was signed and the draft cancelled, men previously exempt because of war work suddenly vacated hundreds of these houses as well as others of the less desirable type or location. Rents which have averaged \$5 per room per month have begun to drop, but have not yet reached the pre-war average of \$3. A "Buy Your Home" campaign has been started in the city, and it is now announced that these houses are to be sold immediately at their market value, which is less than cost. First choice is to be given Hog Island workers, and the remainder to any others who wish to buy! These buildings probably met a temporary urgent need of the Government at a comparatively small loss, but the city

has gained nothing over its usual type of commonplace housing. Due to the cessation of the usual operative building, these houses will probably be in some demand so long as the shipyard is operated, but should this now called "temporary shipyard" be abandoned, it is quite possible that, due to the location of some of these houses, present values will shrink considerably, and the "deserted house" be at the loss of the present-day purchaser on whom the Government is about to unload. Such houses in metropolitan districts are, however, much less likely to be deserted than those in more isolated villages.

Activity in seaboard shipyards and accessory manufactories has greatly decreased, causing cessation of overtime and dropping of the double shifts of labor. Most of these plants are, however, planning to continue not only the completion of present Government contracts, but also new private orders, which are expected as necessary to replete the world loss of tonnage. Annual repairs to ships built in these plants will also require a large regular force. The men attracted from the interior by high weekly wages have naturally cut the extra expense of living away from home, and have vacated, mainly, the boarding or lodging houses. Large numbers of workers were also attracted from the interior to build the housing, thus temporarily increasing the already acutely crowded communities. Many of these workers have returned to their home cities. The acute demand for housing has, therefore, even in metropolitan districts, greatly subsided. Also the total number, probably not over 30,000, permanent houses recently erected will accommodate such a small proportion of the total normal labor force of these new plants (generally less than 10 per cent) that from present indications there will be few deserted houses in metropolitan industrial districts adjacent to these plants. During the war transportation was improved, and many workers have daily traveled "on a strap" distances up to 40 miles to and from their work, at a cost of from 20 to 40 cents per day. Probably at least 50 per cent have traveled over 5 miles each day. With the return to normal wages men cannot afford this time, money and lost energy, and should welcome an opportunity to obtain new and attractive homes within walking distance of the plant.

Whether these villages will or will not be "deserted" is largely dependent upon the early completion of the necessary amenities. Good shops, schools, churches, amusements and recreational attractions must be provided, as well as good walks, well planted and paved streets and parks, or the worker will prefer to live and work where these are to be had. These are most vital to the isolated industrial community, located near munition or

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other strictly war necessity plants which are most likely to become "Government Deserted Villages." Even should these plants be turned into active peace industries, they will, without all these necessities, experience difficulty in attracting and holding a labor reservoir far from the city with its attractions and many opportunities for securing work. Practically none of these necessary amenities have yet been provided and it is essential that permanent Government investments should not be endangered by their noncompletion.

It would seem, therefore, that the Senate Resolution requiring abandonment is unwise. Private building will not be likely to proceed to any extent on a falling market, and, until labor and material values are stabilized and Victory Loans are over, money will not be largely loaned for investment in building. Until Government standard prices, such as even now maintain on brick in some districts, are removed, prices cannot be fully adjusted. In the meantime many men are being discharged from service, and with cessation of this housing work more men are thrown out of employment. Would it not be wise, therefore, for the Government, not only in order to provide employment but to protect its own investments, to continue at once the completion of the necessary amenities that will make the isolated industrial village attractive to the working man?

The temporary housing should, in order to reduce competition with permanent housing and prevent deteriorative slum conditions, be scrapped at once and charged to war cost and the sites restored immediately upon evacuation. As to the permanent housing, the national emergency is past, and we do not like to think of Uncle Sam as our landlord, troubled with maintenance and administration of properties erected, to say the least, in great haste. As soon as guarantees of proper standards for administration and maintenance can be established, which should be six months after peace is declared as provided by the Emergency Fleet Corporation agreements, the Government should sell its property or its mortgages at normal cost and retire.

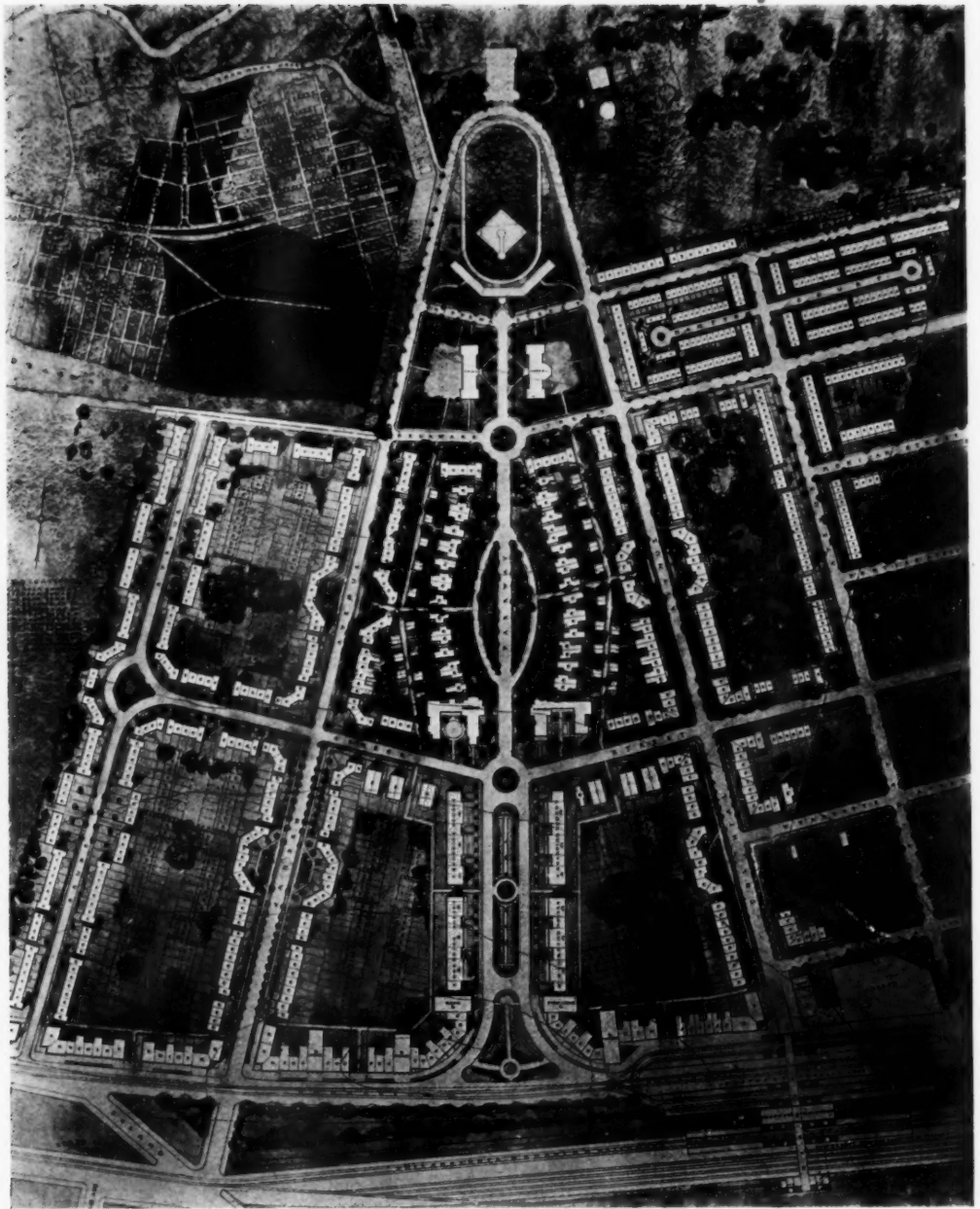
It is essential, however, that beyond the limits of organized municipalities some good organization, political or non-paternal, be established to maintain and manage the buildings, streets and parks, provide fire and police protection and in some cases to maintain the utilities, collect garbage and ashes and perform other municipal duties, which some of these suburban districts are not now allowed by law to do. Where the property is owned by a Local Housing Corporation, this problem of maintenance should properly be its duty, and for the good of the whole community the ownership of the entire property should remain

in the Local Housing Corporation. The owners of the plants are anxious that the houses be not sold in fee again to have title transferred to a worker in a competing plant, or to an objectionable neighbor. They are now protected by cancellation clauses in the Fleet Corporation Village leases, upon termination of employment in the plant. For the plant to retain or acquire ownership might require more capital investment for housing of labor than for housing of machinery, and besides the advantage gained of renting direct, to employees only, is too paternal to be popular with labor.

The American workman now understands the buying of Bonds on installments, but is apt to be suspicious of a "copartnership" as practiced in England. Why not, therefore, instead of selling the houses, sell the workman on partial payments from his wages, a rent paying first mortgage bond secured by the normal value of his home, and carrying the privilege of occupancy while employed at the plant with the first option for repurchase reserved to the Local Housing Corporation upon his removal or desire to sell. As his investment increased his rent would decrease, and if arranged to cover all costs, taxes, etc., he would be likely to appreciate the advantage, and become settled. By thus preventing profiteering on resale, the unearned increment should redound to the credit of the Housing Corporation.

There is a growing tendency in the locality of these new communities to question whether it is altogether politic to segregate so many workers of one class, sometimes with peculiar national traits, without admitting to residence some of the best elements of our citizenship which would leaven the thought and action of the community. It would seem wise, therefore, to encourage the dwelling within the village of the school teachers, clerks, shopkeepers and professional men required by the community.

These war villages should not establish our highest ideal for the future, for it must be remembered they were designed and erected under tremendous pressure. Much better results should be obtained under normal conditions, when responsibility is centralized in a single head. The Government has withal raised the general standard for real estate development to a level where all future developments should start, and the future industrial villages to be erected after reconstruction should be so controlled by City of State Planning Commissions as never to fall below the level thus established. The architects should help the general improvement by establishing and making known a new schedule of charges proper for this class of work, including town planning services.



PRELIMINARY TOWN PLAN OF SOUTH PHILADELPHIA, PA.

(Location plan inserted in upper corner)

CLARENCE WILSON BRAZER, TOWN PLANNING ARCHITECT

Westinghouse Village at South Philadelphia, Pa.

SOUTH PHILADELPHIA lies between the towns of Lester and Essington on the Delaware River, about three miles north of Chester, Pa. The large new marine turbine plant of the Westinghouse Electric & Mfg. Co., for whose employees the town was projected, extends from the water front to the railroad on the watershed, as shown on the small insert plan. The inland side is the village site, approached from the plant by a viaduct over the railroad tracks as well as over the tracks of the Chester Short Line trolley from Philadelphia. The viaduct is also planned to serve a railroad station and a trolley loading loop.

glorious old oak tree some six feet in diameter still remains, however, carefully "courted" to preserve its roots. About 20 acres in the center of the tract are richly wooded, while stretching across the fields were groves of gum trees, very colorful in the Fall.

The Westinghouse Company has more than twenty other housing developments, but this is the largest of them all, and as planned it will eventually provide homes for over 6000 people. Long before America entered the war this scheme had been projected as a permanent part of their plant, and the company's town planning architect, Clarence Wilson Brazer, was commissioned to study and report a complete



Drawn by E. D. Robb

GROUPS OF SIX-ROOM HOUSES AT SAUDE AVENUE AND SENECA STREET

The tract set aside for housing contains about 90 acres of comparatively high land, sloping gently north with a fall of 30 ft. toward Long Hook and Darby Creeks, which are surrounded by marsh land. The portion nearest the trolley tracks was formerly a cornfield surrounding one of the first built houses on the Delaware River. Essington, on Tinneconk Island, was the first permanent settlement in Pennsylvania, having been colonized by the Swedes in 1642. Its streets were named for prominent Swedish settlers. The old manor house had been burned out many years ago, and the first act of the workmen, before they could be stopped, was to use it as a quarry for foundation stones. A

and comprehensive town planning development for the site, with plans of all buildings and municipal engineering suited to the needs of the locality and the company's employees.

After several months spent in survey and study of surrounding towns he submitted the accompanying plans with a comprehensive report. The latter discusses all phases of town planning, taking the open land, its subdivision, plotting, installation of all streets and public utilities, housing for different classes and the necessary number and kind of shops required to provide their needs, and churches which the population could support. A complete census of probable male, female and child



Drawn by E. D. Robb

GROUPS OF FIVE AND SIX-ROOM HOUSES ON JANSEN AVENUE, SOUTH PHILADELPHIA, PA.

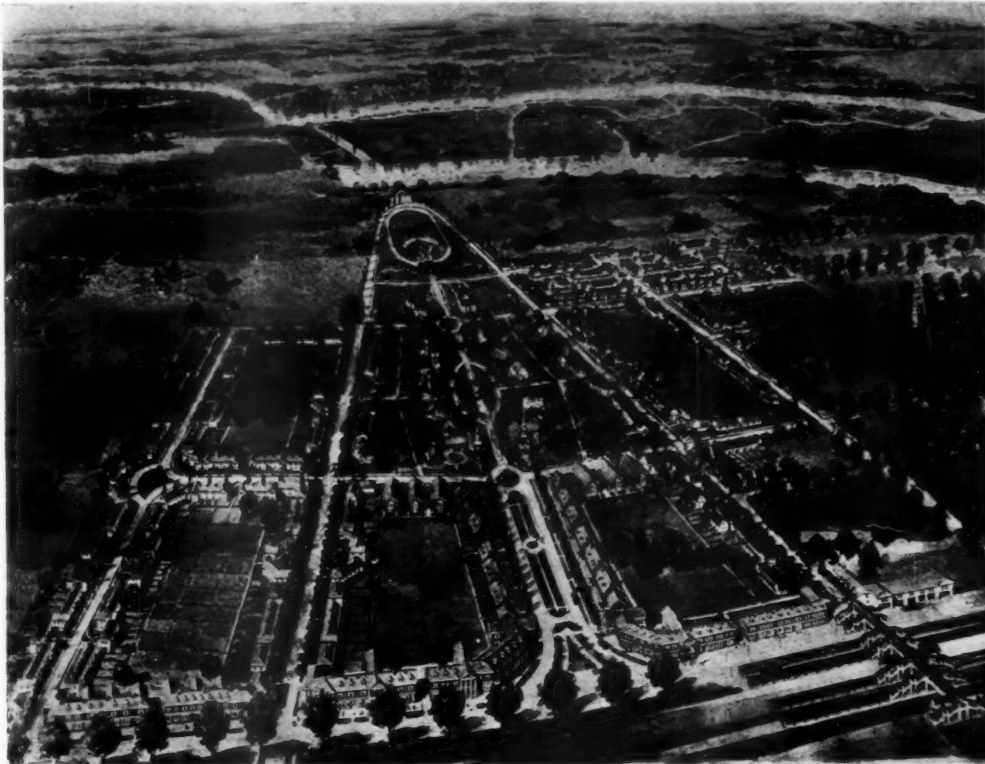
CLARENCE WILSON BRAZER, TOWN PLANNING ARCHITECT

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occupants of the bedrooms contained in the typical plans of the buildings designed also gave data for school population and playgrounds as well as the possible number of male employees, single and married, that could be housed. This was accompanied by the usual percentage tables to prove the proper proportioning of the land area, and detailed estimates of cost of full land and utility development, as well as detailed builders' estimates on the build-

on the gross cost of building and lot average only 9 per cent, including water rent, interest and all the above-mentioned charges. Recommendations for restrictions to be placed on the land, administration and disposal of privileges terminate the preliminary report.

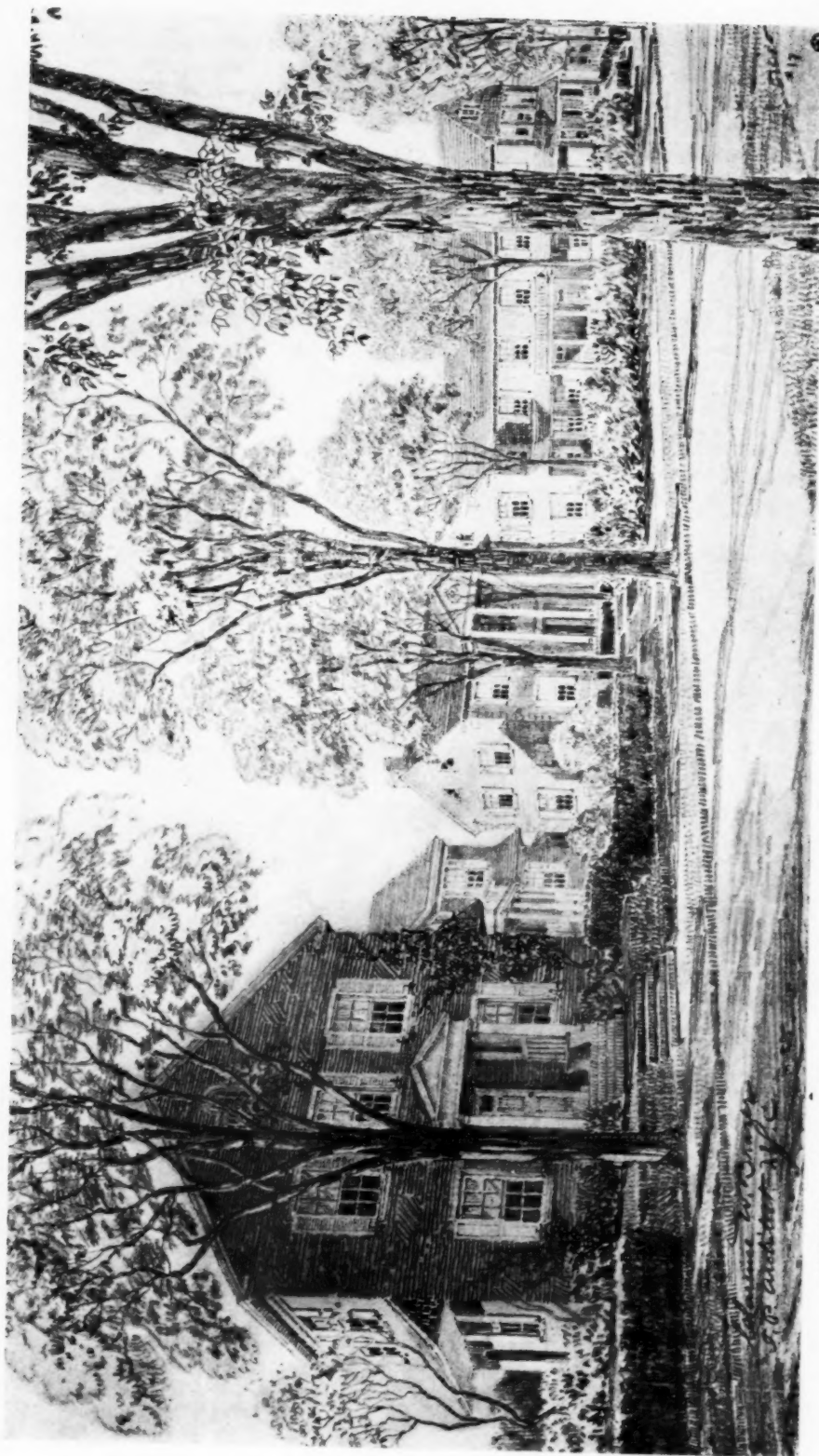
When Mr. Brazer first studied the site, the factory buildings were nearing completion, and their septic tank was being erected upon the lowest land



PRELIMINARY AEROPLANE PERSPECTIVE OF SOUTH PHILADELPHIA, PA.

ings, thus giving a grand total of eventual expenditure required. The public improvement costs were assessed against the lots, according to area, to which were added the cost of the buildings. Tables of each of the 15 classes of buildings were prepared, and on these total costs for each class were ascertained the taxes, insurance, water rent, 5 per cent interest on the investment, maintenance and repairs for streets, parks, lights, fire protection and buildings, as well as costs for collection of ashes, garbage and rents. These tables thus gave the amount of rent required from each house or building to pay all these charges, and the proof of good design is shown by the fact that the yearly rentals

adjoining Long Hook Creek. Extensions of the septic system had been planned to provide for the future village. This, therefore, became one of the determining factors in the town plan, as the natural fall of the land from the railroad gave just about the proper grade for sanitary sewers. Then, too, the surface drainage could be handled most economically by the same route to Long Hook Creek. The Swedish named streets of Essington and the Indian named streets of Lester had already been plotted, and were in part cut through in typical gridiron fashion. As the distance between these two towns was only 1800 feet, a system of curved streets would not only have been incongruous, but unsuit-



Drawn by E. D. Robb

GROUPS OF FIVE, SIX AND SEVEN-ROOM HOUSES ON JANSEN AVENUE, SOUTH PHILADELPHIA, PA.

CLARENCE WILSON BRAZER, TOWN PLANNING ARCHITECT

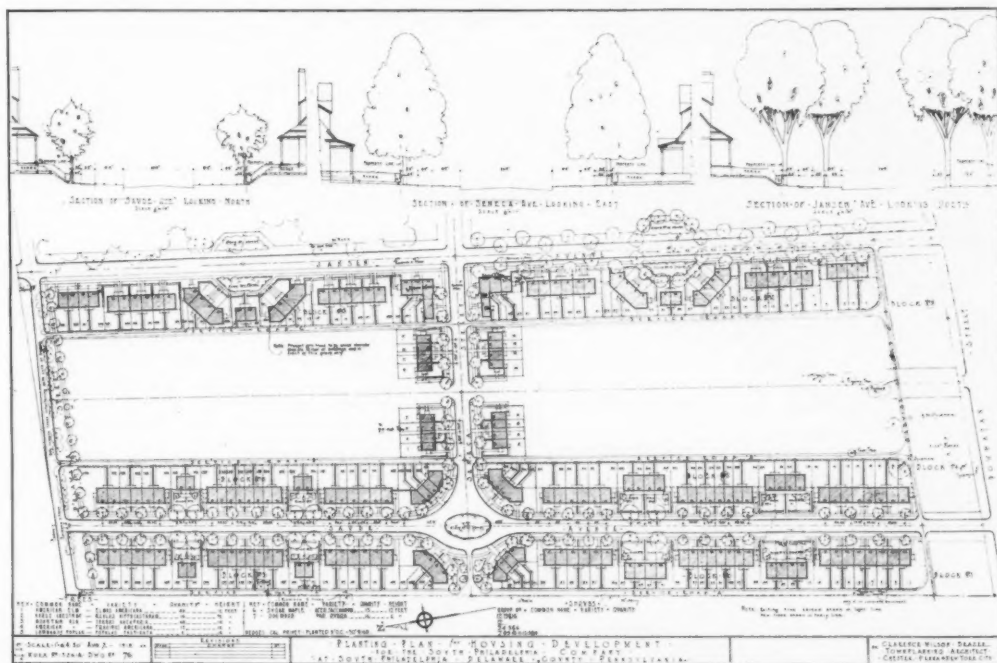
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able to the economical straight-forward plotting of flat land for the row type housing preferred by workmen in this locality. In order to fuse simply and directly with these towns some of the adjoining streets were continued into the property, and those running north and south were chosen for residences, so that practically every room in the village gets direct sunlight some time during the day.

The frontage on the trolley line naturally was reserved for stores, banks, movies, etc., with apart-

located the school, Y. M. C. A., recreation field and boathouse; the latter on filled land. The lowest corner, on the east side nearest the viaduct to the plant, was reserved for the laborers' section, and the higher land to the west for homes of mechanics and foremen.

The blocks have been planned with alternate streets temporarily omitted until full development requires their being cut through, so that in the intervening years children will have the use of these



PLANTING PLAN OF FIRST FIFTH PORTION OF DEVELOPMENT

ments for the shopkeepers, and offices for the professional men, placed in two stories above to shield the housing district and give more privacy from the smoke and noise of the manufacturing plant and railroads. These higher buildings are broken by Central Parkway, 150 ft. wide, on which are placed boarding houses of similar height, leading to the Protestant and Catholic churches on the edge of the woods. In order best to preserve this wooded section, twin and single houses were plotted for the executive force of the plant, each with its garage on a minor service road. Service roads were also introduced to serve all houses and to permit most of them to have private garages. The sanitary sewers are placed here most economically. At the far end of Central Parkway, where the noise of organized play would least disturb the villagers, are centrally

protected open lots for play or gardens at will. All necessary connections have been made to the sewers and other utilities, of size amply to serve the future houses, which are located as shown by dotted lines on the town plan. Thus the first development will retain all the openness of the surrounding unplotted country at very little additional first cost.

Upon America's entry into the war prices so advanced that private financing became undesirable, and Fleet Corporation financial assistance was accepted for a sixth section of 200 houses only. This portion is shown on the accompanying detail planting plan, and the houses thereon have now all been plastered and over half of them are occupied. The unfinished condition of the surroundings which, with the planting, cannot now be done until Spring, makes it more desirable to publish the beautiful

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Drawn by E. D. Robb



REVERSE PLANS.

GROUP OF FOUR SIX-ROOM HOUSES AT SENECA STREET AND JANSEN AVENUE
CLARENCE WILSON BRAZER, TOWN PLANNING ARCHITECT

THE AMERICAN ARCHITECT

perspective drawings by E. Donald Robb than any photographs which could be taken at this time. In the war haste with which these houses were designed and erected, many of the detail drawings

were not followed on the job. Ill-advised changes were also quickly made by rough work pushers, so that better results are anticipated in the larger number of buildings still to be erected.



Drawn by E. D. Robb

GROUPS OF FIVE AND SIX-ROOM HOUSES ON SAUDE AVENUE, SOUTH PHILADELPHIA, PA.

CLARENCE WILSON BRAZER, TOWN PLANNING ARCHITECT

Massachusetts' Building Program

A building program involving the expenditure of \$200,000,000 in Massachusetts, \$64,000,000 of which should be expended in Boston, is urged upon Governor Coolidge by Henry N. Teague, associate director of construction for the United States Department of Labor. The plan proposed by the Federal Labor Department calls for spending \$300,000,000 throughout the country. The Department of Labor is seeking to gain the co-operation of each municipality and State in the hope of getting legislators to appropriate abnormally large sums for building and highway improvements.

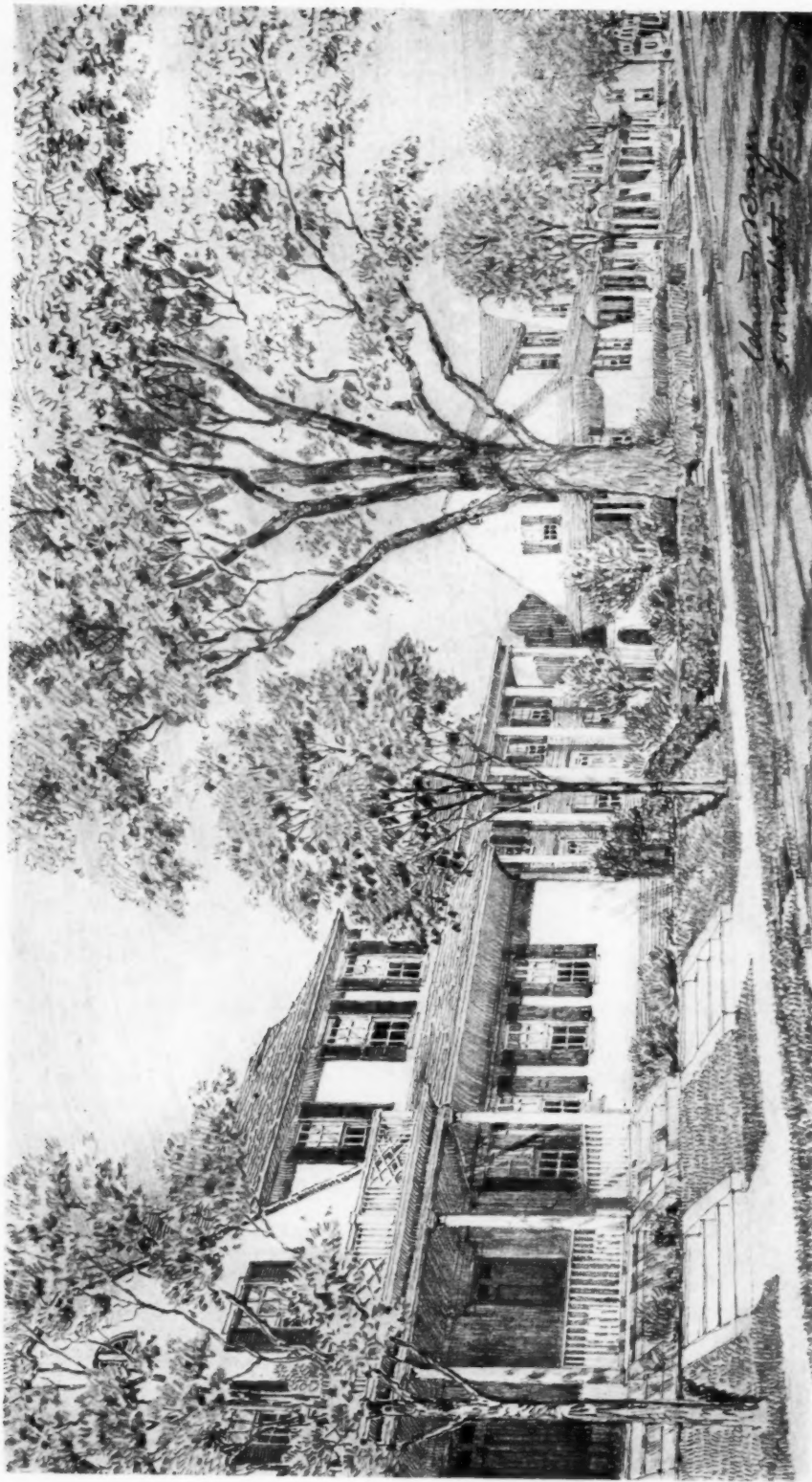
"The Highway Department has nearly \$5,000,000 which has been accumulated from appropriations for road work during the past two or three years," he said. "The commissioners are planning on spending this in addition to their appropriation for the current year, and the amount asked for is larger than usual. I believe there will be a considerable amount of money spent for State buildings,

especially those devoted to educational purposes.

"Private interests are holding off as the majority of business men expect a depreciation in wages and cost of materials. The Secretary of Labor has stated that he does not expect any marked decrease in wages or materials for several years to come. It is up to the city, state and national governments to lead the way by starting elaborate building and improvement programs and then the private interests will follow."

Mr. Teague feels confident that building will boom everywhere. Prior to reaching Boston he conferred with the Governors of twelve States and the mayors of the leading Middle Western cities. Practically all the officials he met indorsed his plan.

Partly because of the reception he has met and partly on account of department investigations, Mr. Teague is optimistic regarding readjustment of labor conditions. According to his figures labor shortage exists in a number of States. These are mostly big manufacturing centers, which have attracted returning soldiers from other localities.



Drawn by E. D. Robb

GROUPS OF FIVE AND SIX-ROOM HOUSES AT OAK TREE COURT, SAUDE AVENUE, SOUTH PHILADELPHIA, PA.

CLARENCE WILSON BRAZER, TOWN PLANNING ARCHITECT

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The Sport of Chance or The Master of Destiny

AFTER the Civil War, when the question was widely debated as to the best methods that would effect a resumption of specie payments, a certain statesman advanced the opinion that "the way to resume specie payments was to resume."

This will also be the best method with reference to building operations halted by the present war. We have but to resume, at once to take up the work where of necessity we laid it down, and go forward with our building operations, adapting ourselves to present conditions.

While there will probably be some further reduction in prices, and, possibly owing to the large number of unemployed, some cheapening in certain directions of labor costs, it would be unwise to defer operations suggested by present necessities in the hope for radical cheapening of labor and materials in the near future.

The way to resume building operations is to resume. Secretary of Labor Wilson has recently addressed a letter to the Governors of all the States, urging action in the stimulation of interest in public works and civic construction. In response, the Governors of many of the States have appointed special commissions and the impetus due to this action is already apparent.

Governor Coolidge of Massachusetts has issued an inspiring address to the people of his State, in which he says: "Instead of being the sport of chance, Massachusetts ought to be the master of destiny. Instead of waiting we should act."

This is exactly the right spirit and one that should be shared by all of the people. We should act, and now. There is little if any material result to be gained by a policy of procrastination.

UNDOUBTEDLY the first important movement toward the resumption of our normal building conditions will result from a well directed leadership on the part of the various agencies of the Government. The national Government and those of all states and communities should start this movement. There is today a pressing need for many types of public buildings. It is claimed that the contracts for more than eight hundred schoolhouses were held up during the war, and it is estimated that these represent a building cost of eighty million dollars. *The American Contractor*, commenting on this one item of construction, school buildings, states:

"Assuming that a decrease of 20 per cent in construction costs might develop during the next four or five years (and this is regarded by many as a maximum decrease) the immediate completion of the nation's school program would involve an excess of only 1 per cent per capita per year over the per capita cost, even if construction were delayed for several years. The educators of the country ask, shall the country have its schools now at five cents per capita per year, or delay having them for four or five years in order to buy them at four cents per capita per year?"

A POLICY that seeks to provide employment for men for the simple purpose of giving them something to do is not founded on sound economic principles. It is a wasteful proceeding. The program as outlined by the Department of Labor is one based on well considered effort looking to the sound and safe resumption of our building activity. It seeks to repair in a practical manner the deterioration of the past two years, to provide for the logical needs due to our unusual growth during that period.

The same safe and sane program may be, with the necessary adjustment, applied to civic building. The way we shall resume our building operations will be—to resume them.

Architects may by well-directed, logical arguments make clear to their clients the exact situation as it stands to-day and demonstrate the "penny wise and pound foolish" attitude of procrastination. There should be no slackening now in any measures

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that look to securing the rapid return to normal conditions, and the influence of the architect on the subject of a speedy resumption of building can at no time be better exerted.

A Comprehensive Educational Measure

PROBABLY the most comprehensive and important educational measure ever put before Congress is the bill introduced by Senator Smith of Georgia. Its main provisions make appropriations for the removal of illiteracy, the Americanization of the alien, the equalization of educational opportunities within the several States, co-operation for the promotion of physical and health education and of recreation.

A further important feature is the creation of an executive department, known as the Department of Education, with a Secretary in the President's cabinet.

The fact disclosed during the first selective draft that there were in this country 700,000 illiterates between 21 and 31 years of age, was a surprise to most citizens. It was not conceivable that in a nation where educational facilities were so generally supplied there could be so large a number of citizens in this class. The bill introduced by Senator Smith allots \$7,500,000 to be used for the removal of illiteracy.

The matter of the Americanization of the alien has now become one of large importance. The conditions disclosed in this country during the progress of the war unmistakably pointed out the fact that if we are successfully to eliminate the hyphenate we must set about the education of the alien and enact such laws as will quickly mould these people to the better forms of conditions in America. For this worthy purpose the bill provides \$50,000,000.

Our population has been made up largely of immigrants. In 1910 there were in the United States 13,515,886 persons of foreign birth out of a total population of 91,972,266; or, roughly speaking, every seventh person of the entire population was born in a foreign land. The foreign born population in our Atlantic Coast States and in our industrial States increased rapidly from 1900 to 1910. Large numbers of these were illiterates. In New York alone there were, in 1910, 406,020 foreign born illiterates—a number probably greatly in-

creased before the outbreak of the war. The total number of foreign born illiterates in 1910 was 1,650,361.

If these immigrants are to be more than just so much productive power, they must become Americanized. The first step in this process is acquiring the ability to speak and read English. Those under ten years of age should go to the public schools regularly. Other provisions must be made for the adults.

The matter of the equalization of educational opportunities within the States is one of very great importance. The success of an effort in this direction would undoubtedly be largely influenced by the creation of a National Department of Education, presided over by a Secretary with Cabinet rank. As the matter now stands the educational opportunities are largely controlled by the per capita wealth in the various States. This is very uneven. In North Carolina, for example, it is \$726.35, in Nevada \$4,135.35, and in the country as a whole it is \$1,712.77 per capita. Further, the population back of each teacher employed in the public schools is also uneven. In Iowa there is one teacher for a population of 81.52 persons, in Louisiana there is one teacher for a population of 240.01; in the country as a whole there is one teacher for a population of 163.91.

The bill before Congress provides \$50,000,000 annually "for the improvement of public schools of less than college grade, with the definite aim of extending school terms and of stimulating State and local interest in improving, through better instruction and gradation and through consolidation and supervision, the rural schools and the schools in sparsely settled localities." An equal amount by the States would provide \$100,000,000 annually. The fund is to be distributed on the per teacher basis, and amounts to \$80.34 for each public school teacher employed.

The bill provides that no State shall share in this fund unless it has at least twenty-four weeks of school in each district, unless it enforces an adequate compulsory school attendance law, and unless it provides that "the basic language of instruction in the common school branches in all schools, public and private, shall be the English language only."

This bill is one that should receive the active support of every citizen. It is undoubtedly the most important educational measure ever considered by Congress.

Structural Service

Impromptu Remarks by D. Knickerbacker Boyd at the 57th Annual Convention of The American Institute of Architects

I WELCOME this opportunity to add for consideration certain suggestions concerning the services of architects as applied to practical matters. I hope you all realize that Structural Service does not concern itself solely with matters considered to be structural in the ordinary sense of the word. The intention has been by combining with it the word service to include and describe all forms of the architect's service exclusive of those pertaining to design. From that point of view the field would be divided into design on the one hand and what we choose to call "structural service" on the other. As stated in the resolution of the board in proposing a committee which is now to be inaugurated, the subjects covered by the field of structural service would be all those relating to "the improvement of building materials, their safe and efficient application and use, and to providing for the safety, health and comfort of the occupants of all buildings."

I would like to point out a few of the opportunities which I see before us for service in connection with other organizations to render the broadest kind of a national service. Take, for instance, the formation of this body just mentioned as a federation of the building industries (later organized as the National Federation of Construction Industries by the Chamber of Commerce of the United States in co-operation with the National Association of Builders' Exchanges, the Associated General Contractors of America and other bodies). I would like especially to urge that in associating with us the various organizations of the country we should include all of those which concern themselves with any phase of the sheltering of humanity in its broadest aspect. We should, in this connection, not think in terms of materials alone, but consider them as but mediums with which to provide the best and safest kinds of habitations for mankind, and include in such federation all those who would welcome the opportunity to contribute to improvements in the character of such habitations.

But, instead, I will merely call your attention to that fact and mention a few of the opportunities as I see them for us to render the kind of national service to which I refer.

Mention has already been made in the report of the board and on this floor of some of the activities of the American Society for Testing Materials, the

National Fire Protection Association, the Underwriters' Laboratories, the United States Bureau of Standards and of some of the departments of the United States Government.

Various departments of the Government, as well as these, and other organizations throughout the country, are performing services at all times and issuing publications that are of the greatest interest and usefulness to the architectural profession and other interested citizens—and yet how few of us, comparatively speaking, realize what is being done in this direction and how we are being benefited. The point is, that being the case, should it not create a reciprocal obligation on our part to co-operate with these agencies, not alone by availing ourselves of the information which can be obtained through publications issued by them, but by participating as fully as possible in their activities and contributing to the results which make these publications possible? Should we not, as many of us as can, be members of the National Fire Protection Association, the American Society for Testing Materials, and some of the other national organizations which are working for the good of us all in the various problems connected with the sheltering of humanity?

And yet there are only about fifty members of the Institute who are members of the National Fire Protection Association. This association, originally created as an agency for the protection of property against loss by fire, has long since become one of the most potent in this country for the protection of life against loss by fire, panic and other causes inseparable from mere property considerations.

I believe that there are only three who are members of the American Society for Testing Materials. At the convention in Atlantic City last June of this society, which I attended with Professor Nolan, chairman of our Committee on Materials and Methods, there was a report submitted from the Committee on Fireproof Construction, and on the front page it was stated that the report had been prepared in collaboration with representatives from eleven important national organizations, which were listed, and in the list was not included the name of the American Institute of Architects.

Upon calling the attention of the convention to this fact, it was pointed out that Mr. Daniel Everett Waid was a member of the committee, but that he represented the National Fire Protection Asso-

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ciation and not the American Institute of Architects, because he had not been officially asked to participate. In view, however, of his being an officer of the Institute, as well as prominently identified with technical phases of our practice, the Executive Committee of the society added the Institute's name.

Surely such a society is one which our members should join in force and in which we should make our influence felt by serving, not alone on that committee, but on the many others concerned with building materials and methods.

It seems to me that we have ourselves largely to blame that we are not more generally asked to participate in these and other public service movements, for we have not heretofore made sufficiently apparent to the inclination to do so. So I am going to urge upon you all to seek the opportunity to extend the architect's service by collaborating with these important agencies throughout the country which are doing work of so much benefit to us, individually as well as collectively.

Mr. Jensen very ably pointed out what we might do to assist the United States Department of Agriculture in respect to what we have heretofore denominated minor structures of the country—farm houses and groups of farm buildings. How few of us are aware that the Department of Agriculture will provide information and furnish publications to any architect or citizen of the United States who asks for either. Many of the excellent publications are absolutely free and others may be had at merely nominal prices. It seems to me we should acquaint ourselves with the service which this department renders and the publications which it issues, and that in the case of the latter we should use as many of them as we can, should review them, and wherever possible, offer suggestions for their amplification, improvement or greater distribution and utilization.

The same department has prepared an elaborate and most interesting model of a farmstead, showing all the buildings of such a group as well as the layout of the grounds. Why should we not get in touch with the Department of Agriculture and offer our services in further developments of this idea and see that such models are given the widest circulation and recognition possible?

The same thing applies to the Bureau of Education in the Department of the Interior. That Bureau not only issues comprehensive publications relating to schoolhouses and all educational matters, but has prepared drawings for schools for the smaller communities of the country. I wonder how many of the architects know that such drawings have been prepared, that they are available to and are secured and used by school boards and communities? Why should we not co-operate with the

Government in the issuance of such drawings, if they need improvement, and, if not, at least let the department know that we are with it in this movement? It also has prepared a model for a schoolhouse for a small community, and that model is being asked for by school boards in various parts of the country and has doubtless proved very helpful to them in arriving at conclusions.

The United States Department of Labor and the Bureau of Mines have both made investigations into the subject of the housing of employees for many kinds of industry, and they have issued valuable publications relating to this subject which includes a monthly bulletin of the Bureau of Labor Statistics. I do not know how many architects are aware of these facts, or whether they have applied for any of those publications, but, if not, they should.

The Navy Department issues specifications for materials that are used in many features of building construction. These we should know of and benefit by the results of these investigations.

In these and many other ways we should recognize what is being done for us by the various departments of our own Government, and afford them the realization that, as citizens, we are utilizing the results of their endeavors and are willing also to assist them in every way we can.

Among other things we should, it seems to me, co-operate with the American Society of Civil Engineers and other great engineering societies far more than we have ever done. In recognition of the important developments in materials and appliances which they have brought about we should voice our desire and willingness to take a more active part in such work.

We should also maintain a more cordial contact with, and give encouragement and assistance to, such organizations of producers and manufacturers as are constantly and conscientiously endeavoring to improve materials and processes and bring about a better understanding of their varied characteristics.

And, at the same time, I want particularly to mention the necessity for correcting the lack of co-operation on our part with the craftsmen, mechanics and others employed upon buildings. In this connection the American Federation of Labor maintains a Building Trades Department, composed of nineteen organizations known as "Internationals," with local branches, in different parts of the country, covering the various industries that pertain to building construction. These concern themselves, among other things that we ought to know more about, with methods of safety in construction and the use of building materials.

Other organizations exist whose chief functions are to make for safety in all the industries and in all walks of life. Among these are the National

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Safety Council, the American Museum of Safety, the Workmen's Compensation Service Bureau, with the valuable work and publications of all of which we would do well to familiarize ourselves.

The National Education Association is another one of the bodies which is working for the safety of occupants in buildings and is one which has a Committee on Standardization of School House Construction and Planning.

It seems to me we should follow up this work and find what is possible for our members to do in co-operating with that committee, as its intention is, I know, to provide for the safety of the occupants of all school buildings by causing buildings to be fire resistive in construction and by seeing that adequate exits are provided, so that everyone may get out in case of panic as well as in case of fire.

The same thing applies in the matter of co-operating with the Public Health Association and with the American Hospital Association, the latter of which has a Committee on Standardization of Hospitals. No architect is on that committee, and, doubtless, but few know of its existence.

We should, it seems to me, co-operate with the American Medical Society as so effectively pointed out by Mr. Medary. There must be many opportunities for us to offer the services of the American Institute of Architects to this and other important bodies, and we should at least make the effort to find out what they are doing and determine the possibilities for collective or individual participation.

The same thing applies to the Chamber of Commerce of the United States, the national organization representing all local groups. Heretofore we have seemed to avoid connection with anything which implied a contract with commerce, but the times are changing and we must change with them.

As an instance of the lack of co-ordination in lines of similar endeavor, take the case of the conference recently called by the American Civic Association and the American Housing Association.

Certainly none ought to be more interested than architects in those allied activities, and yet these conferences were held in Philadelphia recently and they both covered ground already covered by the American Institute of Architects and by its Journal.

These associations, apparently without notice or conference, were the initiators of a movement which should have been initiated by the architects and carried out in co-operation with these associations.

Another organization with which we have interest in common is the National Association of Real Estate Boards, and there are still many others which I can not attempt to recall in the course of an impromptu summing up of such an important sphere of activities. In concluding this outline sketch, however, I would like to make mention among them of the Illuminating Engineering Society. That organization has prepared a code for the adequate illumination of industrial buildings, and is now working on other codes, one of them being for the proper illumination of school buildings. These codes concern themselves, as is perhaps not so generally understood, with the proper day lighting of interiors, as well as with their artificial illumination by various methods. Certainly the architects of the country should be more familiar with these works and become, in large numbers, affiliated with that society. This, like several of those of which I have mentioned, is not subject to any restriction as to membership except the indication of a reasonable degree of interest and the payment of nominal dues.

In suggesting these as a few possibilities in the way of an extended national service, let me emphasize once more the impression which such service would be bound to create upon other groups and upon the public at large. It would convince them that we are persons interested, not alone in matters of design, of ethics and of pleasing disposition of materials employed in construction, but that we are also essentially interested in all matters which make for the health, the safety and the comfort of the occupants of all buildings. That we are concerned with the width and arrangement of streets, the light and air admitted to buildings, their sound and fire-safe construction, ample exits for safety from fire and panic, matters of proper sanitation, and with everything else which makes for decent places in which to live and work and such facilities for play, recreation and enjoyment as shall make life worth the living.



Some Aspects of Modern Contracting

Remarks of F. E. DAVIDSON, A. I. A. Before the Master Builders of Wisconsin at Green Bay, Wis.

THE business mortality of contractors is said to be the highest of any business, and approaches the mortality of the battlefields of Europe.

I am going to assume that a twenty-five years' active experience in the construction field, first as draftsman, then building superintendent, afterward estimator, then contractor, and for the past fifteen years as architect and engineer, has offered me an opportunity of observing some of the shortcomings of my friends, the contractors, and if perchance I may offer a single suggestion that will react on their brains as a thought, which if acted on should result in conserving any part of their time or resources and at the same time conserve any part of our labor resources for the general good of society, then I shall feel that my trip to this wonderful City of Green Bay will have been of some avail.

Based upon observation, it is my firm belief that the average contractor is ill-equipped successfully or efficiently to perform his functions in our business world. His training has not been sufficient. We have no colleges or schools of contracting. The average contractor enters business, not only with insufficient training and preparation, but with inadequate capital, and often the only asset he has when entering business life is an acquaintance with some architect's superintendent, which permits him to secure a set of plans and specifications and submit a bid as a full-fledged, financially responsible and experienced contractor; and he has been able to get away with it. Why? Because the average owner will usually consider only the lowest bid, because forsooth the bonding companies are ever ready to write a bond on anything and for any purpose.

Everyone knows that contractors and material dealers are children in arms when considered as business men. Else why should our State legislatures provide lien laws to protect their credits, a protection not given to any other business on earth?

I will make the positive statement that our lien laws and our custom of exacting surety bonds has done more injury to the building business as a business than all other things combined. I have often condemned the system of surety bonds as a species of organized legal graft. The price of a bond is fixed by the mortuary business tables of the insurance companies and anyone with the price to pay can secure a bond for any purpose and for any amount.

As to our lien laws, every mechanic's and material man's lien law should be wiped off our statute books and the building business put on the same footing of common honesty and fair dealing that is the rule of conduct in any other successful business.

Is it not time that you as contractors ceased to be regarded as wards of the State and unable to conduct your own business? Today the law views you as a class of men unable to judge credits, or even able to collect your own accounts or to pay your own bills, and to aid the great gamble allows the bonding companies to speculate on your ability to conduct even a simple financial transaction.

One of the vital questions which our nation must answer and which you individually and as an organization may do your part in answering, a question that is now and in the next few years will be one of the most important that any people have ever been called upon to face, is the great problem of conserving the man power of the nation.

Human life has always been considered a cheap commodity, and during the years when the tide of immigration set to our shores, but little regard was paid by industry to safeguarding human life and limb. Society overlooked the fact that the maiming or killing of an industrial worker was a crime and that it must thereby carry an additional burden for every worker that was killed or injured. It also overlooked the fact that every worker injured or killed reduced the available man power of the nation and directly decreased our capacity for production and added as well a further burden on society for caring for the injured and for the support of the family of the one injured. But again the State has recognized that what is particularly true in the building industry is true to an extent in all industry, that industry and society were not adequately and directly caring for those injured and for the families of those killed. Therefore the bonding companies were permitted to gamble on the chances of your employees being killed or injured and on your inability so to manage your building operations as to prevent the loss of life and limb. And what is the result? In many States we find compulsory liability insurance laws, and the rates charged by the liability insurance companies for insurance in the field of building is higher than for any other industry, proving conclusively that contractors as a class are less able to protect their own interests, as well as the interests of the community, than any other class of men. Every preventable accident is a

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direct loss not only to society, but to the employer. The expense of the labor turn-over is increased, the loss or damage of materials, the cost of reorganizing the working force, the expense of replacing and training of men to replace those injured, on the occasion of a serious accident, all represent a financial loss to the contractor that is not covered by his insurance policy and that is a factor of cost not usually considered in preparing estimates on work.

Why is the percentage of accidents, and the corresponding cost of insurance, higher in the building industry than in any other? In Wisconsin the ratio is about four to one and varies but little in the other States. It cannot be that our building mechanics are less intelligent or less skillful than the workers in the railroad yards or the mechanics in a rolling mill. The human element will be found the same whatever the line of work considered. Therefore, why the four to one ratio of accidents on your work as compared with all others? I will venture the suggestion that the average contractor was improperly trained for his calling. He is perhaps an ex-carpenter boss, or a bricklayer, or a plumbing foreman whose wife has inherited a little money and he concludes to become over night a full-fledged contractor; and if he is lucky, he gets away with it. He is starting his business life, no better equipped than the very great majority of his competitors. By the law of averages, a few at least succeed in making money, but he continues to conduct his business along the lines of the same old gamble, instead of organizing to reduce costs and increase efficiency; he continues to gamble on the chance of a profit on work in which to him there are so many unknown quantities that the loss of a few lives is too small a matter to be considered; for has he not done his duty to society by buying liability insurance? He overlooks the fact that his neglect in doing all that might be done to prevent accident is not only a direct loss to himself and to the community, but affects the insurance rates placed on his class of work, which every man in a similar capacity is compelled to pay.

No man can live by and for himself alone. Our each and every act affects the lives of all our fellows. It is the duty of every contractor to do all possible to conserve man power. Let each member of this society read the astonishing results secured by some of the largest contractors in reducing the number of accidents on their work.

The contractor who is able to maintain a high morale in his organization is able to do work cheaper and better than the contractor who takes no interest in his workmen. The really successful contractor is he who knows men, who knows their problems and can sympathize with them in their troubles, who

considers even the laborer on the job as his partner in business, and recognizes that the time has arrived when it is better to consider labor as a comrade than as an enemy. A contractors' association such as yours will do well if it heeds the "handwriting on the wall" that labor has the right to participate in the management of construction and that the right of organized and collective bargaining has been established for all time, as one result of the world's war. Co-operation was the great lesson taught by the war. You as contractors and we as architects must recognize that the co-operation of contractors, workmen and architects is necessary to give perfect service to those who employ us. Let me say further that the contractors of the future will be compelled to give a service not dreamed of in your philosophy. I expect to see the day when contracting, instead of being a matter of barter and exchange, will develop professional aspects and that when you sign a contract you will be expected and compelled to furnish service to the owner in addition to delivering to him so many carloads of brick or so many feet of lumber assembled in a certain way.

The successful contractor of the future will be a better business man than he is to-day. He will not only know how to keep cost accounts, progress reports, etc., but he will also learn how to reduce the labor turn-over and prevent 85 per cent of the accidents now chargeable to building operations.

In conclusion let me say that if you have no brains, hire some. Brains are the poorest paid and the scarcest commodity in the world today. Organize your work, give your employees an interest with you or at least see to it that they are interested in your welfare. Prove to them that their best interests are also your own. Increase the morale of your working force. Don't regard your competitor as an enemy but as your brother. Talk over your problems with him. Remember that your calling in life is an honorable one. Jesus Christ was a carpenter. Remember that he who can devise a means of reducing costs is a benefactor of his race. Remember that every preventable loss, whether in materials or man power, is a national loss, and above all, remember that whatever you may do affects your neighbor, that in the end his interests are your interests, and that as an organization you can have no ideals not possessed by you and your associates as individuals. Let your association set its standard so high that you as an individual will ever be compelled to look up to the standard you as an association may set, and bring to your business an idealism and an expression from the innermost heart of life. Bring to your association the best that is in you; ever remembering that the good of one is the good of all.

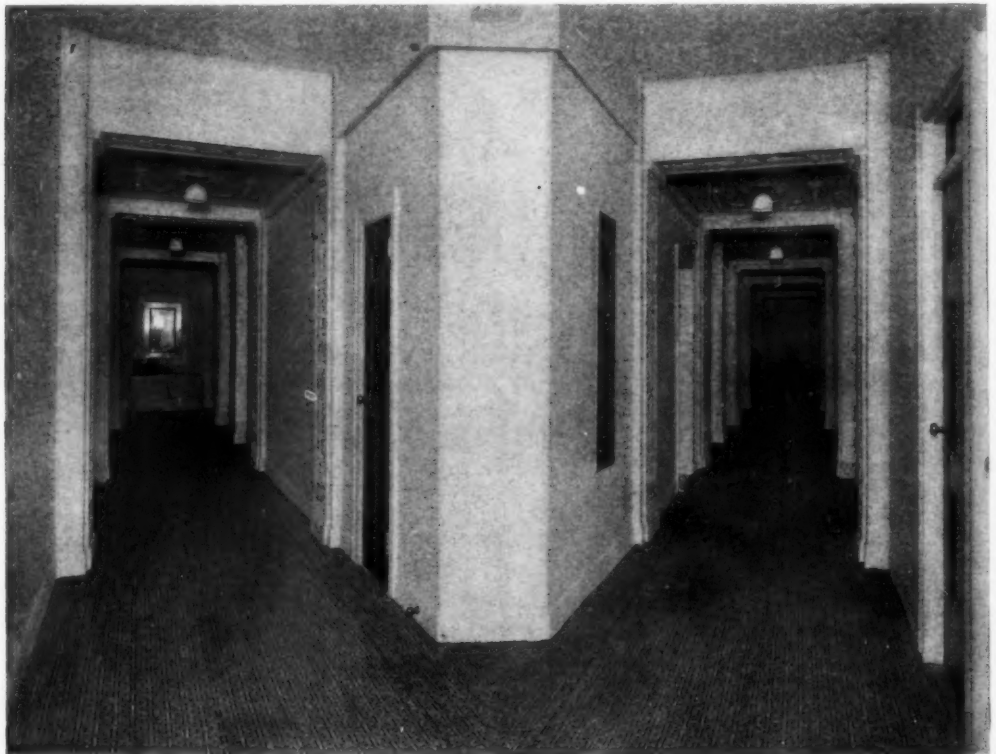
Hotel Lincoln, Indianapolis, Ind.

RUBUSH & HUNTER, *Architects, Owners and Operators*

HOTEL LINCOLN, illustrated in this issue, is situated at the juncture of Washington Street and Kentucky Avenue, in Indianapolis, on a lot triangular in shape, measuring 150 ft. on Washington Street and 187 ft. on Kentucky Avenue. Since this location is in the very business center of the city, it was imperative that the design and plan should be one wherein there might be

low granite base carrying ivory terra cotta up to and including the third story. Above this story there is used a rough textured brick in variegated buff and light brown tones laid in brown mortar with raked joints. The result of this happy combination of materials has been to produce an extremely soft and pleasing texture.

As it is intended to extend this hotel an additional



INTERSECTION OF CORRIDOR ON LOUNGE FLOOR

located upon the ground floor a maximum number of shops in order that the income-bearing possibilities of the project might be realized to the fullest extent. This location of the business premises necessarily curtailed the size of the lobby, café and other features usually to be found on the ground or entrance floor of the modern hotel, but, as will be seen in the illustration, in no wise retarded the opportunity for making these features architecturally attractive. As will be noted, the exterior is one of the simple Adam design with a

eight stories at some time in the future, the present cornice is but temporary.

The lobby, as will be noted in the plan, may be approached from both Washington Street and Kentucky Avenue through vestibules whose walls and arched ceilings are of the same terra cotta as used on the exterior, decorated in low relief. The warm tones produced are of a most satisfying nature and accent the domestic atmosphere that is a pronounced feature of the interior of this hotel throughout. The same general treatment is to be

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seen in the café and coffee shop. An unusual feature in the lobby is the admission of daylight through a skylight through an open court extending up through the lounge on the second floor. It materially emphasizes the size and dignity of this important space.

The lounge on the second floor extending entirely around this open space has many unusual features of planning to allow social intercourse either in small groups or to avail of the entire space. This room has a vaulted ceiling decorated in the Adam style. This decorative treatment, in fact, is to be found throughout all the public rooms of the building, and has been successfully carried forward by the introduction of well selected delicate greys without accenting the high lights which emphasize in the most satisfactory way the numerous Wedgwood effects that are introduced.

The upper floors have been planned to meet the requirements of the usual social and business activities and each room has been especially planned for the arrangement of the necessary furniture and the avoidance of crowding so often to be noticed in hotel sleeping rooms.

The following description of the interior fittings of this hotel is taken from a communication received from the architects and indicates the very large amount of thought and personal supervision that has been given to produce a result in which the city of Indianapolis very properly takes a considerable pride.

This description is of interest in view of the fact that Messrs. Rubush and Hunter are not only the architects of the hotel, but also the owners and control its management. They state:

Each bedroom has its accompanying bathroom. Solid porcelain recess bath tubs, vitreous china lavatories, flushometer water closets, solid porcelain

recessed shelf over the lavatory, enameled rod towel shelf, recessed grab rail and soap dish over the bath tub, recessed white glass toilet paper holder, plate glass mirror, white porcelain shaded light, tile floor and wainscot, circulating ice water, ventilation and last, but not least, a radiator to keep the room warm for the man who likes to sleep in a cold, well ventilated bedroom.

The basement is taken up with the public toilet room, barber shop, tailor, carpenter shop, store rooms, boiler room, engine room, helps' dining rooms, and the inevitable kitchen with its many ramifications little thought of by the public, but a composition of mad detail to the architect in its layout and proper equipment. After you get it all complete and view the results with satisfaction, you are thrown to the depths of despair when you turn loose the steward, French chef and bakers and the thousand and one experts who are to occupy this space, and learn that absolutely nothing is right and that only a first-class bonehead could make such a mess of a kitchen. But you regain some of your courage when you lose your first chef and his corps

of experts and find that the new gang would have planned the whole thing in a manner entirely different from the original chef. After you recover from the onslaught of the kitchen dignitaries and breathe a sigh of relief, you find you have only jumped from the frying pan into the fire when you come in contact with the housekeeper. Then you find how little you know and how poorly informed the sources are from which you obtained your information as how to furnish a hotel bedroom, but thank goodness all of these are only made up of the personal equation and your real happiness comes when you hear the expressions of delight and satisfaction of the guest which more than repays you



BUST OF LINCOLN IN LOBBY

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for the untiring efforts and hard work you have injected into the enterprise.

The furniture throughout the public portion of the house was selected not only to meet the severe service but to harmonize with the architecture in both design and color and at the same time furnish these portions in an inviting and homelike manner.

The bedroom furniture was made in black walnut from our own designs, harmonious with the style used throughout the hotel. The dressers have one panel fronts with the veneer laid at an angle of about 60 degrees, running from the lower corners meeting in the center. This lends a very attractive feeling and refinement. The mirrors are large and stationary. The drawers are provided with wood knobs, mahogany bottoms and all corners are slightly rounded to prevent splintering caused by the rough service they are required to withstand. All beds are veneered in the same manner as the dresser fronts and the footboards are low, being but two inches above the top of the dressing of the bed. The chiffoniers are designed to match the dressers and have the customary sliding drawers, etc. The desks are provided with a drawer with a drop front, thus providing writing space without removing anything from the desk top. Desks, chiffoniers, dressers and night stands have glass tops.

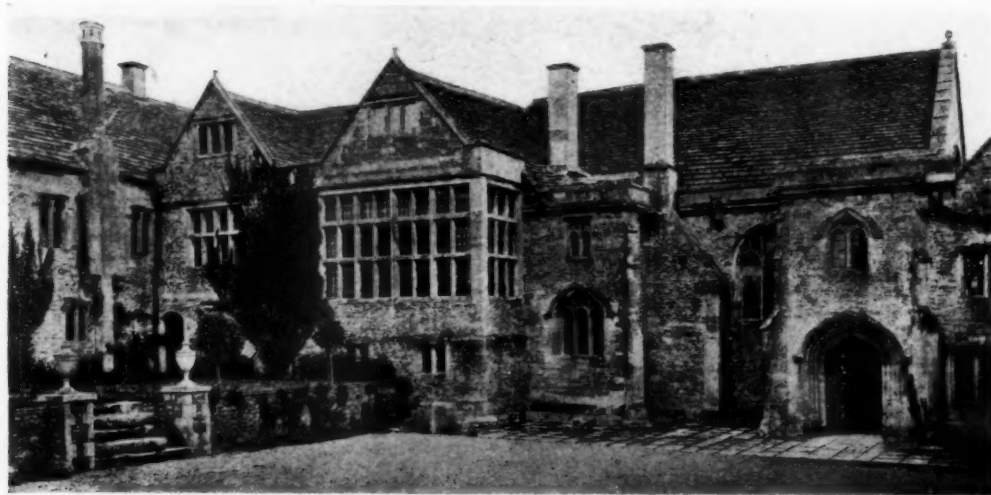
The grip or handbag stands have been uphol-

stered with carpet of the same material and design used on the floor. This makes it possible to use it as a stool in case the room is temporarily crowded, thus avoiding the delay caused in sending for an extra chair.

The rooms commonly used by male transients are equipped with a chiffonier and desk combined, a drawer being provided to serve as a desk, the front dropping down as on the regular desks. This makes it possible to dispense with a regular desk in these rooms.

Each room is amply provided with chairs, including the destructive, yet necessary, rocker; also the little things to complete the furnishings, and sanitary drinking cups; in fact, nothing is left undone to make the rooms complete and homelike, even to the use of light figured wall papers, tinted ceilings and pictures which are different.

Now, if you haven't had experience sufficiently varied to satisfy you in the planning, designing and furnishing of the hotel, become interested in its operation and you will no doubt fill your cup to running over in endeavoring to satisfy those of the traveling public who own the room, as well as the entire hotel, as soon as they register. But you will also find there is another portion of the traveling public who appreciate your efforts and do not hesitate in expressing their pleasure.

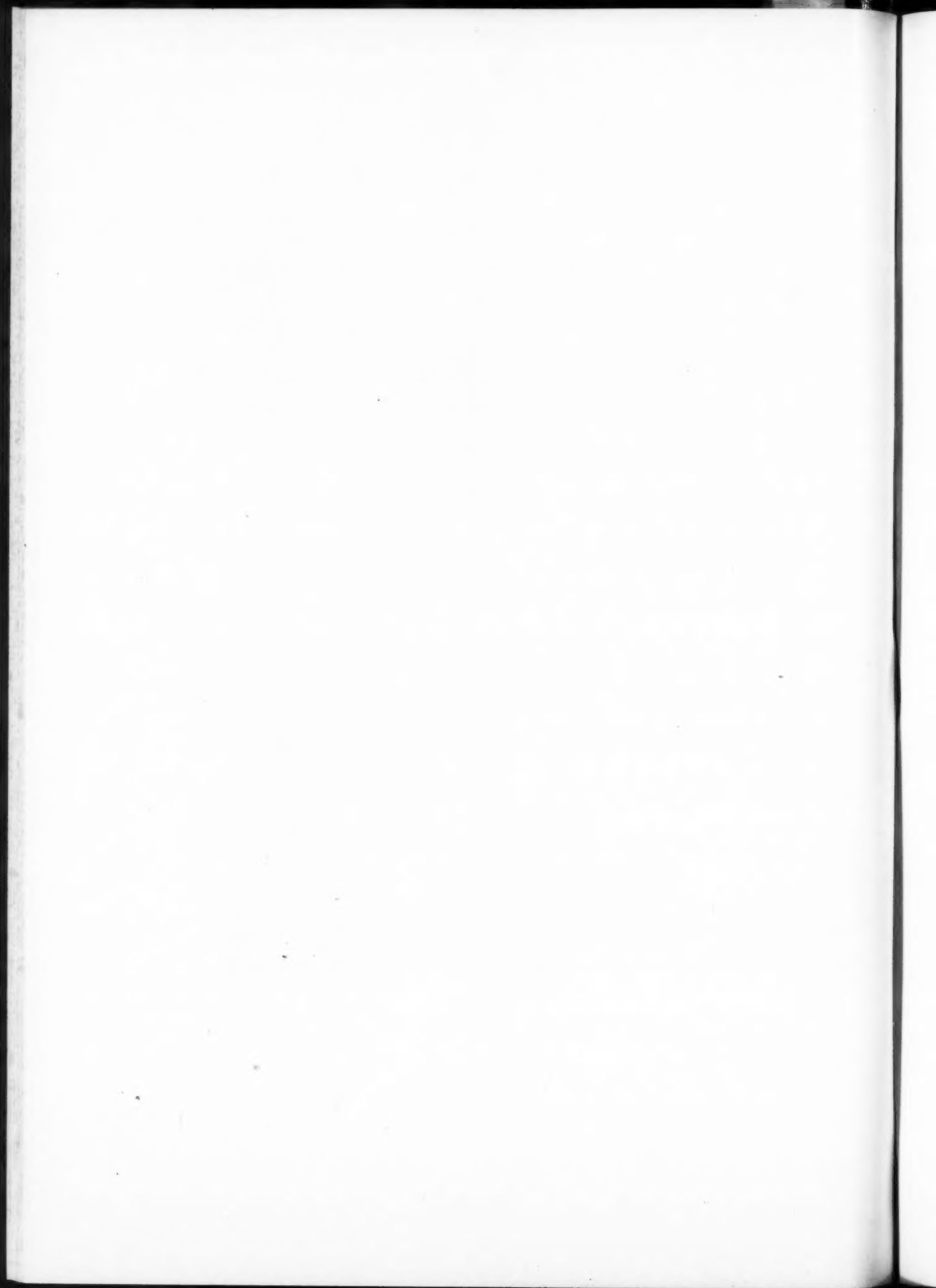


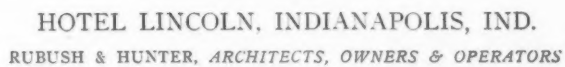
SOUTH WRAXALL MANOR HOUSE



PLATE 51

HOTEL LINCOLN, INDIANAPOLIS, IND.
RUBUSH & HUNTER, ARCHITECTS, OWNERS & OPERATORS





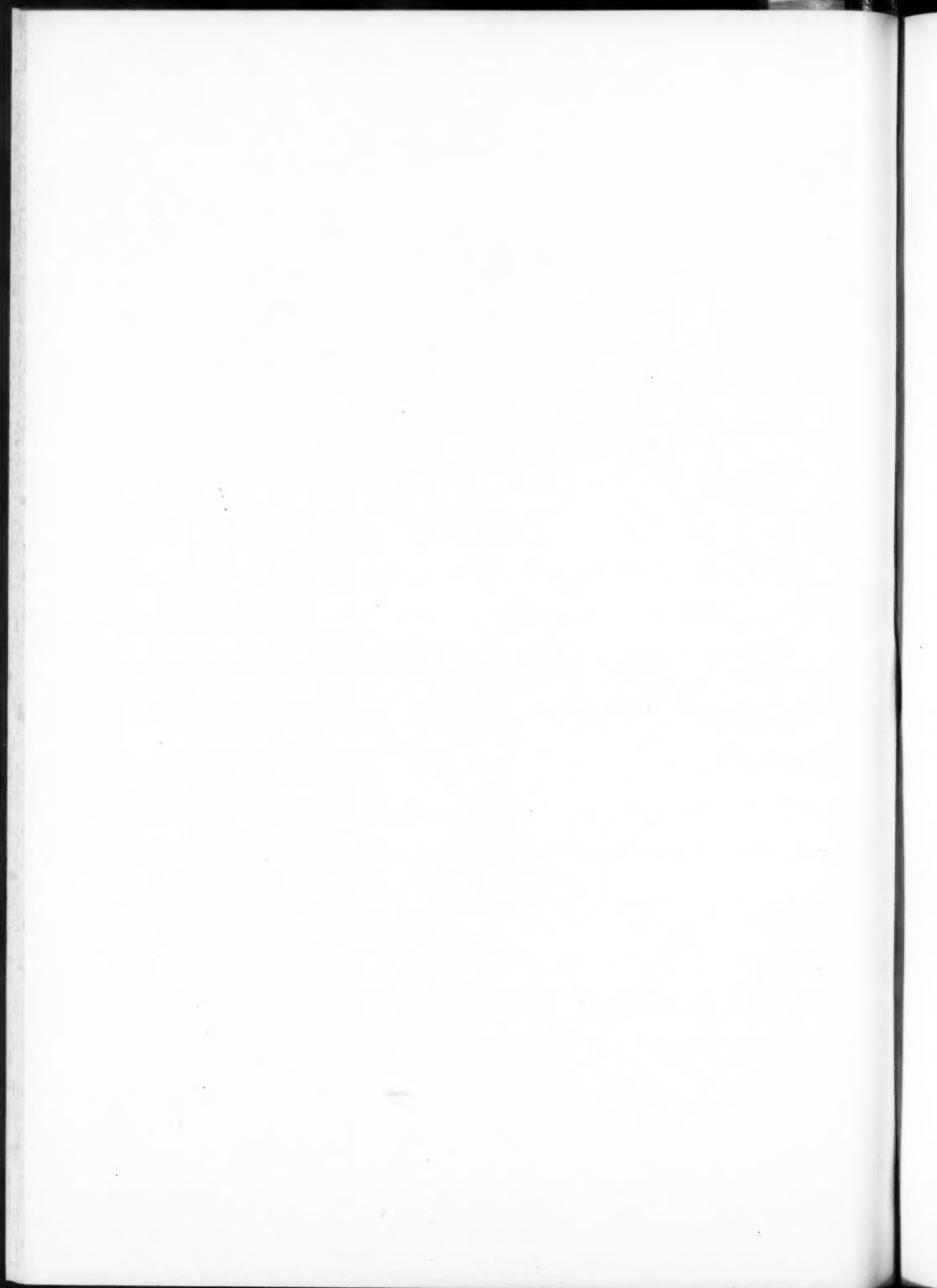
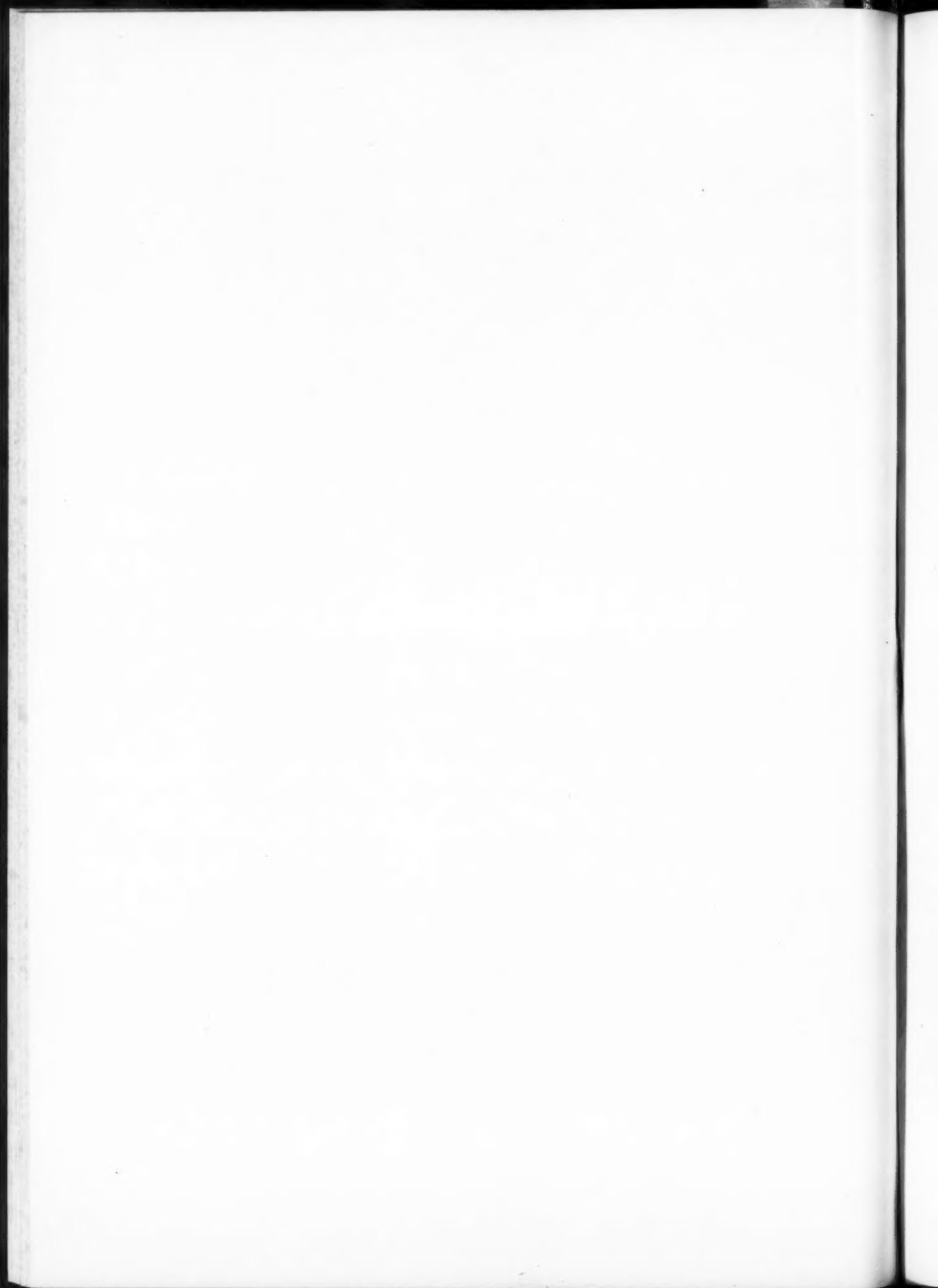




PLATE 53



HOTEL LINCOLN, INDIANAPOLIS, IND.
RUBUSH & HUNTER, ARCHITECTS, OWNERS & OPERATORS





THE LOUNGE



PLATE 54

BANQUET ROOM

HOTEL LINCOLN, INDIANAPOLIS, IND.
RUBUSH & HUNTER, ARCHITECTS, OWNERS & OPERATORS

100



THE LOBBY

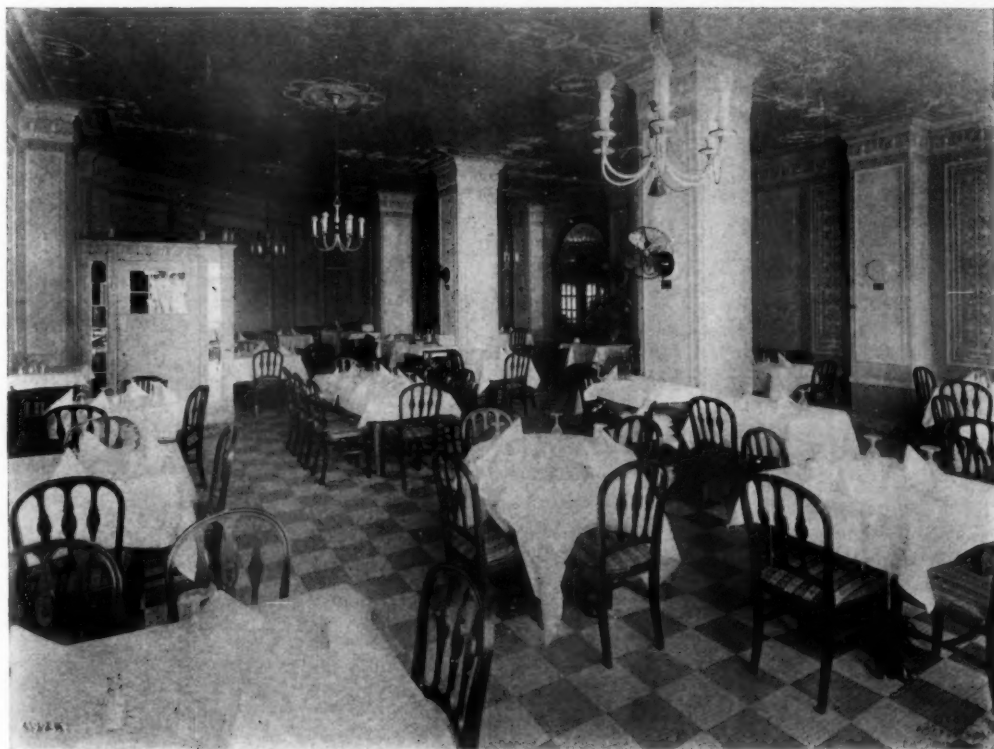


PLATE 55

MAIN CAFE

HOTEL LINCOLN, INDIANAPOLIS, IND.
RUBUSH & HUNTER, ARCHITECTS, OWNERS & OPERATORS

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Financing the Expected Boom in the Building Industry

Starting of First Apartment House Project in New York City in Many Months Indicates
Absence of Any Federal Bar to Building Loans and Encouragement of Widespread Construction—Mortgage Money for New Buildings Becoming
Easier with Stabilizing of Material Prices at Lower Levels

Part III

With the announcement that the first apartment house project to be undertaken in New York City in many months is to be started shortly, evidence is making itself strongly felt that the hesitancy heretofore held by mortgage interests and lending institutions in freely loaning money for construction work has been removed. This release of loans by the banks is due mainly, it is believed, to the statement made by Carter Glass, Secretary of the Treasury, who, when he learned that money from the loaning interests was not forthcoming because they were saving it for the Victory Loan in April, as they would be the primary source of flotation, said that the public will be just as ready patriotically to absorb that loan as it was to subscribe to the others.

All Government authorities are bending every effort to encourage building construction, including the flotation of loans on both public and private construction. Other factors that have put the banks and larger insurance companies at ease, are statements from the Department of Labor. One was from the Assistant Secretary, Felix Frankfurter, which said:

"As far as the Department of Labor is concerned, we are making every effort to stimulate the development of necessary public works by the States and cities during 1919. We shall shortly know the programs of 500 cities. We can already estimate that the amount of public work will be valued well above the normal amount of \$600,000,000 per annum, and we have every confidence that both public and private work will go forward in large volume.

"Furthermore, it is the definite policy of the Government, as announced in the President's message and as followed by all departments, to set in motion all the necessary public work in order to supply some substitute for the large Government orders which have been cancelled.

"On behalf of the Secretary of Labor, I hope you will bring home to the building trade his desire to assist it in any way in his power, and that the industry will feel able to do its part in providing employment for large numbers of returning soldiers and former war workers in 1919."

Acting at the request of the Secretary of Labor, who urged governors in every state in the Union

to stimulate interest in public works and civil construction, Governor Calvin Coolidge of Massachusetts has announced the appointment of a special committee composed of representatives of labor and capital to forward this purpose. In a statement issued to the people of Massachusetts advising them that the State does not intend to be the "sport of chance," but the "master of her destiny," Governor Coolidge said:

"The material resources of the community must be used for the benefit of the people of the community. Such use is the only thing that gives them value, and the only warrant for their existence. Unless this is done by private enterprise it will have to be done through the taxing power and otherwise, for the purpose of relieving the suffering caused by unemployment. Every facility is at hand for an era of great prosperity. What is needed is the courage to act. In the exhibition of that courage the Government agencies must take the lead."

Further evidence of the spirit of co-operation that alone can result in a widespread construction movement all over the country, on the part of the building interests, has been shown in the voluntary cutting by New York material men of the price of Portland cement. The new level shows a lowering of 20 cents a barrel, delivered on the job, although no cut whatever was made in the wholesale quotations. Brick interests, with no stocks on hand and an increased demand, resisted pressure to raise prices from the present \$15 level. Roof slate manufacturers have adopted a stabilizing scale of prices to conform to the new schedule. Other material prices showed hot air registers to drop 25 per cent; tarred felt showed a 50 per cent per hundred weight concession; electrical porcelains face another drop of from 5 to 10 per cent; rubber-covered wire is obtainable at lower levels. Changes have been made in pipe discounts in favor of the consumer.

The removal of another factor instrumental in holding back building projects came in the announcement from Washington that the quantities of available building materials on hand, due to the cancellation of war construction contracts, are not to be distributed so as to upset market conditions. Many

were expecting that vast quantities of materials would be dumped on the market at below market prices, but the official statement was that the stock, with the exception of lumber, was very small indeed. So instead of being able to pick up supplies cheap, as many had hoped, what stocks there are will be rapidly absorbed into other Federal departments for Government construction work.

Stabilization of lumber prices, too, may be expected, even at the cost of a decided shrinkage of profits, for there is a distinct tendency to give equilibrium to the consumer. To-day \$50 buys \$20 of lumber at ante-war prices, but until the cost of labor for handling at the mill is made lower than \$10 per 1000 ft.; until the lighterage charge of \$2 to \$3 is removed by restoring the free lighterage system prevailing in this harbor before the war; until the high freight rates of \$3 to \$7 per 1000 ft. is reduced by supplementing war time rates for peace time tariffs, and until the cost of handling at retail yards is returned to the pre-war levels instead of the \$12 to \$15 per 1000 ft. costs now prevailing, any reduction in price to the consumer must come out of the profits of the dealer, who, in order to co-operate in the general price conciliation that is being made in every department so as to get construction work started, is now operating at cost and in some cases below cost.

A new plan by which delivery cost is covered in the revised schedules for the New York district upsets a custom more than half a century old—one that had originated back in the days before the telephone was developed, when it was necessary to have a general meeting place where dealers could gather and buy and sell according to prices posted for the day. Heretofore, all prices have been based upon a wholesale scale, but in the future all building material prices will cover delivery at the job, if it is located in any of the boroughs of New York, with the exception of Richmond. It is planned to bring Newark and Jersey City within the zone of unification, so that contemplated building operations can be estimated with greater uniformity.

The new plan facilitates new construction projects at a time when many owners of real estate contemplate improvements, provided they can be assured of a reasonably regular market. It will be necessary for the present, however, to quote common brick from the Hudson, Raritan and Hackensack at the wholesale price. Street traffic congestion is such an item in the cost of the brick in building as to make it impossible to change the plan.

It is possible to figure the delivered quotations for any particular site by adding to the wholesale price, which today is \$15 a thousand, dock New York, cost of carting and handling 10 per cent; the "cost of carting" depending upon which zone the job is

located in and the distance of the site from the unloading piers that are available. Traffic conditions in certain parts of lower New York and Brooklyn are such as to make it more costly to cart a thousand brick across Manhattan Island at any point below Canal Street than it costs to bring the brick a hundred miles down the Hudson River.

As a part of the preparation being made for building distributors of Portland cement, plaster, plaster-board, plaster block, second hand brick, and hollow tile have already listed their materials under the new price quotation system. There are cases where slight advances over listed quotations have to be made from time to time where the job site is remote or the hauling conditions particularly bad.

The building material situation this winter has been given a new aspect because of the long period of open weather. This has affected conditions by allowing the brick plants to continue operations, and the crushed stone quarries are expecting the biggest winter's business on record. Glass production has been resumed and the Hudson River is open for navigation once more. All of which goes to make the probability of higher prices more remote.

At the same time, a leading contracting firm of Philadelphia, with nearly a century's experience in the sale of building materials in that city, brings forth statistics from its business records showing that not within fifty years—in fact it is almost safe to say one hundred years—have material prices reached the figures obtaining at present. It is very interesting to note from the records that in 1866, immediately after the close of the Civil War, cement was worth \$2.00 a barrel, calcinated plaster \$2.50 a barrel, Roman cement \$6 a barrel, fire clay \$2.50 a barrel, lime 30 cents a bushel, plaster hair 30 cents a bushel and fire brick \$48 a thousand.

Current prices for similar materials prevailing throughout 1918 and largely at the present time are: \$3.27 a barrel for cement, \$4 a barrel for calcinated plaster, \$3 a barrel for fire clay, 44 cents a bushel for lime, 30 cents a bushel for plastering hair, and \$47 a thousand for fire brick. In 1916 cement sold for \$1.65 a barrel, calcined plaster at \$2.05 a barrel, fire clay at \$1.50 a barrel, lime at 20 cents a bushel and plastering hair at 28 cents a bushel.

It will be noted that 1918's prices are in many instances from about 30 to 60 per cent higher than those prevailing in 1866, and in some cases 100 per cent above those for 1916, the year before the entry of the United States into the world war.

It is a curious coincidence, however, that plastering hair sells to-day at the exact figure prevailing in 1866—30 cents a bushel.

The fact that prices to-day are higher than at any time in the past fifty years is traceable, no doubt, to the increased cost of labor and production. While

THE AMERICAN ARCHITECT

it is true that labor-saving devices have been perfected and new sources of raw materials opened, still the greatly increased demand and amount of production bring with them an increased amount of labor, which is not as cheap as it was in the days following the Civil War.

An optimistic outline anticipating a healthy revival of building by early spring has been given by O. W. Ketcham, president of the Philadelphia Master Builders' Exchange, in his report to the association which discusses future business and prospects for 1919. In substance he said:

"Already there exists strong indications in this direction. Many inquiries are being made for materials for structures of different types.

"While the prices of building materials have as yet shown no material decrease nor can such be expected for some time to come, there nevertheless seems to prevail among the builders a strong desire to start operating. The percentage of advance in

pricing building materials with few exceptions has been so slight as to permit of very little, if any, reduction for the coming season.

"Many plants making bricks and other materials closed during the war period will, as soon as conditions warrant, resume again. As yet there appears to be very little common brick or face brick piled for future deliveries, but with the resumption of business, there will, no doubt, be a plentiful supply on hand to care for any early demands. But as this stock will have to be accumulated under present conditions which have not materially changed from that of two months ago, the selling conditions must remain about as at present.

"Building materials in comparison with other materials of different kinds have shown a lower percentage of increase in selling prices than any other. No reduction can be expected with prices fixed for future deliveries. It seems to be an opportune time to develop plans and prepare for spring operation."

Current News

Treasury Department Calls for Money

A large oversubscription of a new issue of Treasury certificates of indebtedness is necessary in view of the fact that banks have been informed that Government expenditures are still running at an extraordinarily heavy rate.

The Government's outlay in December was in excess of \$2,000,000,000, and is said to be continuing at this rate, although signs are not wanting that the pressure is gradually easing. The matter of financing the Government's immediate requirements was understood to be the subject of a lengthy session of the Money Committee of the banks of the Federal Reserve Bank recently.

Italians Place Big Southern Pine Order

The purchase by commissioners representing the Italian Government of 3,500,000 ft. of yellow pine timber is an interesting and highly significant feature of the export lumber market that has developed recently. It is noteworthy not only because of the size of the order but because of its indication that post-war lumber buying for European countries may be handled largely by government commissions which may deal with organized central agencies in

preference to making purchases direct from individual mills.

It is not officially settled that this method will be adopted, but in addition to the Italian transaction with the Southern Pine Emergency Bureau, there have been intimations that France and England will buy lumber in this country through the "high commissions" which handled their war-time purchases. The important question of ocean tonnage, which has troubled students of the export market more than a little, may be disposed of if the business is handled upon the lines indicated, sellers making delivery at American ports and buyers providing cargo space.

U. S. to Finish Philadelphia Houses

Appeals from Philadelphia have resulted in the Government's decision to complete the construction of the 700 houses adjacent to Thirteenth Street and Oregon Avenue, that city. The operation is now about 50 per cent completed. Reports that the Government would not finish the operation because of the end of the war caused the Philadelphia Housing Association and other bodies to protest to Washington. It was argued that the completion of the houses would alleviate the lack of housing facilities. The dwellings, which are being erected under the direction of the United States Housing Corporation, will be leased to navy yard employees when completed.

THE AMERICAN ARCHITECT

Results of Fuel Saving by Restricted Industries

Statistics of the United States Fuel Administration from reports made by 4,000 clay products companies, representing practically the entire industry, of what each one actually saved during the first six months of 1918 show:

	Net tons
Fifty per cent curtailment—Brick, terra cotta, roofing, floor and wall tile, and sanitary ware...	1,218,000
Twenty-five per cent curtailment—Hollow tile, drain tile, and sewer pipe.....	603,000
Fifteen per cent curtailment—Stoneware (except chemical)	25,000
	1,846,000

Letters received by the administration tell of the lessons of economy through more efficient methods learned by the companies, which will be continued in most cases, although restrictions have been lifted.

Engineering Societies Employment Bureau

The employment bureau maintained by the four national Societies of Civil, Mining, Mechanical and Electrical Engineers has issued a statement to state and municipal authorities, corporations and individuals, who have need now or expect to have in the near future, for the services of professional engineers, asking them to communicate their wants.

As many engineers who have been serving in army or Government capacities during the war are about to be released and returned to civil life, it is the desire of this bureau to place such men in touch with contemplated projects as early as possible. In the present emergency the demand for engineering services and the supply has not as yet been so thoroughly co-ordinated as to afford the best results. It is with a view to meeting these conditions and laboring to correct them that this very useful bureau has been formed.

The bureau may be addressed at the Engineering Societies Building, 33 West 39th Street, New York.

Labor Takes a Reasonable View

According to advices that have reached the Department of Labor the attitude of labor toward new building projects is thoroughly reasonable and conciliatory. An instance has just come to light at Atlantic City, where a \$3,000,000 hotel is under construction, which is encouraging for builders. It seems that electrical workers employed elsewhere in Atlantic City were receiving 87½ cents an hour, but the rate of pay on the hotel was only 75 cents.

The men felt that they should receive the prevailing wage, and notified the construction company to that effect.

For a time the controversy threatened to halt work, but when the men understood that the company had taken the contract based on less than 75 cents an hour for electrical workers, and would lose heavily if they insisted on the 87½-cent rate, the men willingly returned to their jobs and agreed to stick to the 75-cent-an-hour rate.

Proposes \$1,000,000 Bridge as Memorial in Maine

Legislation to provide for the erection of a \$1,000,000 bridge on the site of Martin's Point Bridge at Portland, Me., on the State highway leading to Brunswick, to be known as Maine's Memorial Bridge, has been introduced in the Maine Legislature by Senator Howard Davies of Yarmouth. The purpose of the measure is to commemorate the "mighty work of the men and women who went from Maine and participated in the world war." It is proposed that the Federal Government appropriate \$600,000 toward the expense and the State \$400,000.

Frank Duveneck

Frank Duveneck, for fully forty years regarded as one of the most gifted artists of the world, died last week at his home in Cincinnati, Ohio. He was seventy-one years of age. Until the past six months, when he was stricken with illness, he had always been an active figure in both American and European art.

It was John Singer Sargent who said at a dinner in London more than twenty years ago that "after all is said, Frank Duveneck is the greatest genius of the brush of this generation."

Duveneck was a Kentuckian, born in Covington in 1848, of Dutch ancestry. Since the death of his wife, Elizabeth Booth Duveneck, several years ago in Florence, Italy, Duveneck has been an instructor in the art school at Cincinnati. He first studied art in Munich under Wilhelm Van Diez. His exhibition at the Panama-Pacific Exposition three years ago won for him a special gold medal, in recognition of the great influence he had exerted in the modern development of American painting. When he first came back to this country on completing his studies abroad he startled New Yorkers by his broad and bold technique, which was at direct variance with the detailed motif of the Dueseldorf school, after which the early Americans patterned their efforts.

Iron Exports Held Up

Pending action by the United States Shipping Board on the question of cutting ocean freight rates to a level where offerings may be made in foreign markets which will be at actual competitive figures, iron men report that export of their product is being held up. There have been some tonnages shipped where the demand had been for immediate delivery regardless of price, but this has been in the minority. The trade is reported to be in a splendid position to sell iron just as soon as the foreign rates are cut so that the foreign market prices may be scaled.

Southern California Chapter, A. I. A.

The one hundred and twenty-second regular meeting of the Southern California Chapter A. I. A. was held Jan. 14, 1919.

As guests of the Chapter were present: Lieut. W. H. Perdue, of the U. S. Engineering Corps, and Mr. John Bowler of the *Southwest Builder and Contractor*.

Under "Communications" the following letters were read:

From Mr. E. C. Kemper, executive secretary of the Institute, stating that Mr. Robert D. Farquhar of this Chapter had been selected for fellowship in the Institute, requesting that the Chapter confirm the nomination. It was moved by Mr. Krempel, duly seconded and carried, that Mr. Farquhar's name be ratified, and the secretary of the Institute be notified accordingly.

From the secretary of the Municipal League, Los Angeles, to the effect that the League had addressed a resolution to the City Council relative to the Hancock Grant of the La Brea Oil Fields to the County, copy of which resolution accompanied the letter. Summarized, the paper stated that the League took the stand of approving the retaining of the Hancock gift by the county, but suggesting that new conditions be mutually agreed upon by Mr. Hancock and the Board of Supervisors relative to the investment of a sum for improvements to the said oil fields, with the appointment of a commission to supervise the work. It was moved and duly carried that the Chapter endorse the resolution, notifying the Municipal League to that effect.

The secretary read the recommendation of the executive committee that the Medal of Award for Meritorious Architectural Work for the past year be passed by owing to the war and the general dullness in building. The recommendation was accepted.

Under the head of "Papers and Discussions" the president introduced Lieut. W. H. Perdue, who addressed the members on his experiences in France during the war, at the conclusion of which the Chapter's thanks and appreciation were expressed.

New York Society of Architects

The New York Society of Architects held its regular monthly meeting Jan. 21, 1919.

The meeting was well attended, several new members were elected, and applications for membership received.

It was brought before the meeting that persons are making unlawful use of the title of Architect. The names of these persons were referred to the Committee on Registration of Architects, with instructions to investigate, and if the facts warranted to lay the matter before the proper authorities for prosecution.

A paper by Mr. F. C. Zobel was read disapproving of the proposed method of stimulating the building industry by encouraging the construction of public buildings, and asking that means be adopted to revive private construction of buildings which will produce revenue rather than buildings which are an expense to the community. After considerable discussion it was decided, on motion of Mr. John P. Leo, to bring the matter before the next meeting for further discussion.

Is Willis Polk An Architect?

Is Mr. Willis Polk really and legally an architect?

This problem is liable to become an acute bone of contention between Willis and the State authorities at an early date.

There is a State law which compels every practicing architect to pay a license fee of \$15 a year, or describe himself as an unlicensed architect.

When the tax collector went to Willis Polk's office for his license money, Mr. Polk received him and said:

"Why do you tax me? All the architects here say I am not an architect. What is my word against theirs? Let the matter go!"

The tax collector, peeved and astonished, picked up one of the Polk letterheads.

"What do you call yourself here?" he snapped, adjusting his glasses.

"Willis Polk & Co., Builders," replied Mr. Polk. "There's no architect about that!"

The collector departed without collecting the \$15 fee. He says that he will yet prove Mr. Polk is an architect, or eat the license.—*San Francisco Chronicle*.

Oyster Bay Plans a Roosevelt Park

A large waterfront park as a memorial to Colonel Roosevelt will be established at Oyster Bay, L. I., if the prevailing sentiment in the home town of the former President materializes. A citizens' committee under the leadership of William Loeb, Jr., who was at one time the colonel's private secretary, has been formed.

Colonel Roosevelt believed in parks for the people, and Oyster Bay has none. Situated near the railroad station is a vast area facing the bay which has never been improved and has been considered a detriment to the beauty of the village. If this is secured it is proposed to fill in many places and erect bulkheads. It will have some suitably inscribed memorial, such as a rostrum, and will be named Roosevelt Memorial Park. Several thousand dollars have already been contributed toward the fund.

Copper Men Go Abroad

A committee representing the Copper Export Association has gone to Europe, accompanied by S. R. Guggenheim, a director of the American Smelting & Refining Company, for the purpose, it is said, of perfecting plans for the extension of the Copper Export Association.

Washington Hears of Much Building

News has reached Washington of many building projects, which will not only give employment to a large number of returned soldiers and enable the transition of industry from a war to a peace basis to be made with a minimum of friction, but will also increase the wealth of the country and its resources for the foreign trade campaign that will soon begin. The readiness of States and municipalities to do their part in construction development is illustrated by the attitude of Maine and New Hampshire, which stand ready to contribute a large sum for the building of a bridge from Kittery to Portsmouth.

Secretary Daniels, it is understood, favors a Federal appropriation to aid these States, on the grounds that the project is rather too large for their resources and that the Federal Government, through the Portsmouth Navy Yard, will benefit greatly from the work.

Building loan associations throughout the country have manifested much interest in the plan of the Division of Public Works to assist home building at this time, and co-operation on a national scale has been suggested at conference be-

tween the building loan representatives and officials of the division. There are certain technical difficulties in the way of most effective co-operation, but it is anticipated that these will shortly be cleared up or circumvented, and that builders may be assured aid in the same way farmers are assisted by farm bank loans.

Won't Discharge Soldier Against His Will

To solve the problem of unemployed discharged soldiers, the War Department has ordered that no man be discharged from the army against his desire until such time as he can obtain employment in civil life. Orders have been telegraphed all department commanders to retain all men who desired to remain temporarily in the service without prejudice to their subsequent discharge to take employment.

Governor Coolidge of Massachusetts will send to the State Legislature shortly a bill authorizing an appropriation of \$10,000 to aid and find employment for returned and returning soldiers, sailors and marines.

Cleveland Building Figures Show Gain

If building construction figures for January are an indication of Cleveland's volume for 1919, this year's total will show a decided gain. The figures for the first month this year, according to tabulations made by H. H. Uthoff, statistician, show a gain of \$579,990 over those for January, 1918. The total building volume for the month just ended was \$927,900, against \$347,910 for the corresponding month last year.

\$10,000 Building 10-Day Record

Building permits totalling around \$10,000 were issued for the first ten days in January at Fort Worth, Tex., which is considered a remarkable record for this time of the year, January being considered one of the poorest building months of the twelve.

Personal

Reopening of the offices of P. Tillion & Sons in the Terminal Building, 103 Park Avenue, New York City, is announced. Clement V. Tillion has returned after two and a half years' service with a New York Division, but Philip G. Tillion is still with the American Expeditionary Forces in France.

Wage Standardization and Administration

Standardization, which is rapidly increasing in the larger industrial institutions, with the determination of wages, hours and conditions of work according to general principles, the justice of which is universally acknowledged, is the subject of a joint paper by Earl Dean Howard and Henry P. Kendall read at the recent annual meeting of the American Society of Mechanical Engineers. The paper first gives particulars of the administrative machinery available before the war for dealing with industrial relations, and then of the governmental agencies since developed for that purpose. The authors say:

"The regulation of industrial standards by joint boards as suggested has the great advantage over the present system in that it eliminates at least three-fourths of the cost of friction between the particular employer and his employees. Each employer then adopts the standards which are current in his trade and knows that all his competitors are on the same basis and have no advantage over him. Even under our present system, the chief objection to any one employer's increasing wages lies in the fact that it comes out of the profits unless the increase is general among his competitors, when it is shifted to the consumer of the product. It is easy to foresee a time when the public and not the employers will have the chief interest in opposing wage advances."

England is Short 500,000 Houses

In the opinion of Sir J. Tudor Walters, M. P., who has given much thought and time to the question of housing, England faces a shortage of 500,000 houses in addition to her normal requirements of 100,000 new ones annually. Consequently England is wrestling with many housing schemes. One of the unusual plans suggested for bridging the transition period while England is being changed from a war to a peace basis, is a proposal that the Government should build houses and either sell them on long-time payments or furnish them outright, particularly to soldiers.

Reports from Great Britain show that thousands in the building trades have gone into other work, as all building operations ceased when the war started. Materials there are at exorbitant figures or unobtainable. It is much more difficult for prospective small-house owners to finance construction than it was four and one-half years ago. One of the plans suggested is that the Government pay the

householder the difference between what his house will cost to construct immediately after peace terms have been arranged and its estimated value five years hence.

Any plan that will result in large expenditure of public money will be met with considerable opposition among members of the Government. This was made very clear when a statement was made in the House of Commons that the Government should give all war workers a six months' holiday with full pay as one means of solving the tremendous problem of changing England from a war to a peace basis. At least one member of the Government, referring to that statement, said that the Government could not undertake any gigantic financial obligation in its effort to bridge the transition period as quickly and efficiently as possible.

To Study British Labor Situation

An employers' commission, designated by William B. Wilson, Secretary of Labor, to study labor conditions and governmental labor policies in Great Britain and report thereon to the department, has sailed for England, expecting to spend several months in its investigations. R. R. Otis of Atlanta, Ga., represents the building industry. Others include Dorr E. Felt of Chicago, connected with the machinery industry; R. J. Caldwell of New York, the textile industry; W. H. Ingersoll of New York, the watch industry; Eldon B. Keith of Boston, the shoe industry, and E. T. Gundlach of Chicago, the publishing industry.

Support Lane's Land Plan

The Women's National Committee of the American Defense Society, of which Miss Elizabeth Marbury is chairman, has announced that it has telegraphed to the members of the Appropriations Committee of the House urging a favorable report on Secretary Lane's Land Settlement Bill. The measure aims to provide land for returned soldiers, and is said to have the approval of President Wilson.

Exports from France to U. S.

The total declared value of the exports from France to the United States and possessions during 1918 was \$57,048,499, against \$94,561,318 for 1917. The exports to Continental United States were valued at \$55,688,490, against \$93,462,780 in 1917; to the Philippines, \$1,273,724, against \$955,074.

Late News in the Financial Field

Guarantee of Labor Stability Urged to Aid Building

Assurance has been given the building trade that efforts will be made before the next Congress to have an appropriation set aside as a sort of building subsidy fund, to be operated on an amortization plan to make it possible to cover the high cost of labor until the law of supply and demand of man power has been met by returning service men.

A term probably extending over the period covered by the measure to shut out immigration for approximately four years is proposed. In other words, Federal farm loan principles applied to a form of Government building subsidy will probably be used as a means of releasing the millions of dollars' worth of construction that is being held up pending the adjustment of wage scales in a great many cities in the country.

The opening of the general construction season is but little over a month away and the building industry is still stagnated because of its inability to make mill alterations, enlargements and repairs to meet the greatly enlarged demands upon their capacities, much less to the staggering demand for new construction of various kinds that is booming all over the country. A total lack of what is termed "wheelbarrow" labor, which in the production of building materials is a very important factor, is one of the causes of the difficulty in the construction business at present. The supply of labor promises to be still further depleted by thousands of foreign-born men clamoring for passage back to Europe.

Building material and equipment prices are continuing to drop to attractive levels and the scarcity of rentable space makes it imperative to build at once. All building materials, with hardly an exception, may be accepted as being at practically the lowest ebb, which is only a temporary level. Prices will have a distinct tendency to advance, even if only twenty per cent of normal building is attempted this year, because of the heavy tax upon available supplies of construction material. Notable downward movements include a drop on lead of \$5.50 a ton; stove pipe, sash cord, cast iron sash weights, insulated wire, electric pole line material, malleable iron fittings, electric lamps, and there are immediate prospects of reductions in plumbers' earthenware, wire products and a few other lines.

Urges Public Work to Avert Idleness

That there is immediate need of co-operation throughout the country to forestall the threatened danger of unemployment and that efforts should be concentrated to support the efforts of Secretaries Lane, Wilson and Redfield favoring public building as the medium, is the opinion of officials of the National City Bank in a survey of economic conditions just given out. The fact that costs are still high should be no deterrent, it is maintained, to the undertaking of improvements, otherwise labor will be idle and its "potential value totally lost to the country." In an analysis of conditions the bank statement says:

"The idea that the Government might promptly adopt a constructive policy for dealing with the danger of widespread unemployment has had as yet no adequate development. Secretary Wilson has established in his department a bureau for the encouragement of public construction by municipalities and other public bodies, and Secretary Redfield has written letters giving public indorsement to the policy of liberal expenditures of this character, but the executive officials can do little themselves without action by Congress.

"There is greatly needed at this time a large and enterprising public policy which would organize and co-ordinate the activities of national, state and local governments, so as to create a large amount of construction work for the coming spring and summer. After that it is safe to say that the situation will take care of itself, provided unemployment can be averted in the meantime. The prestige and co-operation of the national government is required to develop such a movement, and the good efforts of Secretaries Lane, Wilson and Redfield should be not only supported but enlarged and made a national policy. The railroad and utility companies should be enabled and encouraged to make improvements now, when labor will otherwise be idle and its potential value totally lost to the country. Extra costs are nothing compared with total losses and little compared with war expenditures, and this is the view that communities should take of the proposal. Of course the program should be elastic, so that no more work would be undertaken than necessary for the purpose, but unemployment should be prevented by a public-spirited, nation-wide movement.

"The policy of heavy taxation upon business profits begins now to show its repressive and unfortunate influence. There was never a time when the spirit of courage and enterprise was more needed than now. Secretary Wilson made a strong plea at a New York meeting a few days ago for business men to go ahead with resolution and public spirit to set the wheels of industry turning and provide employment to the wage-earning population. All who heard him realized the force of his arguments and the truth of his warning against the dangers which might develop from widespread idleness and distress. But these are times when serious risks attach to individual policies."

Department of Architectural Engineering

A Structural Material Made of Thin Sheet Steel

A NEW structural material, or the new use of an old material, is always of interest. This interest, however, is influenced largely by the manner of its first presentation to the public. If it is represented as a substitute for a known and tried material it is immediately placed on such a basis

ilar parts made of incombustible material. While the initial intention was to make the buildings that usually are constructed with wooden joists and studs more fire-resisting, it has developed that in



A store and office building, the floor and partitions of which are constructed of formed metal joists and studs.

and is not liable to be accepted on its true merits. To properly gauge the value of such products, it is necessary to consider them in relation to their actual uses. On this basis is here discussed some structural shapes which are coming rapidly into general use.

These structural shapes are fabricated from rolled sheets and, generally, in forms similar to rolled structural shapes. Primarily they were designed to replace wooden joists and studs with sim-



A floor with metal joists, structural steel girders and columns. Concrete floor slab in place. View from below.

a greater field, this material has been found entirely suitable. Like all other materials and constructions, it has limitations of use which are determined by its physical properties and economic considerations. To better appreciate these limitations, a general description is here given.

The basic section is that of a channel beam, from which I-beam sections are made by riveting the channels together back to back. The studs are of channel, U and T shapes. These sections were first formed on a brake, each separate bend being a distinct operation. The length of the section, without splices, was controlled by the length of the brake. This length was generally 16 ft. 8 in. Sections were spliced in such a manner as to provide any length for which the cross-section was suitable. These splices were designed in such a manner as to develop 25 per cent more strength than the balance of the section. A later development in the fabrication of these sections is in making the splices by electric welding.

It is understood that all rolled steel sections are subject to internal stresses which are inherent from the nature of the production process. Some engi-

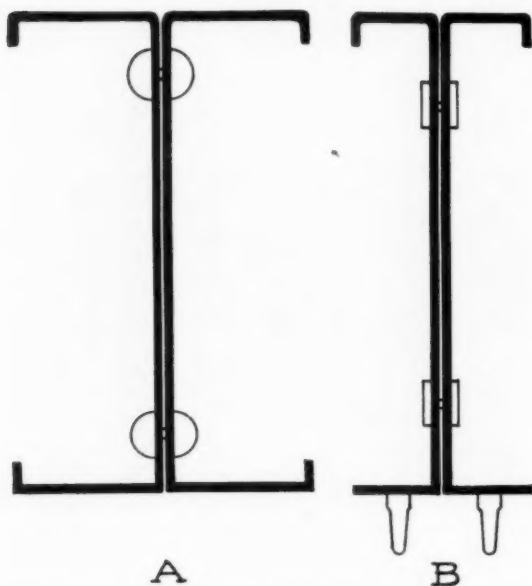
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neers attribute the comparatively easy destruction of rolled structural shapes, under comparatively low temperatures, to these internal stresses. The correctness of this theory is debatable. Rolled sheets have these same internal stresses in some degree, and also the usual distinct grain parallel to the rolling. When such a sheet is fabricated in a brake there is a weakening of the material at the bends; this is also the case when the shaping of

first and depth second as in wood joists, are in inches 3 x 3, 3 x 4, 4 x 5, 6 and 7, 5 x 8 and 9, 6 x 10 and 12. The 10 and 12 in. beams are made of 14 gauge steel only. In this type the breadth of the flange increases by groups, as the depth increases. Type B is made of 12 and 15 U. S. Standard steel gauge. The flanges are all 3 in. wide and the depths are 4, 5, 6, 7, 8, 9, 10 and 12 in.

In both of these types prongs can be provided for the attaching of metal lath to the top or bottom flanges or both, as shown in the illustrations. When beveled wood floor strips are used for the attachment of finished wood floors, these strips are attached by nailing through the strip into the space between the channel sections.

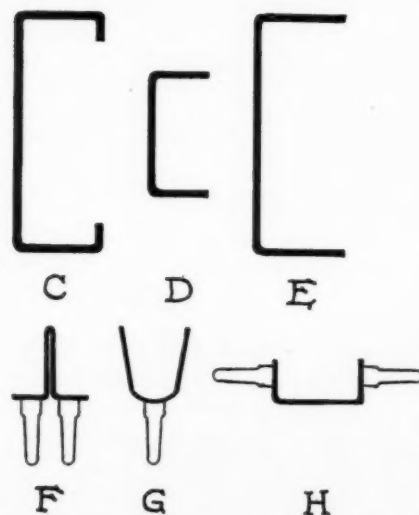
Metal studs are made in several forms. The



Typical sections of formed metal joists, made by riveting two channels back to back.

the material is done by forming rolls, which are now used for this purpose to a large extent. To overcome this difficulty the sheets are cut to suitable lengths and re-rolled in a direction at right angles to the original rolling. The result is a fine double grain material. The material, re-rolled and annealed, is uniform in texture and in repose from internal stresses. The sheets used for this purpose are not ordinary commercial sheets, but those made to special specification requirements. Fire tests indicate some greater resistance to the effects of high temperatures than is found in the rolled structural shapes, but this does not absolve this material from the necessity for adequate protection from fire.

Referring to the cross-section diagrams, sections A and B are typical I-beam sections made by different producers. It is noted that they are formed by riveting two channel beams back to back. Type A is made of 14 and 16 U. S. Standard steel gauge sheets. The dimensions, reading the breadth

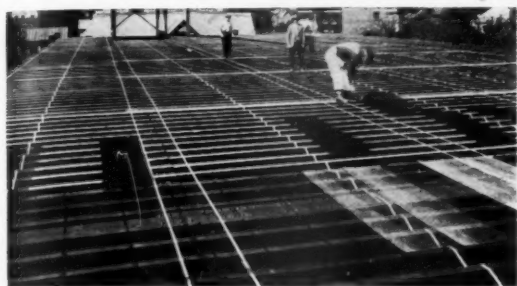


Typical sections of formed metal studs, sills and caps. Channel studs riveted back to back to form H-studs for bearing partitions.

channel studs of type C are made in sizes of $1\frac{1}{2} \times 3$ and 4, and 2×5 and 6 in. of 14 and 16 U. S. Standard steel gauge, type D is 1×2 in. in size and made of 16 gauge steel only. These studs, excepting the 1×2 -in. size, have prongs on both flanges for the attachment of metal lath. H-studs are made by assembling type C back to back with the prongs staggered on the flange. These studs are used for bearing partitions and where additional strength is required to support concentrated loads. Type H studs are made with flanges $1\frac{1}{2}$ in. wide and depths from 2 to 6 in. inclusive, increasing the depth by $\frac{1}{2}$ in. These sections are made of 12, 14, 15 and 16 gauge steel. They are assembled in the shape of I-studs by riveting together back to back. These stud sections are used

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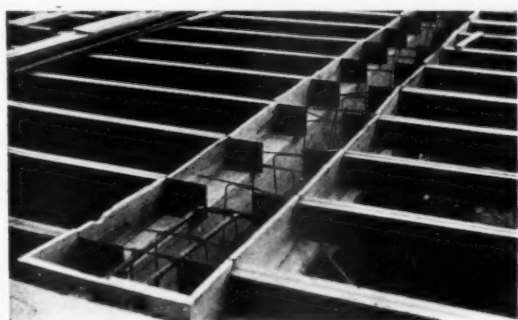
for bearing partitions, and where partitions do not carry any load such types as F, G and H are used and made of 16, 18 and 20 gauge material. Type F, called the T-stud, varies in depth from $\frac{3}{4}$ to $1\frac{1}{4}$ in., increasing by $\frac{1}{8}$ in. Type G is made in depths from $\frac{1}{2}$ to $\frac{3}{4}$ in., increasing by $\frac{1}{8}$ in., and



Placing the metal lath over metal floor joists. The white strips are galvanized iron bands used as bridging to keep the joists in position until the concrete slab is placed.

from 1 to 2 in., increasing by $\frac{1}{4}$ in. Type H, in addition to sizes already noted, is made of these lighter gauges with $\frac{3}{4}$ -in. flanges and depths from $\frac{3}{4}$ to $1\frac{1}{4}$ in., increasing by $\frac{1}{4}$ in., and from $1\frac{1}{2}$ to 4 in., increasing by $\frac{1}{2}$ in. In these lighter stud sections prongs are provided as shown.

Type E is used for sills and caps, which are laid horizontally and between the flanges of which the vertical studs are placed. They vary in width to accommodate the various depths of the studs and the width of the flanges varies to afford such beam strength as may be required.



Metal floor joists embedded in the flanges of an unpoured reinforced concrete T-beam girder.

These sections are the basis of this type of construction and are so designed as to be quite elastic in their application. The result is that any condition of plan for which this material is adapted can easily be provided for. In other words, any construction that is made of wooden joists and studs can be duplicated in this material.

This material is assembled in two ways. One is by riveting the members together with small rivets, cold driven, and angles, straps and other connecting members. The other form of assembling is made by using a mortise and tenon connection. The mortise is made by punching a slot hole or by depressing a portion of the sheet metal, which allows the tenon to pass between the depressed part and the main sheet. In the tenon is provided a hole into which is driven a metal wedge. By driving the wedge home a close contact is made, resulting in a rigid connection. No special equipment is necessary to assemble this material in place other than that used in ordinary carpenter work.



Apartment house construction, showing metal floor joists, studs, cap and sill plates.

To give an idea of the properties of this material, a comparison will be made with yellow pine dimension lumber. A 2 x 10 yellow pine joist dressed to $1\frac{5}{8}$ x $9\frac{1}{2}$ in. weighs 4.3 lb. per lineal foot and a 10-in. metal joist of type B weighs 6.3 and 9.8 lb. per lineal foot when made of 15 and 12 U. S. Standard gauge steel respectively. The section modulus of the 2 x 10 wood joist is 24.44 and for the 15 and 12 gauge steel joists it is 4.45 and 6.8 respectively. It will be seen that the metal joist is the heavier, but yet within a weight which is easily handled by one man. The comparative

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strength or resisting moment is found by substituting in the well-known formula:

$$M_R = fS$$

in which

M_R = the resisting moment.

f = the extreme fiber stress in pounds per sq. in.

S = section modulus.

Then we have for the long leaf yellow pine beam:

$$M_R = 1,600 \times 24.44 = 39,104;$$

for the steel beams of 15 and 12 U. S. Standard steel gauge:

$$M_R = 16,000 \times 4.45 = 71,200,$$

$$M_R = 16,000 \times 6.80 = 108,800.$$

From these results it is seen that the 2 x 10 wood joist has but 55 per cent of the strength of the 15 gauge metal joist and but 36 per cent of the strength of the 12 gauge joist, based on the fiber stresses assumed.



Floor construction in a large apartment house, metal joists supported on structural steel girders, galvanized iron bridging strips in place.

In calculating the moment of resistance of these beams this formula can be used:

$$M_R = fd \left(A_s + \frac{dt}{6} \right)$$

in which

M_R = moment of resistance in in.-lb.

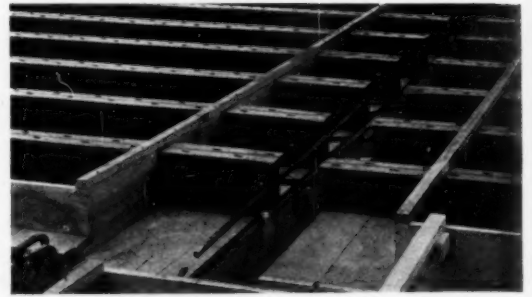
f = extreme fiber stress in pounds per sq. in.

d = height of beam in in.

A_s = net flange area in sq. in., or the gross flange area minus the area of holes punched out for prongs.

t = thickness of web in in.

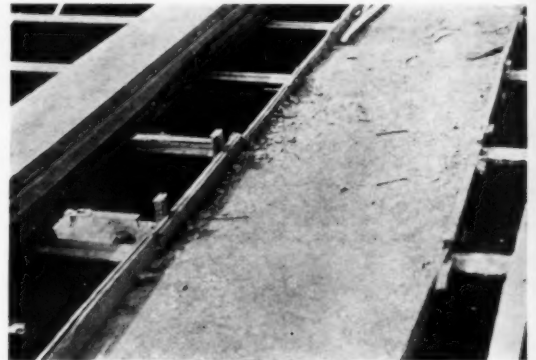
In tests where the loading is increased to destruction it is found that the lower or tension flange is not injured, but that it is the upper or compression



Reinforced concrete T-beam girder with metal floor joists in place and anchored together, ready to be poured.

flange that is affected. When several joists are tested together, in a panel with the concrete floor slab in place, the ultimate strength of the beam is very materially increased. This is due to the lateral support afforded the upper or compression flanges by their embedment in the concrete slab.

The floor is constructed by first placing a layer of metal lath on top of the joists and attaching it thereto by means of the prongs in the top flange. On the lath is placed the 1½ or 2 in. concrete slab and finished in the usual manner. When a wood-finished floor is provided, 1½ or 2 in. wood strips are laid along the tops of the joists and nailed thereto, after which the concrete filling is placed



A reinforced concrete T-beam girder the forms of which are filled, the concrete enclosing the ends of the metal floor joists.

and struck off level with the strips. The finished wood flooring is then placed as usual. Where thin hardwood floors are used an ordinary underfloor is first laid on the strips. The ceiling underfloor is made by attaching the metal lath to the under side of the joists by use of the prongs and plastered. The spacing of the joists varies from 16 to 24 in., according to the kind of metal lath used, and the joists are designed to comply with the conditions

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thus imposed. For this reason these joists are not readily adapted to spacings wider than those for which they are designed.

This system of construction is fire-resisting for the reason that primarily the material is metal, and therefore incombustible. With its greater strength, these two qualities are the main advantages over wood construction. It is necessary, however, to protect the metal from high temperatures resulting from the burning contents of the building. This protection is provided by the concrete floor construction and the metal lath and plaster ceiling.



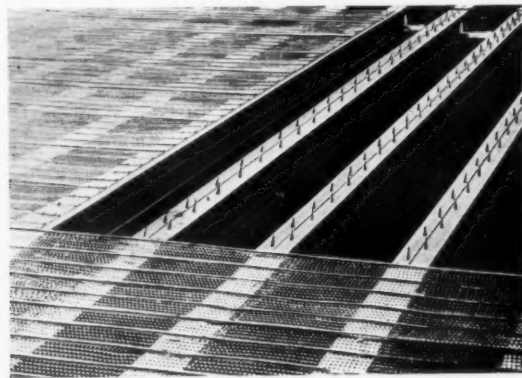
An apartment house, the floors and partitions of which are constructed of formed metal joists and studs.

The ceiling is naturally the most vulnerable point and the protection is limited by the fire-resisting ability of the plastering.

The fire tests of this construction indicate that it will withstand a temperature of 1700 deg. Fahr. maintained for four hours. Naturally this result is obtained only by virtue of the plastering on the ceiling, as without this protection the construction would fail. It is unfortunate that in these tests temperatures of the steel joists and the air space between the ceiling and floor construction were not

obtained. This data would be a valuable aid in forming conclusions for conditions other than those under which the tests were made. In this case the cement plastering was 1 in. thick and made of a 1-2½ mix. Its insulating value would vary directly as its thickness. As before stated, the quality of the plastering is a very important element in the fire-resisting ability of this type of construction.

The fire-resisting ability of this type of construction limits its use, except in sprinklered buildings, to those that do not contain large amounts of combustible contents, such as residences, school houses, apartments, hotels, office buildings and some classes of mercantile occupancy. The mercantile occupancies would be those in which the stocks were of fairly incombustible goods and of light weight.



A school house floor under construction, the metal lath being placed on top of the metal floor joists. Note the prongs for attaching the metal lath.

It is apparent that these floors are not adapted for what is known as "heavy duty" floors, but are commercially possible for light live loads such as are found in the kinds of buildings mentioned above. The structural, fire-resisting and economic limitations are light live loads, medium spans and minimum fire temperatures due to the burning of combustible contents.

One of the great economies in the use of this material is due to the lightness of the material and the construction. With few exceptions, fire-resisting floors have a dead weight of from 70 to 125 pounds per square foot. This type of construction weighs from 32 to 40 pounds per square foot and is one of the few fire-resisting constructions in which the live and dead loads are approximately equal in the class of buildings above mentioned.

This element of lightness permits of the use of lighter girders, columns and foundations and is one of the principal factors in the cost savings effected by the use of this material. The supporting girders

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and columns can be made of reinforced concrete or structural steel. In case concrete girders are used, they are T shaped and into the flanges of which the ends of the metal joists are incorporated and anchored, either into the girder or the opposite joist when there is one. When structural steel girders are used, the joists bear on angle iron seats or are hung in stirrups and anchored to the girder. When the joists rest on top of the girders a sheet metal seat is provided which clips on to the joist and the girder.

It is unfortunate that the production of this material is not standardized in the same manner that structural steel shapes are standardized. As it is, each manufacturer has his own standards and the differences are not of sufficient importance to preclude the possibility of uniform standards. Designing data is furnished by the manufacturers which enables architects and engineers to design

for the use of the material. For competitive purposes, the architect who produces his own structural designs will be compelled to make two or more designs or accept those provided by the manufacturer. Many architects and engineers prefer to have entire control of the design, and rightly so, and this condition of non-standardization hinders the use of this material, in the same manner that the use of structural wrought iron was affected when each rolling mill had its own individual shapes.

The use of this material is becoming more common as its availability from a structural and economic viewpoint is better known. It is found that its cost very closely approximates that of wood construction, giving the added and desirable quality of great resistance to destruction by fire. In these times, when justifiable economies are sought and studied, this material is well worthy of careful consideration.

Useless Waste in Concrete Construction Due to Legal Requirements*

By W. STUART TAIT, *Assoc. M. Am. Soc. C. E., Assoc. Mem. Inst. C. E.*

MOST of us have at times used the expression "It is A1" when wishing to state that something is highly satisfactory. Few of us, however, know how the expression originated. The term "A1" is an abbreviation of the phrase used in connection with shipping, "A1 from Lloyds." Lloyds refers to Lloyds Register of Shipping, and A1 is the highest classification made by that society. It means that the vessel referred to has been thoroughly well built and is entitled to receive the best rate of insurance quoted. Lloyds Register of Shipping was founded in 1760, and their book of rules and tables is the principal naval architect's handbook covering the design of a ship's structure. In the past hundred years the word "Lloyds" has gradually become linked in people's minds with things highly safe and sound, until to-day the phrase "A1 from Lloyds" has world-wide use.

Structural engineers engaged in the design of buildings and bridges would pass many sleepless nights if they were called upon to design a steel ship, and instead of following the beaten path blindly made an analysis of the structure which they had developed from Lloyds tables. They

would find a factor of safety of considerably less than 2 and probably not over $1\frac{1}{2}$, and in spite of this Lloyds Bureau is to-day considered throughout the world as being the criterion of safe and conservative design. Until comparatively recent years no engineer has been able to analyze the structure of a ship, and as a result Lloyds rules and tables were practically all developed from experiment and experience. Mankind can be truly thankful that ship design was not hampered by ultra conservatism in a manner similar to concrete building construction. A ship with a factor of safety of 6 or 8, which is approximately what we really have in most concrete buildings, would have to be several times as heavy as the ship built under the present standards, and, in consequence, vastly higher carrying rates would have to be charged. A ship is subjected in a storm to far greater strains of an indeterminable nature than any possible overloading or the most severe impact in a building could produce. Then again, let a failure take place and the ship, her passengers and crew, are at the mercy of the waves. In a concrete building which is severely overloaded a failure would never be sudden, and, looking at the factor of safety as a protection for human life, the ship should be far more conservatively de-

*Continued from our issues of December 11-18, 1918, January 8-22 and 29, 1919.

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signed than the concrete building. The reverse, however, is true.

In the preceding articles I have shown how we may, by making better designs and executing better work, produce concrete buildings with greatly reduced costs. In order, however, to make possible the use of the more reasonable design methods outlined, one of two things must happen. Either all building ordinances must be entirely revised or the building departments much recognize a board of engineers created to make a detailed examination of concrete building plans and to practically take charge of the superintendence of the construction, in a manner similar to the operation of Lloyds Bureau of Shipping. I feel that the latter method would produce better and more immediate results. This engineering board would be recognized by the building department of each city and permitted to formulate its own code of structural design. Each city would retain its present building code, but would accept also concrete structures in which the design was approved by the proposed engineering board and the construction executed under the supervision of that board. The board would charge a fee for the examination of building plans, and the fee would be sufficiently large to permit them to examine the design in the most complete detail. The board would also charge for and furnish sufficient inspectors to insure the highest class of work and the exact adherence to the plans. The fees charged by the board for inspection could not be furnished on small structures for a percentage charge which would be adequate on large work. This feature would tend to force small work, which is that usually executed by the less competent designers and contractors, through the usual channels, and this work would be carried out under the existing building codes. The board would recognize and examine designs prepared only by architects and engineers who had proved by their past work that they were competent and conscientious and that they understood concrete design thoroughly. The board would not only check the main features of the design, but would also examine all details with care. The board would have in its employ, as chief executive, a competent engineer at a salary sufficient to insure obtaining one of the best men in the district. He would have entire charge of the operations of the board. The board that I suggest would be made up of two structural engineers, two architects, and the architectural engineer of the building department. The two structural engineers would be appointed by the local engineering society, the two architects by the local chapter of the American Institute of Architects or the State Society of Architects. These four mem-

bers would serve for relatively small compensation and would act in about the same manner as the board of directors of a corporation. The board would prepare its own code of rules governing concrete design, and any plans approved by them would be accepted by the building department. In a previous article I cited a case, and not by any means an exaggerated one, in which an engineer who followed the building ordinance of most cities would produce a structure which would be decidedly weak. I also showed the correct design for the same structure and showed how, under present conditions, a building department could not approve the correct design. In cases of this kind, a board such as suggested in this article would have a most desirable effect. The board, having power to decide these matters, would assist in obtaining better structures and in all cases would be free to approve a design upon its merits without being bound by the technicalities of the city building code. I think that most engineers will agree that it is almost an impossibility to prepare any building ordinance which can be followed literally and produce good and reasonable results in all cases. New conditions develop which lead to new methods of construction, and it is hardly reasonable to hamper and retard these developments as a result of the technicalities of the ordinance. I will cite an example of this. During the development of concrete ship design it was found that concrete weighing about 140 to 150 lb. per cu. ft. could not be used with real success. As a result, a concrete aggregate of such weight that 100 lb. concrete can be obtained has been produced, and with a 1-1-2 mixture of this material a strength of 4000 lb. per sq. in. at 28 days is obtained. Now, according to existing ordinances, concrete is to be taken to weigh 150 lb. per cu. ft., and 1-1-2 concrete cannot be considered as having an ultimate strength at 28 days of over 2900 lb. per sq. in. Therefore this new concrete aggregate could not be used under existing building codes, and it would take two years or more to obtain revisions to the code which would permit of its use.

After a building was completed the necessary load cards for the floors would be issued by the board and approved by the building departments. The annual inspection of the building would then be carried on by the building department just as at present. It is the writer's opinion that in a short time after one board, such as suggested, was in operation other cities would see the advantages of this procedure and allow similar boards to be created. It would then be only a short step to associate all such boards and to standardize all the codes of these boards on concrete design throughout the country. Concrete engineers and

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architects doing business in a number of cities will all admit the great advantages of a uniform code in concrete design and one in which a more logical and reasonable factor of safety is provided.

In the first article of this series the conditions to be allowed for by the factor of safety were stated as follows:

1. Use of the structure under consideration.
2. Correctness of design and analytical methods.
3. Uniformity of material strength and workmanship.
4. Knowledge of material strengths.
5. Possible deterioration of structural members.

Providing for item 1, it has been shown in factory and warehouse construction that a factor of safety of $1\frac{1}{2}$ is sufficient to cover possible overloading. In discussing item 2 it has been shown that the "rule of thumb" design moments now in use are in some cases twice as great as the correct value, while in others these moments are only about one-half of the correct value. Attention was also drawn to the fact that there is now in existence a large body of highly trained concrete designers. Note that the use of these incorrect moments often results in stresses highly in excess of the more reasonable stresses suggested in this article. Under the supervision of the board suggested in this article, the factor of safety to provide for item 2 would approach unity.

Dealing with item 3, it was stated that as a result of scientific control and inspection the materials themselves approach very closely to 100 per cent perfect upon their assumed characteristics. The matter of uniformity in workmanship is purely a matter of careful and conscientious inspection. Under the inspection methods outlined in this article there would be little chance of a material deviation from the standards assumed. Let us, however, assume a factor of safety of 1.3 to cover item 3.

Considering item 4, it was stated that 1-2-4 concrete, properly prepared and placed, could be definitely counted upon for a crushing strength of 2600 lb. per sq. in. at 28 days, where standard practice recognizes only 2000 lb. Attention was also called to the fact that the strength of concrete increases 50 per cent. between 28 days and 90 days, making the crushing strength at 90 days for good concrete 3900 lb. per sq. in. As a result of our extensive series of tests we now know fairly accurately the strengths which we can rely upon obtaining, and even under the method of design and stresses proposed in this article we have an actual factor of safety of over 3 without approaching the ultimate strength of the concrete at 90 days. But let us assume an increment in the factor of safety to cover item 4 of $1\frac{1}{2}$.

Item 5 is one which our experience has shown does not exist in reference to concrete buildings. The total factor of safety to be applied is the factor obtained by multiplying the increments necessary under items 1 to 5. The factor therefore becomes:

$$1.5 \times 1 \times 1.3 \times 1.5 = 2.95$$

Under the design methods for beams suggested we have a theoretical factor of safety approximating this and an actual factor of safety in excess of 3. Furthermore, the actual concrete stress developed to produce this factor is materially less than the ultimate strength of the concrete at 90 days old.

In the matter of column design the tests upon which the recommendation of this paper were based were actual size field specimens and were constructed under ordinary conditions of building construction. It would therefore seem that the factor of safety of 3 recommended in the method of design referred to is more conservative than the same factor for floor construction.

In closing, I wish to express a hope that these articles may help to create some new thought in concrete design regulations and also lead to the closer co-operation of the various bodies controlling building construction, so that before long we may be permitted to produce permanent, safe concrete structures for our manufacturers at a far lower cost than now prevails.

An Important Code Committee Meeting

The Fire Marshals' Association of North America has appointed a Committee on Uniform State Building Codes, which held an organization meeting in Chicago on January 21, 1918, and which will hold a meeting in Chicago on February 18. This meeting will be in session for some days.

John G. Gamber, State Fire Marshal of Illinois, Springfield, is Secretary-Treasurer of the Association and writes that a number of architects and engineers will be invited to assist in the work. It should be kept in mind that the State Fire Marshals are in close touch with the executive branch of the various States and in more close touch with the legislative branches than are architects and engineers, either individually or collectively. The importance of this meeting is then apparent.

Code building is in the air, and its importance has been fully set forth in THE AMERICAN ARCHITECT of January 22, 1919, on page 128. Code building is not entirely within the province of any special class of men, but the architect and engineer is vitally interested. What will they do and who will build the codes?

Industrial Information

In this Department there is published each week information as to the development of materials and methods, derived from reliable sources.

Fuel Facts

If to be successful the architect is obliged to be alive to the business issues of the day, perhaps one of the most valuable means of gathering important information in a condensed and reliable form is through the medium of government publications.

In a desultory, casual manner, for the most part, the people have gleaned that coal shortage here and abroad was a serious matter, widely affecting their normal activities. By certain enforced sacrifices they have been made to recognize the existence of a fuel administration whose business was to prevent a crisis and its attendant consequences.

How far have these sacrifices accomplished their purpose? What is the status of the fuel problem to-day? Which methods, tried in wartime and found "not wanting," may be pursued in peace with advantage? What experiences, in other words, may we learn to incorporate which in the future will make for the highest economy of our resources?

These questions are suggested by a booklet issued by the United States Fuel Administration which discusses chronologically and with considerable interest, the whole course of procedure followed by that administration since its organization in August, 1917.

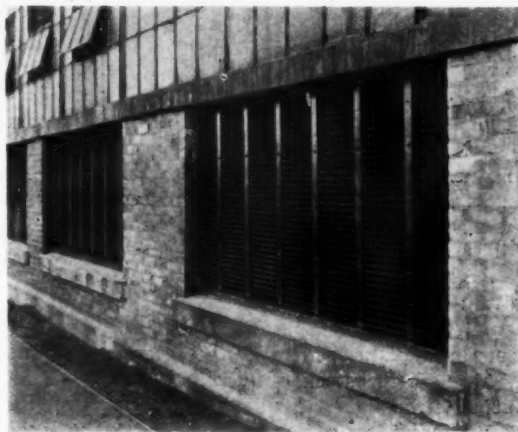
The average reader of newspapers cannot form any conception of the magnitude of this problem with all its ramifications. This booklet, known as "Fuel Facts," contains so fine a summary of an important subject, so many interesting sidelights on the business of war and peace, and so much valuable advice and general information of one sort and another, that the professional man with an eye for practical knowledge will welcome an opportunity to read it.

Interlocked Steel Gratings

It is frequently necessary or desirable to use grating about a building. As window and vault guards, and registers, for instance, architects will recognize in the interlocked steel gratings herein discussed a medium for the accomplishment of these aims which promises satisfaction. Mitchell-Tappen Co., 15 John Street, New York, are the manufacturers.

These gratings were originally designed for sidewalk openings over subways, and for power plants

and places where walkway gratings are generally used to admit light and air below. Their use, however, has been extended, and some of the structural features accounting for this wider use follow: All intersections are absolutely interlocked by dovetail joints. This dispenses with the need for bolts, rivets and screws which tend to loosen or rust out. The spaces, as will be seen in the accompanying photograph, are all rectangular, providing maximum openings for light and air, and eliminating acute angles which may catch disease-breeding dirt or prevent proper painting. These things make for service. The gratings are made of varying weights and sizes to meet requirements.



The grating herein described has been widely used in navy and marine work where requirements are of the most exacting kind. It has been found to give maximum light and ventilation, and also great rigidity, due to the absolute interlocking above referred to, and the fact that members run continuously in both directions. In many instances the gratings are used without any grating framing for spans up to ten or twelve feet.

The illustration shows the interlocked type of grating protecting the first story of the Winchester Repeating Arms Co., New Haven, Conn., and gives an idea of the substantial character of the material. Further information may be obtained by a perusal of Bulletin G-2, sent on request by Mitchell-Tappen Co., 15 John Street, New York.

Ventilating for Results

In any building, provision for adequate ventilation is an essential. Too much stress cannot be laid upon it as a guard to health and an incentive to energetic attention to the activities within.

A roof ventilator which has received both the official award ribbon at the Panama-Pacific International Exposition and the gold medal of the Department of Agriculture, is "Alpina," made by the Milwaukee Corrugating Co., Milwaukee, Wis.

It is appreciated that perfect ventilation means a constant circulation of adequate fresh air without draft. The logical outlet for foul air is the roof, the place to which it naturally ascends. A system which attempts to draw the foul air out where the fresh air should come in, is one which fails to take advantage of the assistance obviously available.

Alpina roof ventilators exhaust the foul air from the building at a point where no counter currents of fresh air can hinder their operation. At the same time, windows or other fresh air intakes are left free to accomplish this special purpose.

Fresh air, though admitted in abundance, is rapidly contaminated by the foul air present unless this is systematically and forcibly carried off. Public buildings are often overcrowded. In theaters, schools or churches, for instance, the problem is not so much how to admit fresh air supply as it is to take away the used air as fast as it is expelled from the lungs of the occupants.

The Alpina Syphon Revolving Ventilator placed at the highest point of a roof intercepts and takes advantage of the slightest breeze from any direction. A vacuum caused by the passage of air currents produces a suction which draws out the foul air through the stock of the ventilator. This influence strengthens the natural tendency of the warm, impure air to rise to the highest point in the interior of the building.

The Alpina has a large capacity due to the fact that it is not stationary, but revolving. It is said to cost nothing to operate and to be easy and inexpensive to install. Technical details are printed in a booklet published by the Milwaukee Corrugating Co. The company conducts an engineering department for the benefit of architects who have unusual conditions to meet in the matter of ventilating.

Tempting People to Paint

It is well said that there is a mesmeric fascination in watching paint transform an old shabby surface into something bright and attractive.

We stand and watch the painter applying his brush even at the risk of paint spots on our outer garments or on our observing heads.

That there is an irresistible itching to apply the paint ourselves is shown by Mark Twain in his story of "Tom Sawyer." It will be remembered that Tom capitalized on this tendency by selling the boys the privilege of painting Aunt Polly's fence. His profits were an apple, a kite, a dead rat and a string to swing it with, twelve marbles, part of a jew's-harp, a piece of blue bottle-glass, a spool cannon, a key, a fragment of chalk, a glass stopper for a decanter, a tin soldier, a couple of tadpoles, six fire-crackers, a kitten with only one eye, a brass doorknob, a dog collar, the handle of a knife, four pieces of orange peel, and a dilapidated window sash.

The profit of the man who applies Dixon's Silica-Graphite Paint to his smokestack or roof or boiler-front, or any other surface requiring protective paint, is the satisfaction that comes in a coating of paint that is good to look upon, with a choice of four colors any one of which can be used as a trimming if desired, and a knowledge based on the experience of others for over fifty years that he will not need to repaint for perhaps many years to come.

Sometimes repainting has been done, not for greater durability, but simply through a desire for a change of color.

Dixon's Silica-Graphite Paint is a paint that is not affected by heat or cold, acids or alkalies, and is one that is not affected by sunlight and therefore never fades. The only change that can come to it is the natural discoloration which comes from dust and smoke and to which all paints are subject.

Now that the stress of war is over, houses and iron work of all kinds should be brightened up and better protected with a coat of Dixon's Silica-Graphite Paint.—From "Graphite," published monthly by Joseph Dixon Crucible Co., Jersey City, N. J.