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Modern Architecture in its Evolutionary Aspects

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Architects, unlike Gaul, are not divided. All architects are odern"! What the adjective means as applied to architects or to chitecture varies as widely as do people. If we are taking a long- ne view, modern architecture would mean the architecture of the neration of 1912-42. But that would include buildings of the ntage of the Woolworth, the New York Municipal Building, and ners which would call forth protest if classified as modern. If we nit the term to mean only that architecture "of our day," the chitecture of a few years ago is ruled out. And if we are raising question, whether modern architecture constitutes an evolution revolution, we need not include those buildings which patently veal the use of the stylistic traditions of the past, be that use aptive or derivative. The modern architecture under discussion ll be taken to mean that architecture of the Twenties and Thirties hich, in both form and intent, avoids stylistic traditions as such.

"Evolution" from its origin suggests an unfolding, a process of coming, of growth from some previous stage or plan. The concept descent or derivation is definitely present in the ordinary use of e word.

"Revolution" on the other hand suggests a complete reversal, the erthrow of what was. The process of revolution seems to involve veral conditions.

1. The existence of some well established tradition, idea, or rm of government.

2. The presence of an active minority in disagreement with this ablished tradition, idea, or form of government.

3. A restriction of minority expression and action and an endant damming up of accumulating power.

4. Culmination by rupture of the social, economic, governmental, esthetic fabric and a sudden release of the accumulated forces of otest which sweeps all restraining barriers before it.

In viewing the record of modern architecture and its develop- ent these conditions of revolution, in my opinion, do not seem to ve been fulfilled.

Before modern architecture there existed no one established adition in architecture. Churches were usually of the medieval old, public buildings leaned upon the pillars of Greece or Rome for eir support, and dwellings renounced their quantitative advantage dividing themselves into Queen Anne, Colonial, Tudor, and other tegories. Nor does eclecticism itself have any strong claim to con- deration as one established tradition in competition with the revivals nich preceded it. Many there are who gleefully insist that all that isted in the nineteenth century was an esthetic vacuum, a century which there was more space where there was nothing (of archi- ctural significance) than where there was something.

That there did exist an active minority, who by word or work pressed disagreement with the trend of their time, is increasingly ident. There was no unanimity of philosophy or design among em, but taken as a whole their ideas seem to converge toward one neral attitude.

In brief recapitulation one might suggest the impressive body engineering achievement and structural innovation progressing om the use of cast iron for columns in the late eighteenth century the extensive use of structural steel in the late nineteenth century. ne names of Labrouste, Paxton, Eiffel, Cottancin, and in our own untry, of Jenney, Holabird and Roche, and Buffington recall major eps in the use of iron and steel construction.

An important part of the nineteenth century minority was composed of the esthetic protestants such as William Morris, Henry Van de Velde and other men, who made their protests effective through their creative efforts in exterior and interior architecture as well as through their writings. Their attitudes and achievements have been pointed out with particular brilliance and penetration by several writers within the past few years.

William Morris and his co-workers, in spite of their inclination toward the medieval and their opposition to the machine, did much to raise standards of design in architecture, furniture, and fabrics in England. Their failure to recognize the inevitability of cheaper machine-made products and the possibility of control of the machine is not surprising in view of their pioneering position.

The concern of the Art Nouveau group with style, and particularly with a style of ornament, blighted the positive contributions of the movement and engendered a reaction against the modern of that day which lingered in the minds of many architects. As recently as 1930 I received the reaction from more than one architect who identified the modern architecture then coming to our shores from Europe as the same Art Nouveau architecture of 1900 and wanted none of it.

Van de Velde did focalize another wave of protest against the derivative and eclectic architecture of his period and succeeded in forming a group which sought vital contact between art and life. He increased the appreciation of his era for the achievements of engineers such as Eiffel and Cottancin, and he strengthened the artist link between Belgium and Germany and Austria.

The Artists' Colony at Darmstadt, with Behrens, Baille-Scott, and others, and the Deutscher Werkbund, represent continuing modes of protest against the separation of art and life, and efforts toward reintegration.

In the Bauhaus of the Twenties, which succeeded the Weimar School of Arts and Crafts, under the direction of Walter Gropius increased understanding and use of machine processes seemed to establish the link between art and life toward which other group movements had striven.

The work and the philosophies of those redoubtable American pioneers, Richardson, Sullivan, and Wright, of Mackintosh and Voysey in England, of Berlage, Wagner, Hoffman, Behrens, and others, add up to a very impressive and important minority which was directed toward one generally similar end—the creation of an architecture which would vitally answer the needs of life and express the civilization which had called it into being. In the work of all of these, one perceives an attempt to free architecture from subservience to this or that style, an attempt to approach each problem from the standpoint of needs, materials, construction techniques, yes—and esthetic values.

One might add as an accessory part of this minority those not concerned with architecture as such but with building—barns, stables, structures of such frankly utilitarian character as to classify them as "untouchables" by the architectural Brahmans of the century. Of course, there was no conscious participation by this practical group in a minority movement. Like the engineers of the century their interest was fastened upon the immediate problem confronting them rather than upon any philosophy of design or style. Their lack of self-consciousness was that of folk architecture everywhere, and of most architecture everywhere until the advent of the Renaissance.

To this minority should be added those architects confronted

with architectural problems for which little or no prototype existed and who were therefore forced to think in terms of "organic planning," even though their enclosure of space might betray stylistic affinities.

Faced with the considerable body of work produced by this minority group of the nineteenth and early twentieth centuries, and by their writings and lectures, one is forced to deny any major restriction or control comparable, let us say, to that exercised by the French Academies on painting. True, the lion's share of commissions went to the eclectic architects, but the individuals who composed our minority group received no negligible amount.

It must be granted that the modern architecture of Europe in the Twenties does represent a marked departure from the eclectic architecture current at the time and particularly that of the United States. Several factors served to sharpen the distinction. One was the freedom from all restraints traceable probably as much to the growing abandonment of all absolutes throughout the nineteenth century as to its more immediate cause—the war. Another was the need for economy in the post-war architecture of Europe, a fact which may have weighed as heavily as the esthetic position that ornament disrupted the unity of surface, or the more tenable position that the ornament commonly employed represented a survival of ornament developed during the era of handicrafts. The influence of painting, particularly cubism, was a third factor contributing to the seemingly tangential course of European modernism.

It should also be recognized that in gauging the differential between modern architecture and its conservative relative, attention has usually focused on houses and housing rather than upon industrial architecture and other types where less of a differential exists.

To discern the lack of preparedness of the American mind for modern art and modern architecture, one needs only to review the startled alarm and the jibes with which America greeted the Armory Show of 1913, and, in fact, exhibitions of modern art held as recently as the early 1930's. Any marked departure from painting tradition, whether of an experimental nature or not, was met with almost total lack of understanding and even with resentment and ridicule. If one leafs through the American architectural periodicals it will not be until the issues of the later 1920's that one will find any appreciable space given to contemporary European architecture, and then it was the superficial modernism of the Paris Exposition which aroused their attention. Our own pioneers toward modernism likewise received scant attention, so that when the Museum of Modern Art assembled its Exhibition of Modern Architecture in 1932, that exhibition broke upon a collective mind which was very slightly conditioned to receive it. For that reason the architecture there exhibited generated a more pronounced reaction and criticism.

With the astonishing spread of design through the majority of industrial and commercial products since 1930, however, and with the great general increase in American interest in art (painters, sculptors, and art teachers in the United States increased 46 percent more than the population between 1920 and 1930) the shock of modern art and modern architecture has abated.

More than that, modern architecture has propagated upon our soil to an extensive degree. John McAndrew observed that in 1932 the Museum of Modern Art could find but ten modern buildings in the northeastern states to include in its exhibition. In the Museum's "Guide to Modern Architecture, Northeastern States," published in 1940, 297 buildings are listed.

In these examples and in examples throughout our land we can perceive that modern architecture, "Le Corbusier—1930," has changed. Esthetic considerations and diminishing dogmatism have lessened the aggressive "machine for living" aspect of many modern houses. There has been a wider recognition of the values of wood, stone, and brick, as well as concrete. Differences in climate, in materials, in regional preferences for color and form, in the degree to which industrial rationalization is possible, in political economy and building codes, in geographic location, have inevitably modified the architecture which seemed in its sudden expansion into all countries to be the "international style." Hugh Morrison's suggestion that regional modernism may evolve from the conjunction of this modern architecture with the older traditions of America seems feasible.

As in science and medicine, the unwillingness of the conservative element to rapidly embrace the newest proposals seems to serve as a useful check against the impractical. It challenges the progressive to prove the rightness of their position.

Of course, boldness and daring are necessary if progress is to be attained. Giotto was certainly a progressive, no doubt a radical to many, in relation to the temper of his time. Michelangelo likewise.

Willingness to change is likewise necessary, though not to the degree illustrated by some examples in the history of the architectural profession, even within the compass of one building. For instance, how shocked we should be if King's Chapel or Old South Church were internally veneered with modern architectural forms (a treatment which obviously would not accord with the tenets of modern architecture). Yet an analogous treatment was administered at Gloucester, presumably without an anesthetic, when the ideal of the fourteenth century conflicted with an earlier ideal and the Norman choir was reclothed with Perpendicular tracery. When the North tower of Bourges collapsed, it was not rebuilt in the tradition and style of the south tower of almost two centuries earlier, but in the modern Gothic style of 1506.

In general, I am inclined to agree with those who would declare a moratorium on style. Experience suggests that style, like happiness, is usually a by-product of some more important quest. All architecture must be rooted in the physical and spiritual needs of mankind, as both traditionalists and modernists agree, however they may differ in their interpretation of those needs. Materials and methods of construction affect the final result. That there is room for ample difference in taste in proportion, color, volume relationship, and all else between societies and between individuals is abundantly indicated in any study of the variations of taste which have characterized past epochs.

Some signs suggest that the Americas of the future will serve as a definite center of banking, commerce, and industry between the old world and the orient. If this condition is realized, American opportunity to contribute to the evolution of architecture will be unparalleled. Architecture of the present generation has been enriched by the humanism of modern architecture and by its recognition of contemporary technics. Modern architecture has modified its doctrinaire position of a decade ago. The process of evolution continues but we need to be constantly on guard against the delusion that evolution guarantees progress. In the words of Kirtley Mather, an eminent geologist, "Evolution . . . merely guarantees change or stagnation."

An innovation in the use of plywood is found in the 198 identical timber roof girders fabricated at the building site and erected for the RCA Manufacturing Co., at Camden, N. J. They are in reality box girders where the webs are made of 5/8 inch plywood on laminated chords of 2x6 inch planks. The chords are assembled by tooth-ring connectors and the webs are fastened to the chords by cement-coated nails. Stiffeners are placed between the webs. Girder spans are all 36 feet. At the ends of each girder a vertical 6x6 extends above and below the chords, affording a means to bolt the girders to the square wood columns or posts. Split-ring connectors are used with these bolts. Stiffeners, between upper and lower chords, are of 4x6, 6x6, and 6x10 to which the plywood webs are nailed through stencils giving accurate location of nails.

Full scale load tests were made showing a deflection of 1/8 inch from the weight of truss. A superimposed load of 24, 562 lbs. increased the deflection to 1 1/8 inch. With the load removed, the deflection returned to 5/8 inch. H. K. Ferguson Co., industrial engineers and builders, here achieved a new construction of low cost in record time.

The Chicago Building Code, adopted and made law in 1939, was pronounced, from near and far, the best building code of any metropolitan city in this country. It had faults and mistakes and amendments for correction have been made into law. The attack on this code by FHA, the Chicago Building Congress, the Association of Commerce, the Chicago Daily News and by individuals during the last year was surprising. The main criticism was based on the cost of building under the code and pressure has been brought on the Common Council to eliminate established fire precautions such as brick walls and provision for air and light.

The Common Council has, in May, passed an ordinance permitting the remodeling of old residences into apartments with less of such precautions than are required for new structures. This new ordinance is to function for the duration of the war.

For the past year the Bulletin has presented to its readers reports of Government purchases and placement locations of prefabricated houses. Arthur C. Holden, A.I.A., tells in the April Octagon of his firm's work in creating such houses and his partner McLaughlin's work in creating a corporation that prefabricates such houses. He argues that skillful group planning will create beauty of composition in harmonious units. "To those architects who consider it their job to utilize every available facility to produce a better house, prefabrication offers no terrors. Such architects will seize upon prefabrication to find out what use they can make of it . . . He will accept the fabricated chassis; he will put emphasis upon the setting and the variation in detail, texture, and color which he can give it." Holden says the architect must become familiar with drawings conforming to the prefabricated system of modules.

To be convincing, Mr. Holden should present to the profession photographs of his houses in clusters as well as individual plans and details.

Store front design is like millinery—both are fickle. A woman will demand that her hat be in fashion even though it be unbecoming. A tenant demanding a new store front wants first of all to attract attention; he may be indifferent to good taste but he wants the passer-by to stop and look at his wares through the show window. One difference between store fronts and millinery is that the architect in this case works at the base of the structure while the milliner tops the crown. The milliner here has the advantage in that he need not concern himself with structural supports. The architect, while he may be forced to ignore lines of support in his design to satisfy his client, often produces architectural crimes in that modern steel construction permits him to carry great superimposed loads over plate glass voids that are violations of the first principles of architecture.

A walk down State Street, in Chicago, from Lake to Van Buren, will verify the above statements. At the southwest corner of State and Washington stands the Reliance building, a structure that made history when it was built soon after the Columbian Exposition of 1893. Its store fronts for various tenants, built later, ignore structural lines both horizontally and vertically. The materials and their potpourri of color are as disorderly as can be imagined. The deportment of the Reliance's neighbors in this respect is not much better. Even in a great structure such as the Palmer House, erected in recent years, the State Street store fronts have changed as much as three times in its life and, while the displays and the night illumination may be the last word in this type of architecture, harmony between the store front structure and superstructure is quite lacking. The great department stores, Field's, Mandel's, Carson, Pirie, Boston store show good manners in their store fronts and respect for the superstructural lines and the very recent rebuilding of the Fair fronts cannot be criticized from this point of view.

On Michigan Avenue there was erected some forty years ago the Gage Brothers wholesale millinery building whose store front and superimposed facade were designed by the late Louis Sullivan. The store front was framed in ornamental iron rich in Sullivanesque ornament and a dignified entrance, also of ornamental iron, was placed within the frame. This store front achieved a national reputation and pictures of it were extensively shown in architectural and art journals. Gage Brothers have disappeared from this location and today there are three stores and an office building entrance within this once beautiful frame. This entrance clashes with everything around it and has a transom bar that harks back to the art nouveau of about 1900. Horizontals of this entrance and adjoining store fronts are catch-as-catch-can. Unashamed the end stores have cut away the verticals of the original frame to bring the glass a little closer to the lot line. The whole thing is a vicious piece of work on Chicago's principle show street. The Carson, Pirie store front by Sullivan, which was designed for Schlesinger & Mayer, in the late 1890's, has withstood the passing fashions and remains today, as it was originally designed, perhaps the finest store front anywhere.

In this matter of designing store fronts to suit tenants, the architect should be able to do some missionary work with his tenant clients. He should urge these clients to have more respect for the structure as a whole in its appearance on the street. Perhaps in no other country are business streets so incongruous where individual shopkeepers through materials and electric lights show bad manners in stepping outside an architectural frame to the extent that they do in the U.S.A.

Charles D. Maginnis, distinguished Boston architect, past President of the A.I.A., has been chosen this year's gold medalist of the American Irish Historical Society.

Illinois Society April-May Meetings

The fourth Tuesday of the month, falling on the twenty-eighth, the Illinois Society of Architects, as per by-laws, held its monthly dinner and meeting. Forty came—40, count 'em, 40—including the special speaker of the evening, Clyde A. Gardner. They were a comfortable, quiet little company and as the evening wore on, with questions and answers between the architects and Mr. Gardner, it was more like a meeting with the "Quiz Kids."

Anyway, after the dinner, President Ryan called for the minutes which had been conscientiously written in detail of the March meeting and read with very good effect. There was even applause after the reading, which is unprecedented after listening to minutes of architects' meetings.

The President then proceeded with a lot of correspondence that he had had with various bureaus in Washington, all in the interest of jobs for architects. It seemed very long, particularly when it is considered that everything projected today may be upset tomorrow. He called on Benjamin Franklin Olson, who is chairman of the Public Action committee and the Public Information committee, for reports. According to Olson nothing startling or violent has occurred in either committee. He had some correspondence regarding publicizing the architect which brought Arthur Woltersdorf to his feet. Woltersdorf related some of his own experiences while serving on the Public Information committee, through a number of years, in the Chicago Chapter. Herman L. Palmer reported applications of a number for membership. Then there was some inter-member exchange of views on defense housing which wasn't overly illuminating.

The President in introducing Clyde A. Gardner as the special speaker of the evening referred to the exhibition of models set up in the room since Mr. Gardner's subject was "Models and Model Making." These models were made in various materials beginning with the time-honored plaster models (Merchandise Mart and Field Office building) extending through wood and pasteboard to all the synthetic products that have been used in recent years for model making. These models, often with color, showed exteriors and interiors of homes, an airport building, an extensive area with the various objects found within it and what have you.

Gardner was a sculptor but passed from that to panoramas, dioramas, backgrounds in museums, animated backgrounds for movies which took him to Europe, Asia, and Africa including New Jersey. His work may be seen in the permanent exhibits in the Field Museum, Chicago Historical Society, and Rosenwald Industrial Museum. Besides this he is today serving in an advisory capacity to an artist's material supply house of national reputation.

Like a prestidigitator, Gardner hauled from the satchel miniature trees, a textured surface used to suggest elephant hide, and many other things. He advised the architects to have as a hobby the making of models and suggested they study, in model form, the huts and habitations of the natives in Alaska, Java, the Philippines, and India. Complete silence reigned after this statement. But Gardner followed along in his informal way gradually building up a lively interest among his hearers and when he came to backgrounds for Hollywood pictures the quiz kids became alive with questions. Men wanted to know how effects were produced in the jungle picture from Kipling's book then showing in Chicago. Gardner told them; he further described the flight into Egypt across the Red Sea, as described in Bible History and illustrated in the movie.

But this was only the beginning. The quiz kids kept him going. Finally, in a lull, someone moved that the meeting be adjourned, which was carried. But before this Mr. Kieth representing Timber Engineering Co. of Washington, D. C. spoke.

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On May 26 the Illinois Society held its regular monthly dinner and meeting with an attendance of 55 which included Robert M. Stack, the speaker of the evening, Merle Sweet, President of Color Research Association, R. H. Smutzer and Navy Lieutenant Neil, all guests. Lieutenant Neil and Army Captain William F. McCaughey, a member of the Society, were in uniform.

President Ryan reversed the usual order by introducing the special speaker first. He was Robert M. Stack of the Camouflage Division of the Twenty-third Engineers in World War I and now manager of a division of an air brush company. He made clear that in aiming to confuse the eyes and camera of the bombardier sharp right angles in buildings, violent color contrasts between roads and adjoining surfaces, shadows from high smoke stacks and the like, must be disguised or obliterated; stacks and towers should be provided with camouflage skirts; that reflective paints must be eliminated for products such as casein paint. The very often extensive areas of smooth surface must be changed to stippled surface. This breaking up of surface is done with Flock, a product of finely cut fibers of rayon or cotton sprayed onto the surface which has been prepared with a suitable adhesive. All this, of course, is done by spraying. The speaker showed an ingenious gun equipped with three vessels or small tanks over the gun proper permitting the operator to use any three colors singly or in combination as desired.

The next speaker was Merle Sweet who had been to Pearl Harbor before and after December 7, 1941. The changes there during his absence were striking. Mr. Sweet paid his respects to George Kades an artist and fine executive at the head of camouflage for the Government, as well as to Lieutenant-Colonel Homer St. Gaudens for their intelligent and successful handling of camouflage in the present war. Sweet spoke of infra-red photos and cameras and demonstrated his remarks by photo prints which were passed to the audience. He reported camouflage tests made in Lincoln Park, Chicago, where children walked up to camouflaged tanks without realization of having an object before them. Mr. Sweet was followed by Mr. Smutzer.

Now President Ryan introduced the regular business of the Society. Secretary Newhouse was absent, no secretary no minutes. The meeting elected as its delegates to the A.I.A. annual meeting at Detroit President Ryan and Treasurer Llewellyn. Ryan had just returned from his third trip to Washington in recent weeks and reported his renewed efforts there in the interest of I.S.A. architects' jobs. Mr. Edmund Purves, the architect's representative at the capital for nosing out Government jobs for his professionals showed little hope of further employment. Ryan continued his calls at all the Government employment offices visited on earlier occasions, was cordially received but given no encouragement until he came to the Army Specialist Corps where he was told that the Illinois Society as an organization, was welcome, that the corps was seeking men of varied talents not necessarily confined to architecture, that the corps had new questionnaires to be filled out in duplicate and would contact the applicant personally through the questionnaire. The officer proposed to Mr. Ryan that the Society forward to him names of those desiring employment who had registered with Financial Secretary Palmer of the I.S.A. The Specialist Corps would then communicate with the applicant direct. The Society would be given credit for all individuals employed from this list. Mr. Palmer was instructed to forward the names of these applicants.

By order of the Board of Directors the Illinois Society's annual meeting will fall on June 30 instead of June 23. This is to avoid conflict with the annual meeting of the A.I.A. occurring in Detroit on June 23, 24, and 25.

A Pilgrimage to Galena, Illinois

The Illinois State Historical Society held a meeting at Galena the afternoon and evening of May 16 which was like a pilgrimage to a shrine to those attending. About 75 men and women members came from many places in the northern half of Illinois.

At the noon luncheon in the Community Center, President Hauburg called on Mrs. Janet Ayer Fairbank who told of her deep studies in Galena lore in preparation for her book "Bright Land." The Museum, housed in the same building with the Community Center, was visited next and then the pilgrimage afoot, under the personal guidance of Secretary Paul M. Angle, started, passing and stopping at no less than 28 places of interest. These were mostly buildings whose walls of masonry, built in the 1820's down to 1860, are remarkable for their sturdiness. Grace Episcopal church, built 1847, is perhaps the architectural gem of the town.

The walk ended at the Hotel DeSoto where after an hour's rest the dinner took place. The President, before calling on Miss Minnie Whitham to speak on "Galena in the Nation's History," asked Miss Scott, who had shaken hands with Abraham Lincoln, and now lives at Washington, Illinois, and is 88 years old, to rise.

Miss Whitham, an educator, now in the emeritus class, spoke forcefully and well. While Galena was not the birthplace of important men in the life of the nation, some grew to manhood and vigor there and played an important part in molding of the country. Of these she held out four: (1) Elihu Washburne, U. S. Minister to France and later U. S. Senator from Minnesota; (2) Augustus Chetlain, U. S. Consul-General to Belgium; (3) General John Rawlins, advisor and constant companion of General Grant in the Civil War; (4) General Ulysses S. Grant, who organized a volunteer company in Galena, offered his and the company's services to his state, was accepted and you know the rest.

Chicago Chapter April-May Meetings

More than 100 men attended the April dinner and meeting of the Chicago Chapter, American Institute of Architects, held in the quarters of the Chicago Bar Association on the twenty-first. The attendants were made up of Chapter members, members of the Illinois Society of Architects, Producers' Council Club members, the Chicago Building Congress officials and those of the Metropolitan Housing Council were also represented.

President Jerrold Loebl, after introducing those seated at the speakers' table, announced that minutes of the previous meeting would not be read, that the minutes would be referred to a committee of two for review. Delegates from the Chicago Chapter to the 74th annual A.I.A. convention, to be held in Detroit in June, will number eleven; that some responses from members willing to serve as delegates had been received. He asked for names from the floor and called on John M. Hoskins, oldest Chapter member, (Hoskins joined the Chapter in 1890 and is now in his 93rd year), whether he would go to Detroit as a Chapter delegate. Mr. Hoskins, alert and straight as an arrow, replied in the affirmative.

At President Loebl's request Nathaniel Owings, Program committee chairman, introduced the special speaker of the evening, Thomas S. Holden, once instructor in mathematics at M.I.T., once chief statistician for the F. W. Dodge Corporation, a member of the Business Advisory Council of the Department of Commerce, and now President of the said F. W. Dodge Corp.

The whole building industry in Chicago has heard Mr. Holden speak on earlier occasions. This time he dwelt on architecture and building of today as effected by the war. He covered the various angles from which this subject is viewed by men in practice and those that would like to continue in business though fear they will have to shut down.

The speaker launched into Conversion Order L41, then spread fan-like to other Government orders, and finally spoke of the post-war period and preparation for it now. He touched on National Socialism in this country and said that extreme New Dealers might bear watching in the interest of private initiative and its rights after the war. He spoke of the national debt, which now amounts to over one-hundred billion dollars, as perfectly safe when the huge business the country is doing is considered. A national debt twice the amount of the national income with interest rates sufficiently low, as at present, with alertness and keenness of mind in economics and finance, Mr. Holden felt was perfectly safe and should not bring on a depression as happened after the first world war. The speaker maintained we should have learned our lesson by now to avoid the depression.

The greatest prosperity the world has ever seen will follow our victory is Holden's prophecy. As the automobile created new architecture so the problems of this war, he says, will create unforseen and untold problems in architecture that will challenge the architect's imagination, his knowledge, and his skill, that will outdistance anything that the architect had to deal with in the classics of old, in the medieval days, in the Renaissance, or in the more recent capitalistic age.

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In lieu of its regular May meeting the Chicago Chapter joined with the Metropolitan Housing Council, Chicago Housing Authority, Chicago Plan Commission, and the Illinois State Housing Board in sponsoring a luncheon in honor of Captain Richard L. Reiss of London, England. Captain Reiss is director of Welwyn Garden City, England and is in this country on the call of Washington as a consultant on housing and billeting. The luncheon was called for noon, May 28. Captain Reiss was the speaker and his subject was "War Housing in America and England."

The 74th A.I.A. Annual Meeting

Announcement of a tentative program for the 74th annual meeting of the American Institute of Architects, with affiliated state organizations, to be held at the Hotel Statler, Detroit, Michigan, June 23-25, has been made.

Four topics of professional interest are given as the keynote for discussion at the three day meeting: (1) Existing situation of the profession; (2) Youth movement and unification; (3) Post war planning and post war program. There will also be a discussion of the education program.

Invention in the Nineteenth Century

To the School of Design in Chicago on April 17 came many guests as well as students of the school to hear Dr. Sigfried Giedion, 1939 Eliot Norton Professor at Harvard and 1941 Trowbridge lecturer at Yale, give an address on "The Anonymous History of the Nineteenth Century and The Spirit of Invention." The approach from the street to the lecture hall led through a harsh entrance and outer corridor into the school quarters. Here displayed on the walls were refreshing and intriguing designs by the students. The march through to the improvised lecture hall was accompanied by strains of distant music.

The speaker was introduced by L. Moholy-Nagy, Director of the School of Design, who mentioned Dr. Giedion's book "Space, Time and Architecture" (Harvard University Press 1941). Before the appearance of this book, students had become familiar with Dr. Giedion's name through his earlier writings and through the International Congress of Modern Architecture where the doctor was Secretary General besides being with Le Corbusier a co-founder.

Dr. Giedion's lecture was delivered without notes but supplemented by slides projected on two screens. His enthusiasm for his subject made him anxious to be heard and understood. Rather than talk on political, social or economic history, Dr. Giedion chose that branch of history which he terms the background of all of them, that is, the anonymous thing of daily life or, to quote from his book, "not a compilation of facts but an insight into the moving process of life;" not an accounting of technical details but the methods by which they arrive. To elucidate, the field of invention was used, and a little more specifically, invention in furniture design.

As a short introduction he traced the difference in invention for the individual ages, from the miraculous of the Age of Alexander, through the automatons of the French Revolutionary Period, to the Age of Machines.

Numerous and delightfully interesting reproductions of patents issued by the United States Patent Office from the early 1800's to the 1890's showed graphically the Spirit of Invention of the early Machine Age in the United States. Bustles and hoop skirts wheels for Waltham watches and tumblers for Yale locks, and artificial legs were among the early creations illustrated.

In the field of furniture something new was accomplished. Aside from the seeming necessity of making two in one inventions, creators were concerned with the mobility of furniture and in justifying shapes to meet the human body. From the camp chair, which was at one time a bed, writing desk, eating table, and cook-stove with storage for utensils, came the adjustable chair which is now the delight of both dentists and their patients but certainly not a thing of beauty. The tragedy of this adjustability of furniture occurred in the fact that it was developed in a purely technical sense. From the rocker of 1831 with springs, through the swivel chair of 1853 with both springs and rockers, the state of hovering seemed to be a constituent of chair design. One hovered in the swivel supported by a single leg or one hovered in a hammock chair suspended from a branch or hook from above.

In the nineties, this adjustability of furniture choked on its own superfluities, probably on the piano which changed into a bed and a fireplace, and the spirit of mechanical invention in household furniture suddenly stopped. Today the problem must be approached from a different angle. In the field of art the state of hovering has been expressed by the fantasies of Mr. Calder and designers are beginning to express beauty as well as mobility in chairs.

Dr. Giedion concluded that invention must be incorporate with daily living, that technical details are not enough. Man cannot live on bread alone. Architecture per se was given but little mention. The facade of Carson, Pirie, Scott & Co. building, Chicago, (Schlesinger & Mayer building, Louis H. Sullivan, architect) was shown on the screen as an example of architecture contemporaneous with a particular invention.

Director Moholy-Nagy of the school announced that through the generosity of Mr. and Mrs. Walter Paepke, Professor Giedion would remain in Chicago during the summer and would hold a seminar on "The Spirit of Invention" at the School of Design.

—Mary Ann E. Crawford

Mr. Ford has built an experimental automobile body of plastics which, in many respects, is superior to steel.

Changes in Chicago Building Code

Section Number	Action	Date	Council Journal Page
67-59	Amended Authorizes frame construction for defense housing in fire limits and provisional fire limits for duration of the war.	3/25/42	6831
68-17	Amended Changes specifications for tile in building walls and partitions.	1/5/42	6212
85-46	Amended Eliminates requirement for leak alarm signal devices on certain air-conditioning systems.	1/5/42	6213
89-2	Amended Includes certain territory in the 10th ward within the fire limits.	3/11/42	6775
Ordinance	Passed Prescribes construction requirements for new dwellings in defense districts for the duration of the war.	3/25/42	6828-31

The Fall of the Building Code

When builders, material dealers, and sub-dividers found that their respective profits, the margin between the actual cost of a small house and the amount of the loan had been getting smaller because of increasing labor and material costs, they united in an attack on the building provisions of the Municipal Code of Chicago. It was not surprising that the Press joined with them in the attack, inasmuch as the group's members are advertisers; on the other hand, it is astonishing that a publication that styles itself "Architectural" joined in the criticism and judgment passed on the Chicago Code, by a man not competent or qualified so to do on architectural, engineering or fire prevention matters. The following is quoted from the publication's editorial column:

> "Nothing less titanic that World War II could have jogged Chicago loose from the tentacles of its notoriously destructive, unreasonable building code, etc., etc., — — —"

But when the builders realized that this code made no provision for letting down the bars to the building of eight inch party walls and omitting parapet walls in row houses and required plastering in habitable rooms, the clamor and smear was renewed and the adoption of the F.H.A.'s minimum construction requirements and the repeal of the first defense housing code was brought about and went into effect April 19, 1942.

Now let us see the substitutes for the building provisions of the Municipal Code:

One header in eight inch brick walls, where the Municipal Code requires three.

Story heights reduced from a minimum of 8 feet to 7½ feet.

Wood lintels in lieu of steel angles; on the other hand, the Municipal Code does not prohibit brick arches.

Wood in lieu of metal gutters and conductor pipes.

Omit electric light outlets in closets — required by Municipal Code.

The F.H.A. Code permits "dry wall finish," and mentions wood boards, Plywood, Gypsum board and Fibre board, in lieu of plastering, but what a hazardous house for one's family, and palace for roaches, mice and other vermin.

In row houses, the party walls may be eight inches, and without parapet walls.

April 15, 1942 an ordinance was submitted to the Council to permit the conversion of any single dwelling of ordinary construction four stories and a basement, of not more than fifty feet in height and an area of not more than 3800 square feet, into a multiple dwelling, and an existing multiple of the same height, area and construction, into a greater number of dwellings, but it permitted the omission of the requirements for two-hour fire resistive separations between apartments, between the latter and corridors and around stairways and direct egress by two vertical means of exit.

Through the efforts of members of the Illinois Society of Architects, this ordinance was referred to a Committee that succeeded in having incorporated in the revised draft, protection of the occupants for a fraction of an hour.

If this ordinance is passed by the next meeting of the Council, it can be in effect by May 31st.

—Richard E. Schmidt, I.S.A. — F.A.I.A.

Dean MacCornack of M.I.T. Predicts

Dean MacCornack says that the bombing attacks on London will eventually bring about a beautification of that city.

"In London during the great fire of 1666, Sir Christopher Wren devised a plan for the rebuilding of the city, which, had it been acted upon, would have made London one of the most beautiful cities in the world and St. Paul's Cathedral, instead of being hemmed in on all sides by shabby property, would have stood in the midst of a fine oval place, approached by a broad roadway from Ludgate instead of by narrow Fleet Street. Again, instead of the miscellaneous collection of riverside warehouses a broad embankment would have bordered the river from the Black Friars Bridge to the Tower.

"Today, however, the bombing of some of this area gives London once again the opportunity to replan large areas of its city on a more perfect basis and there seems to be a good chance that long-range planning in England will have its day and out of the chaos and destruction of the war will come better cities."

In America, Dean MacCornack points out, opportunities to beautify cities were lost after the Great Chicago Fire, the San Francisco earthquake and fire, and the Chelsea fire near Boston.

"We must face, and face it now, the question of what we are going to do with American cities which are *fast approaching bankruptcy* and which cannot long continue to be important centers of a sound civilization unless steps are taken to cure the evils existing in them.

"Our housing has been based on the type of housing built in Middle Europe and in some cities has taken the form of ten and twelve story elevator buildings. Our housing does not furnish homes, but storage warehouses for families. The fundamental and ideal requirement of happy family life is an individual house, and why we should continue to house people in New York City on land that costs from eighty thousand to two hundred dollars an acre is a mystery. Until we consider housing for the indigent on cheap land and in houses that can be built for $250 a room, instead of $1,000, we will still be in the 'Dark Ages' of housing."

—From the Dean's address in Detroit, Feb. 20, 1942

Ungrateful Colonials

Again, our old friend, Professor Rex Tugwell, looms large in the news. First, he made America over, then he sold molasses, now he is busy bearing the white man's burden as governor of Puerto Rico. The colonials don't like the democracy with which they are being dosed by their savior.

Bolivar Pagan, resident commissioner and delegate to Congress from Puerto Rico, says the professor thought "that the island of Puerto Rico was a very nice place to test new social experiments with money that he promised would come from the federal Treasury." As a starter, he proposed to divide up the land among the proletariat. That was unpalatable socialism even if it had been done fairly, but Pagan asserts that Tugwell's own political favorites are getting all the best land.

At home, Tugwell's big idea was to make America over by resettling people in his Greenbelts, Hightstowns and Happy Valleys. He didn't do so well with that idea. The Government is now trying to turn loose of these community projects as fast as it can find buyers at ten cents on the dollar or less of its original investment. In going to Puerto Rico, perhaps he was applying the old proverb that a man is not without honor save in his own country.

—"Nation's Business" for April

One good looking girl wanted the Government to send her to Berlin for a talk with Hitler. She thought she could coax him out of his nonsense.

"The Government should provide me with a nice wardrobe," she wrote. "Then I think Colonel Lindbergh should fly me to Berlin, and as I do not understand German, H. V. Kaltenborn should be sent along as my interpreter." Her letter went on the nut list.

—"Nation's Business" for April

Stephen A. Douglas
His Tomb and Oakenwald

June 6, 1866 is an important date in Illinois History. On that day, just after the end of the Civil War, the Nation's notables gathered in Chicago to pay homage to Stephen A. Douglas, Illinois' first nationally known figure. Judge Douglas, as he was always known, had been the famed Senior Senator from Illinois at the time of his death in Chicago, June 3, 1861, and on this spring day five years later, Chicago was host to the Nation, as the corner stone of his Tomb was laid. The procession was impressive. Major General John A. Dix made the oration. President Johnson, Secretary Seward, Admiral Farragut and General Meade spoke. General Grant and the Secretary of the Navy, Gideon Welles, were presented to the large gathering. Near by, Douglas' grave was decorated for the occasion. They recalled his valiant fight to save the Union and his donation of land which led to the founding of the first University of Chicago. The circular stone platform upon which the speaker's platform was built, had been completed in time for these ceremonies and together with the square sepulchre to house the sarcophagus, comprised the first stage of the Tomb contract, which was awarded October 26, 1865.

In October following the death of Douglas, the Monument Association had its first meeting to discuss ways and means of erecting a Monument and Tomb for the "little giant." In May 1863, the State Legislature failed to appropriate funds because of the war. During 1864, the design was selected. The Douglas cottage just west of the grave site was deeded by his mother and sister, to the Association, to help with the construction costs, and a small fund was raised by the sale of photographs and subscriptions. This was not enough and in 1865 the State Legislature appropriated $25,000 to buy the one acre Tomb site and build the platform and sepulchre.

Douglas had purchased about 53 acres at the southern edge of Chicago in 1849, and called it Oakenwald. This subdivision was bounded on the north by Lyon Avenue (33rd St.) on the west by Kankakee Avenue (South Parkway), on the south by Douglas Place (35th St.) and on the east by Lake Michigan. In 1854, he expressed a willingness to help with the founding of a University of Chicago. In 1856 he deeded ten acres in the center of Oakenwald for the Campus which was bounded by Cottage Grove Avenue on the east, by University Place (34th Place) on the south, Rhodes Avenue on the west and College Place on the north (33rd Place).

The first meeting of the Board of the Trustees of the University of Chicago was held July 14, 1856, with Douglas as President, the post he held until his death. The progress made by the University during its first ten years was reviewed by General Dix in his cornerstone oration as follows: "A few hundred yards west of us, shut out from our sight by an intervening grove, stands the Chicago University. In the magnitude of its extent, the massiveness of its architecture and its well balanced proportions, it is not only an ornament to the City, but a testimonial of the liberality which private wealth has contributed to the cause of science." He said there were two hundred students in Chemistry, Astronomy and the other sciences. In 1866 there were four or five buildings. In one of them, Bryan Hall, Douglas' remains rested in state prior to his funeral and later the main building was named Douglas Hall in his honor.

As the corner stone was laid on that memorable day in June, 1866, Camp Douglas, the second largest prison and training camp in the United States, had been abandoned, only a year before, at the close of the war. It was built in the fall of 1861. Its southeast corner was two city blocks from the speaker's platform. The tract was of irregular shape, fronting east on Cottage Grove Avenue. Its south boundary was College Place (33rd Place), the northern line of the University. It extended west to Forest Avenue and north to 31st Street. Its southern area overlapped the original boundaries of Oakenwald. The camp site was purchased by the Federal Government from a Henry Graves. A surrounding fence twelve feet high was built during the winter of 1863-4 when it was converted into a prison camp where more than 30,000 prisoners were housed. Up to 1863 more than 30,000 troops had been drilled within its confines.

A study of the Chicago newspapers of June 7th, 1866 the day following the cornerstone ceremonies is interesting. *The Chicago Tribune,* the pro-Lincoln Administration journal, covered the event as a news item, whereas the *Chicago Times,* the vicious critic of the Republican War Administration, devoted practically the entire issue to Douglas.

Illinois was proud of Douglas that day and thought of him as one of her own, although he was born in Brandon, Vermont, April 23, 1813. His father died when Stephen was two months old and his mother and sister made both ends meet until he was about seventeen when Mrs. Douglas remarried and the family moved to New York. Stephen was now able to attend the academy there. In 1833, when twenty, he packed his bag and headed west to seek his fame and fortune. He entered Illinois at Alton. He taught school for three months at Winchester, made friends, passed the bar and from then on his rise was phenomenal. He was interested in and identified himself with Jackson's policies and was elected to the State Legislature. When 28 years of age he became a Judge of the State Supreme Court. Two years later, in 1843, he was elected to Congress and remained in Washington until his death. Gradually his fame as an eloquent speaker and an astute politician covered the Nation.

One of the most important and far reaching bills he ever introduced was the Kansas-Nebraska Bill which opened the slavery question, split the Democratic party and led to the formation of the Republican party. Nida says: "Douglas himself had written the bill of his own motion, in his own home and consulted with only two people about it, President Pierce and Jefferson Davis." This home he always referred to as the "Cottage" and was infrequently used by him. He usually stayed at the Tremont House in downtown Chicago.

The design and execution of the Douglas Tomb and Monument revolved about Leonard W. Volk, sculptor and relative of Douglas by marriage. Mrs. Douglas wanted her husband buried at Arlington, Va., but local sentiment was against moving him outside Chicago, so she consented to having him buried on the spot Douglas had pointed out to Volk as the site for his new home. Shortly after the funeral, Volk was appointed custodian of the grave. He attended the first meeting of the Association in October, 1861, and later proposed a plan of financing. He sold photographs of the grave for $1.00 and of Douglas for $2.00, aggregating $2,500 over a four year period. In July 1864, he submitted a clay model in competition with a design submitted by Schureman & Millick (sounds like a firm of optimistic architects). Mrs. Douglas voted for Volk and the Association vote was 8 to 1 in favor of the sculptor's model, and for this he was paid $75.00. The State appropriated $25,000 and the first stage was built and Douglas' body was placed in the sarcophagus June 3, 1868. He is the only one buried there. In 1869 the Legislature failed to appropriate more funds. The Chicago Fire of 1871 burned Volk's designs. The panic of 1873 added new hardships. These catastrophies seriously effected the first University of Chicago also. Combined with the panic of 1857 and the Civil War, they finally caused the insurance companies to foreclose the mortgage and the University ceased to function in June, 1886.

Returning to the Monument, in 1875 new appropriations were sought. At last, in 1877, $50,000 was appropriated and the work got under way. Again in 1879 an additional $9,000 was passed by the Legislature and Volk was awarded his final contract in March, 1880. The Monument was considered complete May 5, 1881, with a total cost of about $90,000 of which $84,000 was State funds. The General Assembly records reveal that in 1879 and 1880 $300 was paid to J. M. Van Osdel, architect, for professional services.

The Monument and Tomb is at the foot of 35th Street and is typical of the period — a giant column 46 feet high, supporting a bronze standing figure nine feet nine inches high. Four seated figures surround the base and sepulchre, one of them, Illinois, is reminiscent of Mary Todd Lincoln. Douglas' body reposes in a sarcophagus of Vermont marble from his home county, which supports a bust portrait of him by Volk. At first the base and sepulchre was built of "Athens marble" (our own Joliet stone), now only the door sill is of that material and the entire Monument and Tomb are of Maine granite and bronze. In 1877 the design of the base and sepulchre was changed and the exposed material changed to granite.

Recently there was a movement to remove the Tomb to some other location. It was initiated by a group who wished to see it in a more prominent location. We hope that when Government restrictions on construction are removed, that this desire will not come to life again. First there is the sentimental factor. In later years if the move is made, there will be another movement to move it

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Villard de Honnecourt

Perhaps the most interesting survival of a documentary nature is the famous album or sketch-book of Villard de Honnecourt a French master of the early thirteenth century and designer of Cambrai Cathedral, which was found in the library of St. Germain-des-Pres.

Villard de Honnecourt was a man of a lively disposition, intensely interested in anything to do with building, whether as structure or design. His sketch-book contains significant little things struck out in conversation with his friend, Pierre de Corbie, like the sketch for a periapsidal ring of chapels with a double ambulatory; direct design, and design in the abstract for the love of it. When he admires, his admiration is generous. "I have been in many lands," he says, "but nowhere have I seen a tower to equal that of Laon." His sketches show his interest in plan and in construction as in detail and ornament. He takes advantage of any short cuts which will save needless labour, and his figures show a blocking out of the main lines and masses. The pages of his book in their notes and drawings show the mind and the hand of the individual designer and student, alert to perceive, qualified to criticise, and competent to construct.

—From "English Monasteries in the Middle Ages" by R. Liddesdale Palmer

New Insulating Board

To meet the shortage of cork insulating board created by the war, "Fiberglas AE (asphalt enclosed) Board" has been put on the market. Fiber glass is treated with a resin binder, compressed into standard 12x36 inch boards, 1, 1½, and 2 inches thick and after boards are formed the surfaces and edges are impregnated with asphalt of high melting point to exclude moisture.

Test show "Fiberglas AE Board" has a heat conductivity of 0.265 Btu. per square foot per hour per degree F. per inch of thickness, as compared to 0.277 for cork board; weighs slightly less than cork and has sufficient structural strength for uses on roofs and for cold storage rooms. The new material, it is claimed, is superior to cork in the prevention of moisture penetration.

Where more than one thickness is required, added layers are secured in place with wooden skewers treated with preservative. Because of curtailment in the manufacture of refrigerators and gas stoves, fiber glass is released for insulation in making this board. It is manufactured by Owens-Corning Fiberglas Corp.

A. W. Clapham in his "Romanesque Architecture in Western Europe" referring to the well known Italian practice of setting the flanking columns of the main doorways on the backs of lions or some other beasts, in the Romanesque era, says: "This, according to Mâle, was the revival of an ancient eastern motif which had been transmitted by eastern manuscripts to the decorations of the Carolingian and later Canons of the Gospels and finally emerged into the round in Italian architecture. From Acerenza (late eleventh century) it spread rapidly throughout Italy and beyond the Alps. A late and very splendid example is to be found in that masterpiece of Dalmatian art the west doorway of the cathedral of Trogir (Trau) built by Radovan, a Slav, in 1240."

The Chicago Plan Commission has just issued a paper covered book of 100 pages entitled "Forty-Four Cities in the City of Chicago." This is a compilation prepared for the purpose of obtaining a background for the specific neighborhood planning problems of each community.

The articles, prepared under the supervision of Dr. Homer Hoyt, Director of Research, were almost all written by the Research Division staff of the Commission, Dr. Hoyt contributing a goodly number from his own pen. Earl Reed, architect, contributed four of the forty-four articles and took the photographs which are reproduced in the book.

The Social Science Research division of the University of Chicago, besides establishing the boundaries of the community areas, has made many analyses of the characteristics of population of these communities. The articles appeared serially in the magazine *Real Estate* from April 5, 1941 to and including February 7 1942.

Plym Fellowship in Architecture Awarded

The twenty-ninth competition in architecture of the Francis J. Plym Fellowship, L. H. Provine, Secretary, has been awarded. Ralph E. Myers was placed first by the Committee of Award and Richard E. Drover second. The subject of the program was "An Airport for a Middle Western Industrial City of 100,000 Population."

American Institute of Steel Construction prizes for the most beautiful bridges built during 1941 were, (1) most beautiful monumental bridge, Rainbow bridge over the Niagara River; (2) Fairmount Boulevard bridge in Cuyahoga County, Ohio, most beautiful small bridge; (3) Passaic River bridge at Kearny, N. J., most beautiful movable-bridge. The following five men were judges: Grosvenor Atterbury, New York architect; Professor Carlton T. Bishop, of Yale University; Kenneth Reid, editor of Pencil Points; Professor Harold E. Wessman, of New York University; Frederick J. Woodbridge, New York architect.

Tin, our chief headache, occurs largely in placer deposits like gold. It is frequently associated with magnetite which can be traced by its magnetic properties. Tin is heavy and usually sinks through the gravel beds to the bed rock. The contour and depth of the latter can be determined by seismic and electrical methods. These methods have been successful in locating placer gold deposits. But neither these nor other methods have disclosed any but the most meager and expensive sources of tin in this country.

—Dr. Morton Mott-Smith in "Science News Letter"

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back where it rightfully belongs and archaeologists will be digging up the old site attempting to locate the original foundations. Finally, the die of the Douglas Destiny is cast. The old *Chicago Times* rightfully said in 1866 "Douglas needs no Monument." And we in 1942 or subsequent years, can do nothing to add or detract from his achievements and fame.

—Joseph F. Booton, Chief of Design,
Division of Architecture and Engineering, State of Illinois

Anthony F. Rusy, Chicago architect, for the last 28 years superintendent of construction for the Board of Education, died at Madison, Wis., April 5. He had been a member of the Illinois Society of Architects since May 5, 1914.

■ ■

John Meldrum, architect in the office of the Illinois State Supervising Architect, died at his home in Skokie, April 25, age 58. Mr. Meldrum was born in Collington, Scotland and came to this country in 1916. His earlier architectural service in Chicago was with Charles Hodgdon & Sons in their work on University of Chicago buildings.

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Arthur N. Talbot, internationally renowned engineer and professor emeritus of engineering at the University of Illinois, died April 3 in Passavant Hospital, Chicago, age 84. Dr. Talbot was born in Cortland, Illinois, entered the University of Illinois at Urbana 1877, graduated there with C. E. degree 1881, and then entered railroad construction. He returned to Urbana in September, 1885, as assistant professor of engineering and mathematics, remained there as a teacher until 1926 when he was retired. His research work, however, he continued until his death. Dr. Talbot in the 1890's was perhaps the first engineer to introduce into architectural and engineering structures in the U. S. the then quite new reinforced concrete. This construction had a tryout in France and Egypt under the engineer Henebique. Dr. Talbot's studies, tests, and deductions, not alone on concrete but other building materials, are noteworthy and authoritative. Likewise in railway engineering his work is noteworthy. Track stresses of his development are responsible for the high speed of train travel today.

Dr. Talbot was a member of all the important engineering societies in America and England. He was awarded many gold medals in honor of his scientific achievements. He lived in Urbana, Illinois.