# The Prairie School Review

Volume II, Number 2 Second Quarter, 1965

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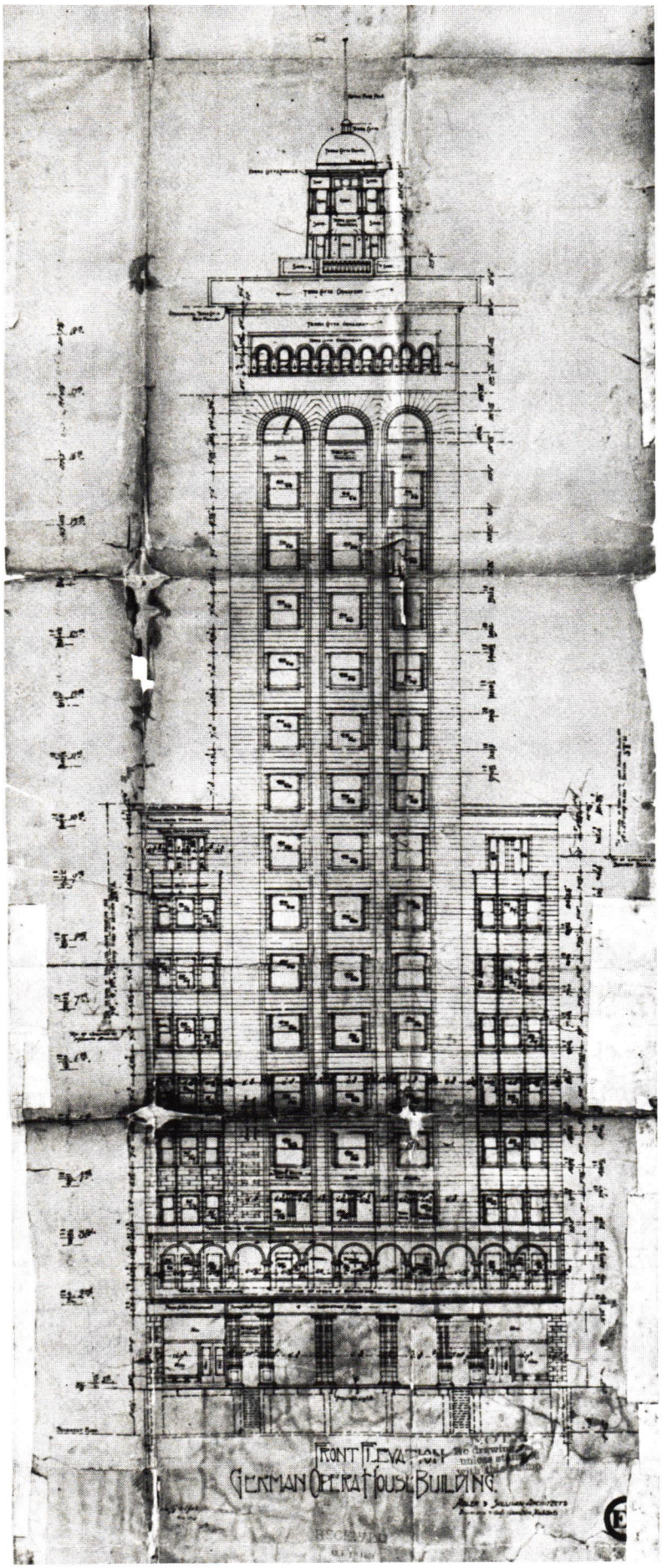
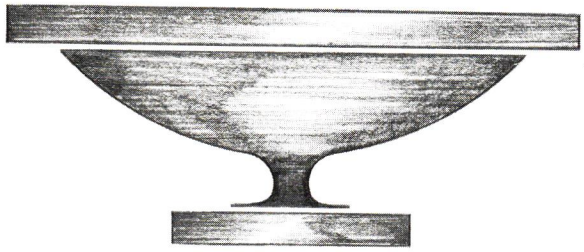



*The photographs in this issue of THE PRAIRIE SCHOOL REVIEW are the work of Richard Nickel except where otherwise noted. Mr. Nickel led the fight in 1961 for the preservation of the Garrick Theater. Although this great building was lost, Mr. Nickel then was instrumental in the preservation of its ornament. His photographs, along with the Historic American Building Survey drawings reproduced herein, are the best source of information we have concerning Adler and Sullivan's Chicago masterpiece.*

*COVER: The Garrick Theater, now demolished, was originally known as the Schiller Building. The two names are used interchangeably in this special issue devoted to Chicago's landmark.*

*LEFT: This is a reproduction of the original Adler and Sullivan drawing of the Randolph Street facade of the Schiller Building. The same drawing can now be seen etched on a steel plaque located in the parking garage now occupying the site of the Schiller.*

The PRAIRIE SCHOOL REVIEW is published four times a year by the Prairie School Press, 117 Fir Street, Park Forest, Illinois. W. R. Hasbrouck, Editor and Publisher, Marilyn Whittlesey Hasbrouck, Assistant Editor. Manuscripts concerning the Prairie School of Architecture and related arts are solicited. Reasonable care will be used in handling manuscripts and such material will be returned if return postage is enclosed. Single copy price $1.50, subscription $5.00 per year in U. S. and Canada, $6.00 elsewhere. Issues are mailed flat in envelopes. Address all change of address notices, subscription or back issue inquiries to the Editor at the above address. 



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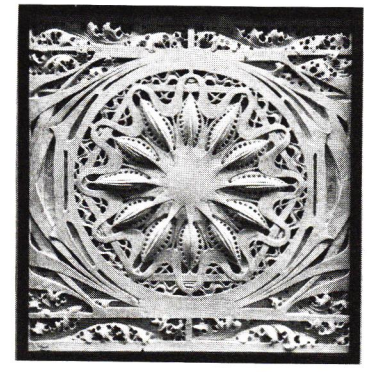


# *From the EDITORS*

*The inexcusable loss of the Garrick Theater has perhaps been the low point in the preservation of buildings of architectural merit. Fortunately, out of this loss grew a public awareness of our architectural heritage that appears to be ever increasing. It is doubtful that another tragedy of the scope of the Garrick Theater could be repeated in Chicago today. The public would not permit it.*

*Now another phase of preservation has become acute. The death of William Gray Purcell in April and of Alfonso Ianelli a few weeks earlier, and the recent acquisition of Sullivan drawings by the Avery Library at Columbia University highlight a correlative phase of preservation. The death of these two men has suddenly thrust into public consciousness two large repositories of historical data.*

*Mr. Purcell was acutely aware of the value of the Purcell and Elmslie file of architectural records. He kept this material intact and arranged for its proper disposition after his death. His friend and biographer, David Gebhard, now has the responsibility of carrying out his wishes. It is virtually certain that these records will go to the University of Minnesota where an archive is to be established which will be open for future use and study.*

*Mr. Ianelli, best known for his sculpture, was active in many phases of art and architecture. He was also a pioneer in the field of industrial design, and his files are a record of our culture's progress in design over the past sixty years. His collection, for example, includes a series of posters and graphics showing a clear line leading to the Midway Garden's sprites, all done long before meeting Frank Lloyd Wright. At this writing, plans for disposition of Ianelli's archive are incomplete. It will remain intact.*

*Louis Sullivan's gift to Frank Lloyd Wright of his personal collection of drawings just prior to his death postponed public trust of this historical material, but the purchase a few weeks ago of the entire collection by Columbia's Avery Library makes discussion of this subject as current as the others. This new acquisition along with Sullivan material already at Avery now constitutes the finest single collection of original material by America's greatest architect. The Avery also was the beneficiary when Marion Mahoney Griffin bequeathed most of Walter Burley Griffin's drawings upon her death several years ago. All of this invaluable material is superbly cared for and cataloged for convenient study. Avery Librarian Adolph Placzek is to be commended.*

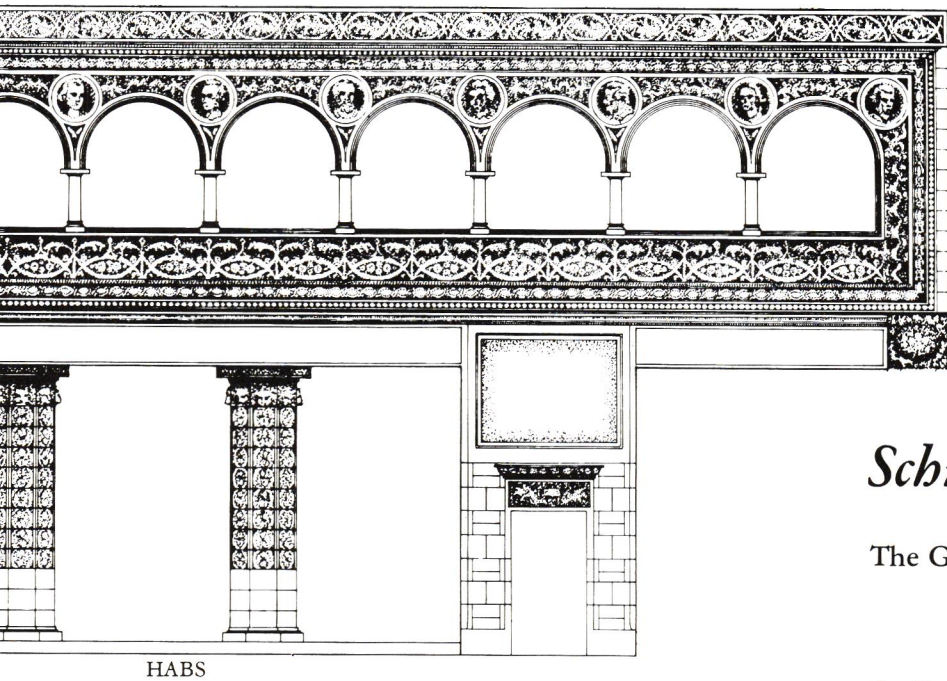
*And where is Chicago? Why isn't this material deposited in Chicago? This is where it began, where the new architecture matured, and where the buildings were built. The commercial buildings of the Chicago School are in the Loop, and many of the Prairie houses of the Prairie architects are within sight of Chicago. They can, of course, be seen elsewhere, but this is where they began and where the record of this achievement belongs. Why must Louis Sullivan's drawings be available only in a city where he built only one building?*

*Chicago has the basic facility required for deposit of such material. It is the Burnham Library at the Art Institute of Chicago. Unfortunately, the Burnham no longer exists as a separate entity. Several years ago, in the name of economy, it was incorporated into the Ryerson Library of Art and since that time it has suffered. There is no longer, for example, a Burnham Librarian. This responsibility is thrust upon the Ryerson Librarian and her assistants who are already understaffed and overworked. Lack of adequate space has forced the closing of the area originally set aside for the Burnham Library, and thus for the student, the Burnham has physically ceased to exist.*

*It has come to our attention that the combined Ryerson and Burnham libraries are now about to undergo an extensive remodeling program which will greatly increase the space available. This will more than likely be the last opportunity to reestablish the Burnham as it should be. We urge that this be done and that a search be undertaken immediately to find the most competent person available to act as Burnham Librarian. This will perform the dual function of relieving the present Ryerson Librarian of these extra duties and will permit the Burnham to once more establish itself as the foremost Library of Architecture in the world.*

*The first cry to be heard following this suggestion will be that of money. Who is to pay the cost of reestablishing the Burnham and placing an adequate staff therein? We do not know the answer to this question, but we do know that Chicago's Art Institute is not exactly poverty stricken. Furthermore, may it be pointed out, the acquisition of items concerning the development of modern architecture in Chicago must be made when the opportunity presents itself; it cannot be deferred. The Sullivan material, the Griffin material, and much Wright material is already gone. The Purcell and Elmslie collection is on its way to Minnesota and a permanent repository must be found for the Ianelli archive or it too may be lost. More such files will become available and soon. Delay is disaster.*

*The buildings of Chicago are gradually being preserved even though many will be lost. What of the documents which may be of even more importance to future generations?*



HABS

# *Adler & Sullivan's Schiller Building*

## The Garrick Theater

by Paul E. Sprague

*The author is Assistant Professor of Architectural History in the Department of Architecture at the University of Notre Dame. Mr. Sprague is currently preparing a book on Louis Sullivan's architectural ornament. He is also collaborating with Donald Egbert on a book about Sullivan's friend, the architect and anarchist, John H. Edelmann.*

Chicago must have presented an inspiring--if not perhaps awesome--spectacle to the visitors from all parts of the world who descended upon the city in the spring of 1893 for the opening of the World's Columbian Exposition. Lining the streets of the Loop were a vast number of buildings whose fronts rose a sheer ten stories from the pavement. These alone would have given pause to most visitors, foreign or domestic, accustomed to the conventional pre-elevator buildings of half that height. But, in addition, scattered throughout the Loop, there were not less than twenty-nine impressive structures whose walls climbed even higher into the sky.[1] Tallest of these was the Masonic Temple reaching twenty-one stories and a height of 302 feet, surpassing its nearest rival, the Auditorium Tower, by some thirty feet.

To the visitor approaching from the east along Randolph Street, a newly completed building with the warm-brown terra cotta surfaces of its slender tower gleaming in the sun cannot have seemed very impressive. Certainly from a distance it must have been visually overpowered by the height and bulk of some of its neighbors on the north side of the street. The Masonic Temple stood two blocks to the east, and the Ashland Building of sixteen stories rose directly beyond it one-half block to the west. Yet it was to this very building with its slender tower, whose name The Schiller could be read in large letters immediately above the ground floor entrance, that the architectural critics and the more enlightened laymen of the day found their way. They sought it out because in it they divined not simply another exhibition of technical audacity but, as well, a work of art.

Banister Fletcher, the English architect, was enthusiastic: "This building appeals at once...as being the best designed tall structure, not only in Chicago, but in the States....I take it, in fact, that the Schiller Theater is in the same relation to the new style of tall building as the Parthenon bears to the architecture of Greece."[2] Fletcher's comparison of the Schiller Building with the Parthenon was no slight praise, indeed, for a sophisticated European to bestow. And the architectural critic, Barr Ferree, representing the

1 For a bird's-eye view of the Loop at this time see Views of Chicago, Chicago: Rand, McNally & Co., 1898, as partly reprinted in Frank A. Randall, History of the Development of Building Construction in Chicago, Urbana: The Univ. of Illinois Press, 1949, pp. 151-216. Randall gives the date of these views as 1898 but the buildings shown are those completed or under construction at the time of the World's Fair. Those which, according to the Chicago Daily News Almanac and Political Register, 1893, were projected or begun in 1892 are shown. Those projected or begun in 1893 and later years, such as the Stock Exchange, Marquette and Champlain Buildings, do not appear.

2 Banister Fletcher, "American Architecture Through English Spectacles," Engineering Magazine, VII (June, 1894), p. 318.

superior culture of the Eastern states, was equally unsparing in his praise: "the Schiller Theater, of Chicago,...is one of the most beautiful and impressive high buildings in the world...." [3]

The Schiller Building is shown in its heyday. The Borden Block, also by Adler and Sullivan, is seen just beyond the Schiller, and a block away the Women's Temple by Burnham and Root towers above its neighbors. Chicago Municipal Reference Library photo.

Of its intricate interior spaces the Schiller's facade gave, at best, only a vague notion. The festive nature of the theater within was announced, to be sure, by the ornamental balcony with its busts of famous German poets, artists and philosophers, and by the delicate open belvedere crowning the seventeen story central tower like a beacon marking the entrance to the theater so many floors below. Even the pilasters of the tower, returned by arches at the sixteenth story, seemed to point as much downward toward the theater entrance and the hidden splendors lying within as they did upwards to emphasize the height of the building. However, the simplicity and regularity of the windows in the floors between balcony and cornice asserted that the purpose of the building was at least two-fold and not entirely devoted to pleasure. But the exact nature of these various functions was not and could not be precisely expressed on the facade.

Beyond a loggia open to the street on the ground floor there was a vestibule and an elevator hall which gave access to the foyer of the theater. In the foyer stairways to the right and left ascended to a second foyer that communicated directly with the main floor of the auditorium. The most marked feature of the theater was the grand series of arches with delicate linear patterns piercing their faces that gradually contracted in size until the proscenium arch was reached. The entire auditorium, which had 1286 seats, [4] was covered by a plaster ceiling whose height continued to increase beyond the arches in order to embrace a balcony and above that a gallery whose furthest seats were 100 feet distant from the edge of the stage. [5] Nowhere was the continuity of this unified space interrupted by such traditional encumbrances as columnar supports or domed ceiling with suspended chandelier. The only remnants from the past were the three proscenium boxes to the right and left of the stage whose two grand arches, enriched with sculpture in their associated spandrels and lunettes, [6] transformed the boxes into decorative rather than useful adjuncts to the overall scheme.

Everywhere the enclosing surfaces were enriched with a delicate plaster ornament that served to establish an atmosphere of festivity and to emphasize as well the main architectural divisions within the auditorium. The ornament served to subdivide the plaster envelope of the main space, to give scale to its broad surfaces, and to furnish the eye with a variety of incredibly intricate linear designs in low relief. And, by means of a masterful organization of these ornamental friezes, moldings, arch faces, soffits and individual panels, as well as by the internal stylistic consistency between them, an effective unity was achieved within the entire space.

In accomplishing his aims the designer had been immeasurably assisted by an unerring sense of color harmony. An anonymous writer in the **American Architect** has left us a description of this long vanished color decoration:

> The interior, in color and design, seems to be a connecting link between the design of the Auditorium Hall and the coloring of the Transportation Building of the World's Fair. In the theater it is extremely successful, being a most pleasing mingling of green, gold and red, green being the body-color used....The finish of the lower floor is in mahogany, which harmonizes with the red in the decoration. The pale-green being ap-

3 Barr Ferree, "The High Building and Its Art," **Scribner's Magazine**, XV (Mar. 1894), p. 312.

4 According to "Views of Chicago," Randall, **History of Construction**, p. 195. The figure of 1300, usually given, is an approximation derived from "The Building Interests," **Industrial Chicago**, Chicago: Goodspeed Publishing Co., 1891, Vol. I, p. 223.

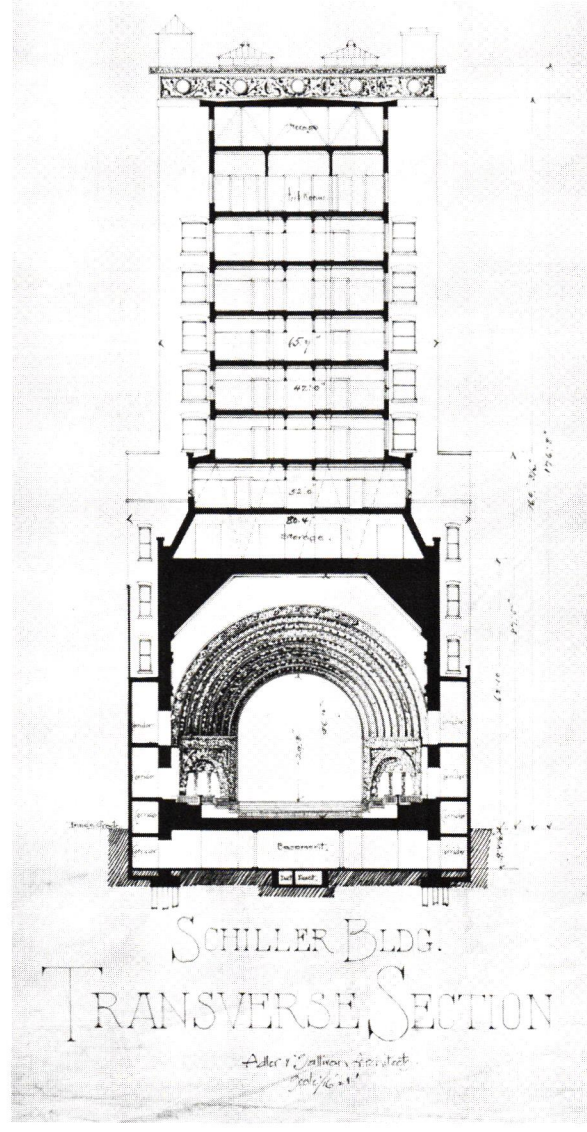
5 All dimensions given in this article are approximate.

6 The sculptured scenes in the lunettes by Richard Bock depicted incidents from Schiller's poems according to Arthur Woltersdorf, ed., **Living Architecture**, Chicago: A. Kroch, 1930, p. 75.

proached by this red through the gold, makes an especially charming effect. On either side of the wall of the first galleries are paintings incorporated into the scheme of decoration much as they are at the Auditorium.[7]

Perhaps the building can be best understood by dividing its plan into three parts and considering the vertical aspect of each. The first part, fronting on Randolph Street, consisted of a seventeen story tower, rectangular in plan, measuring 44 by 53 feet, set between two nine story rectilinear blocks with oriel windows running from the third to the eighth floors on the Randolph Street fronts. These wings were 20 by 40 feet in plan. On the ground floor there were two stores, averaging 19 by 47 feet each, between which there was an entrance loggia measuring 35 by 18 feet. Between the stores and loggia were staircases giving access to a large basement area 80 by 50 feet.[8] In the loggia itself was a second set of stairways, the one on the left leading upward to a large store on the second floor and to all the office floors above. The one on the right communicated with the gallery of the theater. A small vestibule separated the loggia from a hall containing on the right the theater box office and on the left five passenger elevators. All five elevators communicated with floors two through nine; four of them continued to the fourteenth floor and two of these served the three topmost floors as well.[9] Above the second floor were 92 offices whose areas varied from 203 to 328 square feet.[10] This section was supported by a riveted steel skeleton sheathed in a fireproof skin of terra cotta. On its roof stood a 29 foot high belvedere which evidently served solely as an observation platform.[11]

Separating the first vertical unit from the second was a two foot thick brick bearing wall strengthened by steel columns. Beyond it was a rectangular block 80 feet wide by 88 feet long whose walls rose vertically through six floors and housed the theater auditorium. At the seventh floor it narrowed to 51 feet, and from the eighth through the fourteenth floors its width was 41 feet. Its top two floors contained club facilities; below them, on floors seven through twelve, there were 82 offices. The auditorium of the theater did not actually touch the side walls of the lower block but was confined to space 60 feet wide bounded by brick bearing walls two




This is a reproduction of Adler and Sullivan's transverse section drawing through the Schiller. The great trusses over the theater are indicated in dotted lines. See longitudinal section on page 23.

7 "Letter from Chicago," American Architect and Building News, XXXIX (Feb. 4, 1893), p. 72.

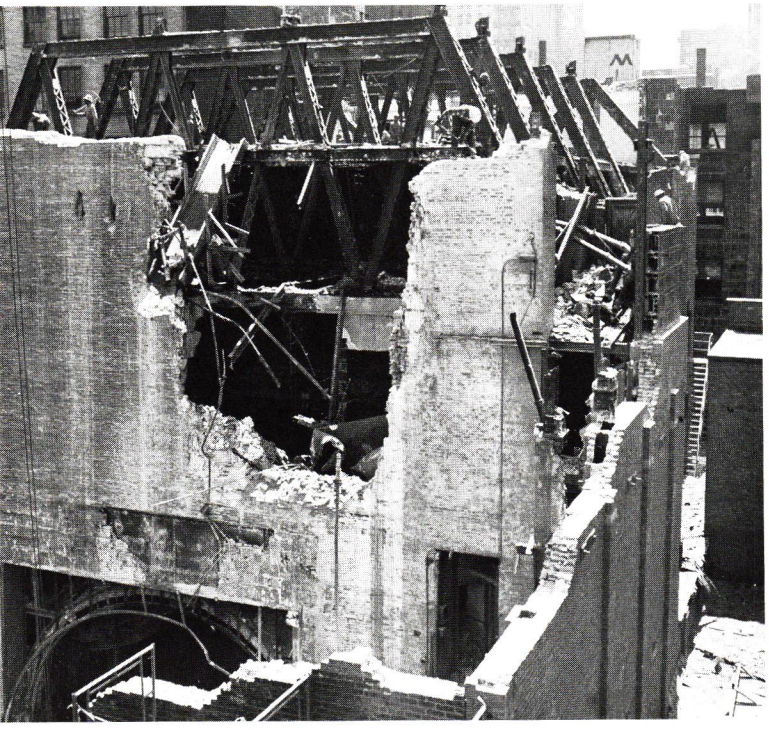
8 The basement when first leased was used as a restaurant and saloon according to the Economist, VII (Jan. 23, 1892), p. 124.

9 I do not know whether or not this was an innovation. Varying the height of the elevator shafts in a building was certain to be tried sooner or later once buildings came to be designed with more than one elevator. The first such building, according to Dankmar Adler, Economist, V (May 9, 1891), p. 798, was the Borden Block (1880) into which, for the first time anywhere, Adler inserted two elevators. As the Schiller well may have been the first tall building to employ the setback principle, it is quite possible that the logical corollary to the use of the setback, that of carrying the various elevator shafts only as high as needed, was also introduced in that building.

10 Except on the thirteenth floor which was part of the German Club. On that floor there was a single large room interrupted only by two columns near the center. The fourteenth floor also is often spoken of as a club area, but its plan shows the same six rooms as are found in the tower floors above it and most likely these rooms were also offices.

11 This would seem to have furnished an appropriate place for a water tank serving the building but, so far as I know, there was no indication of one having been there.

feet thick. Between these walls and the exterior walls set at the lot line, were corridors connecting the auditorium at various levels with the stage and rear alley at ground level. Within the theater and under the main floor were a large coatroom and toilet facilities. Access to the main floor was from the second floor foyer, as described previously, not through tunnels as is sometimes reported.[12] Tunnels were used, however, at the third floor level to connect stairways from the second floor foyer with the balcony. Both the balcony and gallery were supported on steel cantilevers permitting a completely unobstructed space within the theater.



The "great trusses" as well as the sixth smaller truss can be clearly seen in this photo taken during the demolition of the Schiller.

At the sixth floor level there were five great bridge trusses each two stories high spanning the sixty foot width of the auditorium. A sixth truss, one story high, was placed at the seventh floor level over the gallery which extended into the sixth floor space. From these were hung the system of light iron members which carried the plaster ceiling of the auditorium. On the trusses was placed the steel frame of the upper seven floors. Because these trusses narrowed in width, the seventh floor was contracted by 13 feet and the eighth by an additional 10 feet. Between the trusses at the sixth floor level were unlighted spaces used for theater storage. The twelve offices of the seventh floor were inserted between the top halves of the massive trusses. A large room at the rear on that floor contained toilet facilities for office floors three through seven.

Evidently the German club housed on the top two floors required, for some reason, a high unobstructed and completely flexible space. This was provided by Adler & Sullivan through the use of a second set of less massive trusses inserted at the fourteenth floor level. The result was to transform the thirteenth floor into a huge room 13 feet high, 39 feet wide and 75 feet long and to anticipate twentieth century experiments in the design of completely flexible interiors for multi-story buildings.[13] This space may have served partly as the club dining room because at the rear of this section was a serving room and a stairway[14] that gave access to the kitchen on the top floor of the third section. The fourteenth floor, set between the trusses, was used for storage and mechanical equipment.[15] Above the seventh floor the exterior walls were of terra cotta supported by a steel frame.

The third section measured 80 by 40 feet at the base, narrowing in width above the seventh floor to 65 feet. The core of this block contained the stage and rigging loft whose vertical interior dimension above the stage was 84 feet or a full seven stories. At the front and rear this great space was bounded by a two foot thick bearing wall of brick pierced on the auditorium side by the proscenium arch 30 feet in height. As the side walls above the seventh floor were set back to provide the light for the rooms above, they had to be carried above the stage, which ran from lot line to lot line, on four immense phoenix columns 93 feet high. Above the seventh floor the section was bounded by brick bearing walls reinforced internally with a steel framework. These substantial walls were necessary to carry the floor spans of 35 feet in each story over the stage where interior columns were not possible. In this section there were 30 offices[16] and toilet facilities for all upper floors except the thirteenth which housed the

12 Hugh Morrison, **Louis Sullivan**, New York: W. W. Norton & Co., 1935, 1961, p. 159.

13 Similar open floors occur in the third section but from necessity rather than design.

14 According to the HABS plans, sheet 5, this stairway goes down, but this must be an error; if it did, the stairs would penetrate a twelfth floor office for no apparent reason.

15 According to Carl Condit, "The Structural System of Adler & Sullivan's Garrick Theater Building," **Technology and Culture**, V (Fall, 1964), p. 539.

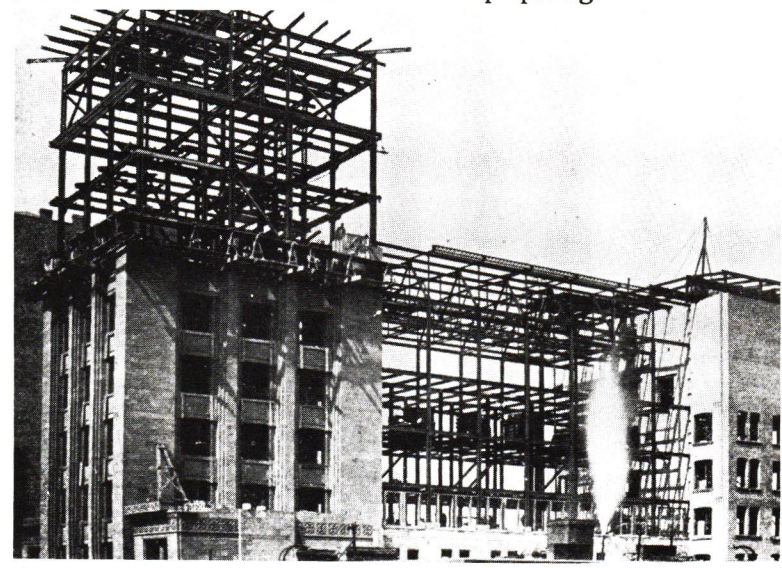
16 The total number of offices was 204 according to "Views of Chicago," Randall, **History of Construction**, p. 195. The building could not possibly have contained the 342 offices reported by Morrison, **Sullivan**, p. 156. Although Morrison had a copy of the Schiller Rental Pamphlet, loaned to him by Paul Mueller and now lost, he seems to have depended for this figure on an Adler & Sullivan office chart which he evidently misread. The chart, recorded in Morrison's notes, reads, "Equivalent to number of offices: Theater & 342," a

club. On that floor in this section was a large ballroom with internal dimensions of 35 by 65 feet, and with a vaulted ceiling[17] reaching a height of 20 feet at its center. Above it was the club kitchen. In the rear corners of this section there was on the right an internal smoke stack and on the left a freight elevator.

The Schiller Building had not been planned from the beginning as an office building and theater complex. The first notice about a building on its site appeared in the March 15, 1890 issue of **Real Estate and Building News**[18] where Adler & Sullivan were announced as the architects of a business block on Randolph Street between the Borden Block and the Dime Museum. This was certainly the same project described in the April 12, 1890 issue of the **Economist**[19] where it was noted that a group of prominent citizens of German extraction had secured a lease on the land next to the Borden Block and were planning a twelve to fourteen story building to consist of stores on the ground floor, a bank on the second, a German Club on the third and offices above. Behind, and fronting on an alley, was to be a theater 80 by 110 feet in plan. Construction was not anticipated before May 1, 1891.

An article in the **Economist** of November 1, 1890[20] reported that the theater, which, it said, had been projected a year earlier, was now being actively promoted by A.C. Hesing, owner of the **Illinois Staats Zeitung**, C.P. Dose and Franz Amberg. By then the project had been enlarged to include a property of 90 by 80 feet next to the Borden Block on Dearborn Street for which an L-shaped building of twelve stories was proposed. As in the notice of April 21, Adler & Sullivan were not mentioned, although here it was reported that "a rough sketch of the building has...been prepared...." The top floor was to contain a concert hall, the floor below a German kitchen and restaurant, and the next lower floor rooms for the German club. Otherwise the building was to be organized as previously described.

If Adler & Sullivan had been consulted on these preliminary studies, as seems likely from the notice of March 15, they were, nevertheless, not formally commissioned as architects until late January, 1891.[21] And, as the **Economist** of February 7,[22] reported that Adler & Sullivan were then preparing plans for the building, there can be no question that the Schiller design dates from February 1891. By then the L-shaped project had been abandoned and the basic form of the building determined. There was to be a tower of fourteen stories surmounted by a domed belvedere 236 feet[23] above the street with a twelve story structure behind whose upper six floors, carried over the theater, were to be set back 18 feet from the lot lines to form light courts. The main difference between this design and the completed building was the subsequent addition of three floors to the tower and of two to the middle and rear sections.



A construction photograph published in **Engineering Magazine**, III (August, 1892), page 634. The steel frame appears to be as sophisticated as any Chicago building of today.

figure which seems to refer to the number of offices the building would contain if all rentable space had been devoted to offices. A few other statistics about the building derived from the office chart are worth appending here: On the eighth and ninth floors the area of the lot devoted to light courts was 29.6%; to the building itself, 70.4%; to stairs, elevators and corridors, 15.2% of the last figure. From the tenth to the twelfth floors the figures were: courts, 39%; building, 61%; corridors, etc. 8.2%. The percentage of renting area was 44% compared with 53% for the Wainwright and 53.6% for the Guaranty. The cost per cubic foot was 30.3¢ compared with 30.2¢ for the Wainwright and 33.0¢ for the Guaranty. The Schiller was the firm's third most expensive building after the Auditorium and Stock Exchange and cost $737,099.

17 Condit, **Technology and Culture**, p. 536, believes this was a "true masonry vault of brick."

18 **Real Estate and Building**, XXXII (Mar. 15, 1890), p. 203.

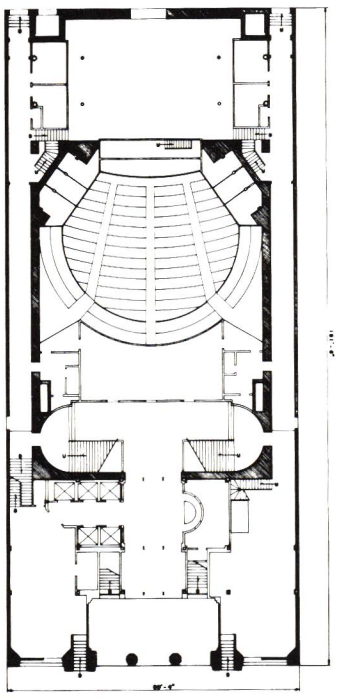
19 **Economist** (Chicago), III (Apr. 12, 1890), pp. 429-430.

20 **Economist**, IV (Nov. 1, 1890), p. 705.

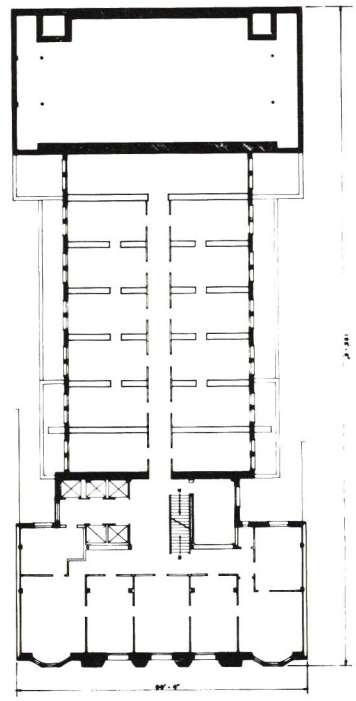
21 **Economist**, V (Jan. 24, 1891), p. 127.

22 **Economist**, V (Feb. 7, 1891), p. 208.

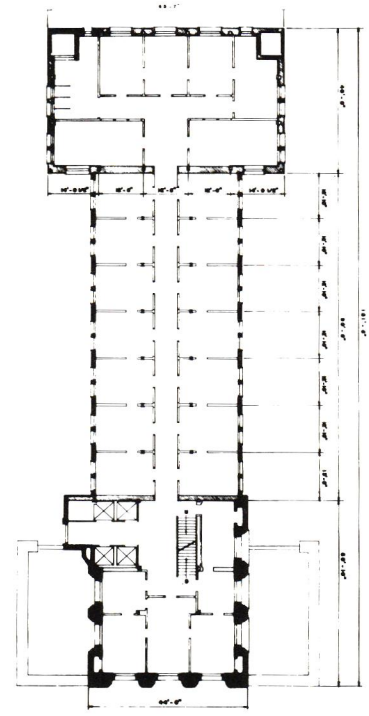
23 The completed building of seventeen stories and belvedere came to only 240 feet. Whether or not this figure of 236 feet is an error cannot be decided, but if correct, the floor heights would have been unusually generous. Also it is not always possible to be precise about the number of stories in Chicago buildings for frequently the ground floor is referred to as a basement although it is often, as here, a full story or more in height. For instance, the "Views of Chicago," Randall, **History of Construction**, p. 195, calls the Schiller, "16 stories and basement." Even so, an error of one story would not account for the above discrepancy.



FIRST FLOOR PLAN



SEVENTH FLOOR PLAN



TENTH FLOOR PLAN

A week later plans were again in a state of flux[24] and, instead of offices, a proposal for a hotel building was being considered. The harassed architects responded with plans that were said to admit of the building being used for either hotel or office purposes depending on the final decision. On the ground floor one of the stores was to be used as hotel office if plans went that way. Floors three to nine were to house the hotel, floors ten to twelve the German club and floors thirteen and fourteen in the tower were to provide quarters for the help. The position of the theater was not affected.

We do not hear about the building again until the end of May[25] when the **Economist**[26] reported that the foundations were then being put in for a building that was to be fifteen stories and would take one and one-half years to complete. It must have been about this time that material was being gathered for Flinn's **Chicago**,[27] a guide book being prepared in anticipation of World's Fair visitors, and for the multi-volume series, **Industrial Chicago**.[28] Both reproduce a pen perspective based on or identical to the official office perspective[29] that was first published in the June issue of the **Inland Architect and News Record**.[30] This drawing, reflecting the change recorded in the **Economist** of May 30,[31] shows a building of fifteen stories.

By comparing the descriptions in **Industrial Chicago** and Flinn's **Chicago** we can get a fair idea of what the building would have been like had the hotel replaced the office portion. The "first-class hotel, conducted on the European plan" was, according to **Industrial Chicago**, to have "150 guest-rooms, of which 50 have private bathrooms." Flinn put the number of guest rooms at 131 with "thirty-eight bath-rooms, so arranged, that they can be used privately in connection with the bed-rooms, or semi-publicly, by throwing them open to the corridors." Also there were to be workrooms, a kitchen and a dining room, 40 by 76 feet,[32] on the ninth floor. The office was to be on the ground floor west of the main entrance and the lobby on the second floor.

The building permit was issued on June 29,



24 **Economist**, V (Feb. 14, 1891), p. 253.

25 There is a drawing among those on microfilm at the Burnham Library dated April 21, 1891. It is the earliest extent drawing and is for the roof covering the ends of the great trusses of the sixth and seventh floors.

26 **Economist**, V (May 30, 1891), p. 950.

27 John J. Flinn, **Chicago**, Chicago: The Standard Guide Co., 1892, pp. 121, 123.

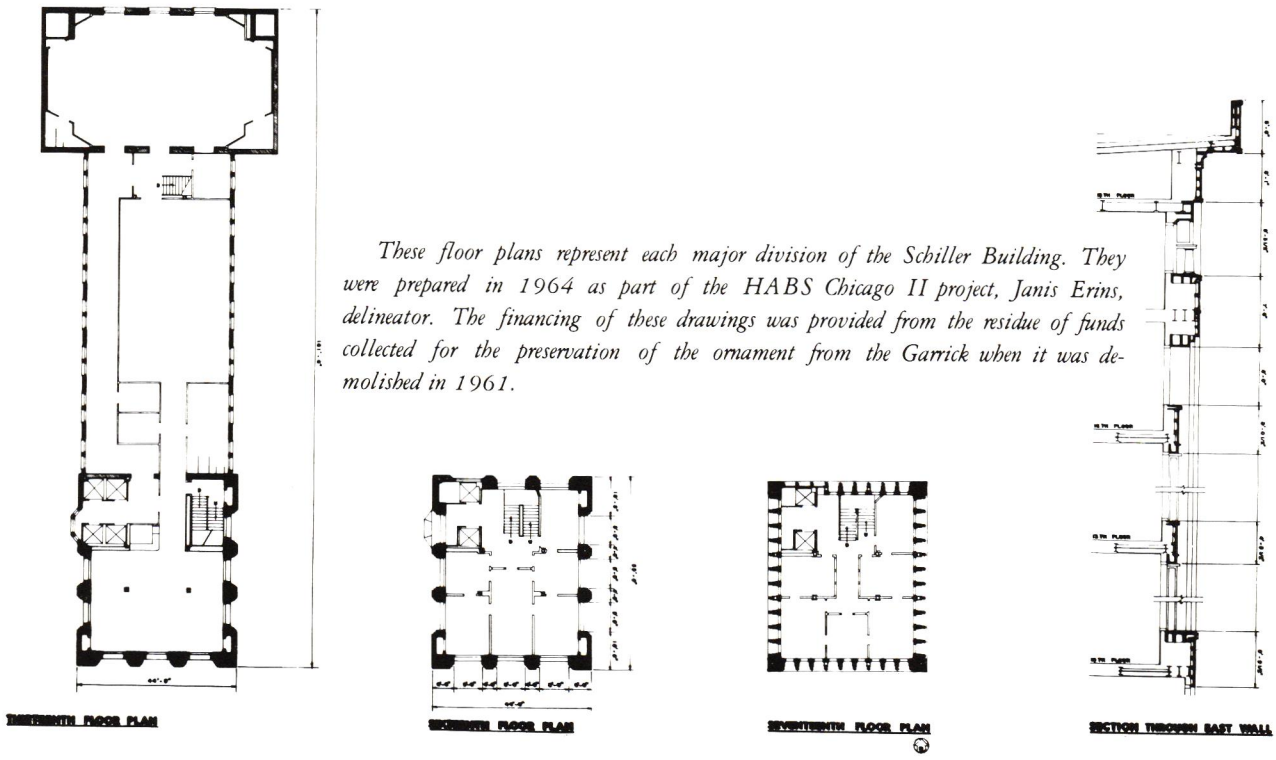
28 **Industrial Chicago**, 1891, Vol. I, pp. 223-224.

29 I have never had the opportunity to compare these directly.

30 **Inland Architect and News Record**, XVII (June, 1891), fol. p. 64. There the building was identified as the New German Opera House; however, at some indeterminate time prior to its completion, it was formally named The Schiller Theater.

31 See note 23.

32 These dimensions are approximately those of the executed club room on the thirteenth floor mentioned above, and the coincidence in measurements tends to confirm my previous suggestion that this large space was used as the club dining room.



*These floor plans represent each major division of the Schiller Building. They were prepared in 1964 as part of the HABS Chicago II project, Janis Erins, delineator. The financing of these drawings was provided from the residue of funds collected for the preservation of the ornament from the Garrick when it was demolished in 1961.*

1891,[33] the principal contracts awarded July 10, 1891[34] and the final plans and structural diagrams for the building were completed during the remainder of July. These were for an office building and therefore we may presume that by mid-July the idea of a hotel finally had been abandoned. According to the **Economist** for July 3,[35] the building permit was for a seventeen story building and we may assume that it was sometime in June that the final decision on the number of floors was reached.[36] By the end of the year the steel work was up only two or three stories[37] owing to delays in the shipment of that material.[38] The theater was opened on October 17, 1892.[39] The offices were finished on January 2, 1893.[40]

Although our reconstruction of the history of the Schiller Building and of its structural and spatial organization has proved to be rather involved, the problem of assessing the relative contributions of Dankmar Adler, Louis Sullivan and Frank Lloyd Wright to its design is likely to be no less complex. Wright was Sullivan's chief draftsman during the entire period of the Schiller's design and construction,[41] and in his autobiography he tells us that, "owing to Sullivan's love for his new home in South, **the Schiller** had more largely been left to me than any other."[42] In the later **Genius and the Mobocracy** he added that "I was in deep trouble

33 Condit, **Technology and Culture**, note 4, p. 525.

34 The date given in **Industrial Chicago**, Vol. I, p. 224 is June 10, 1891, but this presumably is in error by one month as the awarding of the principal contract was announced in the **Chicago Tribune**, LI (July 12, 1891), p. 14. This date conforms more reasonably with the date of the building permit of June 29, 1891 and with the final plans, the first of which is dated July 14, 1891. The **Tribune** gave the amounts of the contracts as $95,000 to the Probst Construction Co., mason work and fireproofing; $122,900 to Binder & Seifert, iron work: and $74,188 to the Northwestern Terra Cotta Co., terra cotta. Since these agree exactly with those published in **Industrial Chicago**, the information for that volume must have been gathered after July 10. Yet this does not seem likely because the entry in **Industrial Chicago** describes a hotel rather than office building, and we are certain from the plans, dated July 14 and later, that by then the hotel idea had been discarded. The only other possibility, that the **Tribune** reported the awarding of contracts a month after they were made, seems highly unlikely. Obviously this difficulty cannot be satisfactorily resolved.

35 **Economist**, VI (July 3, 1891), p. 15.

36 The official office perspective apparently was revised at this time to include the seventeen story tower as well as a number of other minor changes. This revised perspective seems first to have been published in the **Architectural Record**, I (Jan.-Mar., 1892), p. 277.

37 **Chicago Daily News Almanac and Political Register**, 1892, p. 382.

38 **Economist**, VI (Sept. 5, 1891), p. 412.

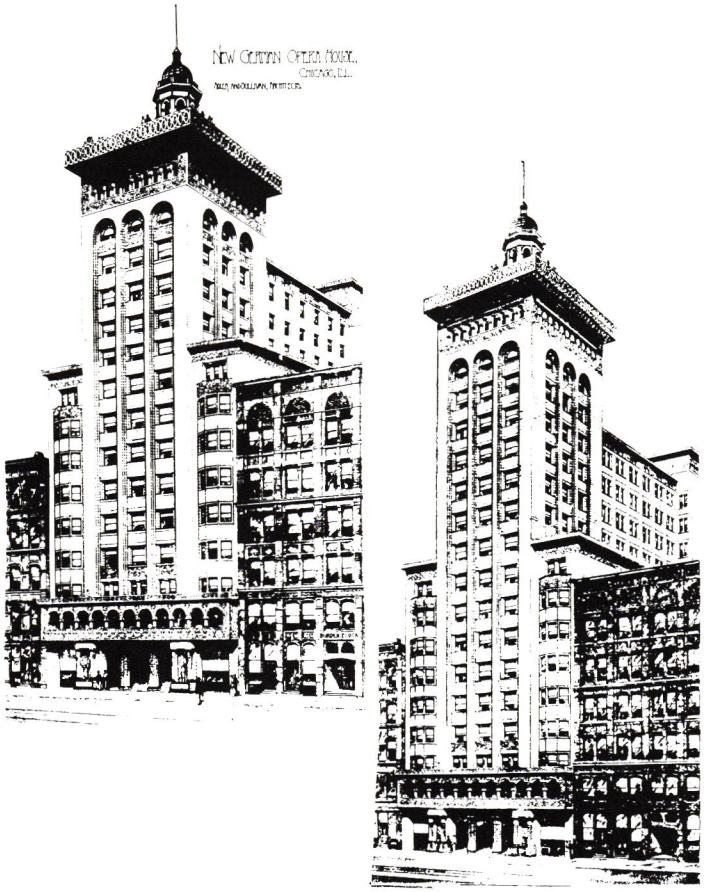
39 Morrison, **Sullivan**, p. 156.

40 **Loc. cit.**

41 There is evidence to suggest that he shared this responsibility with George Elmslie; see David Gebhard, "Louis Sullivan and George Grant Elmslie," **Journal of the Society of Architectural Historians**, XIX (May 1960), p. 62.

42 Frank Lloyd Wright, **An Autobiography**, New York: Duell, Sloan and Pearce, 1943, p. 123.

with the chief Adler himself as in the height of windowsills in the Schiller Building which I raised six inches to get the plastic flow of the surrounding frames complete."[43] These remarks have served as the basis for some generous estimates by Henry-Russell Hitchcock of the role Wright played in the Schiller design. "The return to arched bays," writes Hitchcock, "and the very richly arcaded eaves gallery, both elements omitted in the Wainwright Building, may well be the design of Wright....Elements hitherto




This pen perspective of the "New German Opera House" published in The Inland Architect, XVII (June, 1891), following page 64.

The official and final pen perspective of the Schiller published in the Architectural Record, I (January-March, 1892), page 227. Note the added stories and minor changes in detail.



unknown in Sullivan's work are the coupled windows set flat in the wall screen of the rear section; the crisply panelled bay windows of the side wings; and above all, the motif at the top of the side wing, the little inset balcony subdivided by a central colonette....These are probably Wright's original contribution."[44] Speaking of the upper floor arcade of Wright's Husser House (1899), Hitchcock continued in the same vein, "The moulded ornament of the Husser eaves galleries is the last example of such sensuous ornament which Wright was to use and surprisingly like that at the top of the Schiller Building of six years earlier."[45]

These galleries were, in fact, derived by Sullivan from Richardson's architecture where the essence of the "eaves gallery" was to be found in the horizontal row of top floor windows in a building such as the Marshall Field Wholesale Warehouse in Chicago. These windows also appear in the top floors of various Chicago buildings such as the Rookery and Monadnock which, however, are themselves ultimately descended from Richardson's Romanesque. In the work of Adler & Sullivan this motif first appeared in the Auditorium Building and subsequently was used in the Dexter Building, Standard Club and Walker Warehouse, all of which were designed before Wright entered the office.[46] The arcaded gallery, with ornamented rather than plain surfaces, first appeared in the Auditorium Banquet Hall, designed in mid-1890, and became a common terminating motif in Sullivan's work thereafter. The fact that Wright used such a gallery in the entrance hall of the Winslow House and below the eaves of the Husser House obviously indicates that Wright derived it from Sullivan and not the reverse. In fact, when Wright's work matured, after 1900, he eliminated this and other Sullivanesque motifs that were antagonistic to his evolving personal style. Actually, all of the elements mentioned by Hitchcock can be shown to have evolved gradually within Sullivan's work, and it is difficult to share Hitchcock's confidence in assigning them to Wright. However, it would require more space than is available here to trace the history of each of them through Sullivan's buildings.

Regardless of Sullivan's affection for his vacation retreat in Mississippi--a place where he was not likely to have gone in the heat of July even if the Schiller plans and drawings were not then being prepared--he is not likely to have given Wright as free a hand in the design of so important a building as Hitchcock would have us suppose. However, if Hitchcock were correct, then Wright must have designed every important feature of the facade except the cupola and second floor balcony. Yet all motifs of the facade are consistent with Sullivan's internal

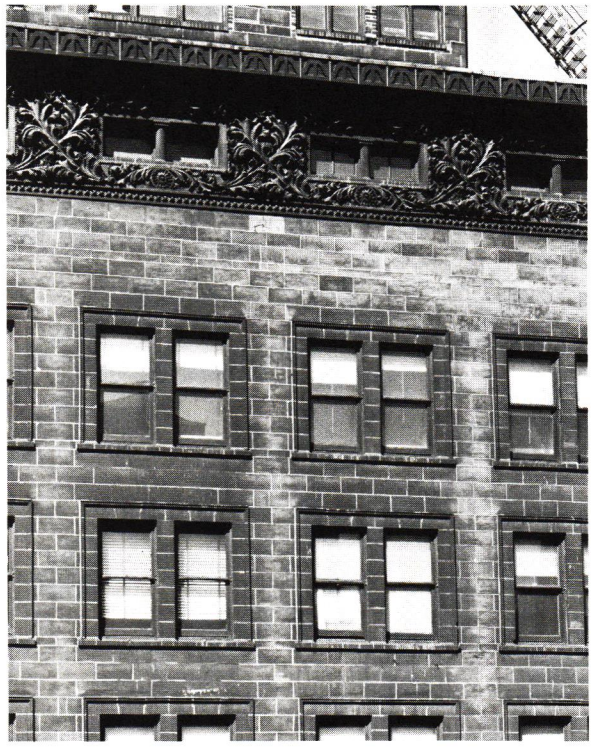
43 Frank Lloyd Wright, Genius and the Mobocracy, New York: Duell, Sloan and Pearce, 1949, p. 63; see also p. 61.

44 Henry-Russell Hitchcock, In the Nature of Materials, New York: Duell, Sloan and Pearce, 1942, p. 13.

45 Ibid., p. 28.

46 Wright was not hired by Adler & Sullivan until the spring of 1888. For various reasons it has been generally supposed that he was first employed in the fall of 1887, but this cannot be so for reasons too lengthy to be presented here. In any case the Auditorium Building, where this motif first appears, was designed almost a year before the fall of 1887.

stylistic evolution and, in addition, are stylistically coherent among themselves. The facade was obviously the work of a single mind, or at least it was as shown in the pen perspective published in the June 1891 Inland Architect.[47] These perspectives were commonly published just prior to construction, and they nearly always corresponded to the executed



This is the east side of the Schiller showing the fourteenth floor frieze and straightforward expression of the use of the structure: an office building. Each pair of windows, with Wright's detailing, serves one office space. The surface of the side of the building was flat while the front and tower were deeply recessed. This differentiation is important for the former emphasized the setback and was expressive of the building's function while the latter made the loftiness effective.

building. Even the ornament, however sketchily it might have been indicated in the perspective, almost always approximated that of the executed building. Aside from the previously discussed two-story increase in height, there were other minor but numerous changes from the perspective in the finished building. If Wright did have more freedom than usual in the design and supervision of the Schiller you can be sure that any changes he introduced were restricted to minor elements. In fact, in November and December 1891, a number of minor revisions were made. If Sullivan had gone to Mississippi, as he usually did in November and December when business was at its lowest point, Wright may well have had to handle--under Adler's supervision--a number of such alterations. According to the surviving plans it was on November 4, 1891, that the windows of the middle and rear sections were changed from single to double lights.[48] In the June perspective these windows appeared as a series of individual clean-cut openings in the wall. As executed, however, the windows were paired and each pair was surrounded by a raised linear molding placed a few inches from the edge of the window. As there were no evident alterations to the Randolph Street windows in the building as executed, the windows of the side walls are most likely the ones that Wright tampered with to Adler's annoyance in order "to get plastic flow of the surrounding frames complete."

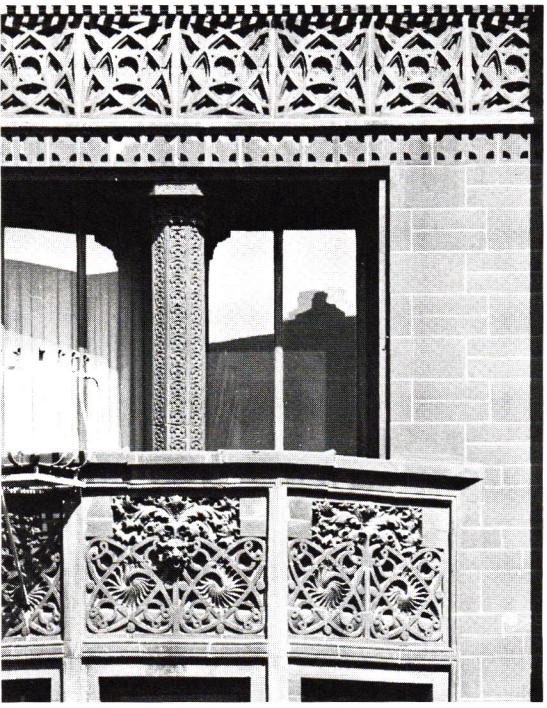
The other changes between the original perspective and the executed building are quite unimportant. On the ground floor two stairways leading to the basement were substituted for niches with statues, a marquee was added above the entrance, the three-part windows on the ninth floor of the wings were reduced to two and the form of the belvedere was altered somewhat. However a series of even more minor alterations may well reflect the presence of Wright; these concern the ornament. According to Wright, "From the very beginning my T-square and triangle were easy media of expression for my geometrical sense of things...Sullivanian ornament was efflorescence pure and simple...Whenever the Master would rely upon me for a detail I would mingle his sensuous efflorescence with some geometric design, because I suppose, I could do nothing else so well."[49] And, in fact, all of the changes in the facade ornament are in the direction of a restrained geometry and away from the flowing three-dimensional involvement of Sullivan's finest ornament. The frieze framing the top floor arcade differs most radically from the ornament of the original perspective. As executed, it is composed of a rather uninspired geometric pattern in relatively low relief. The ornament of the belvedere is equally

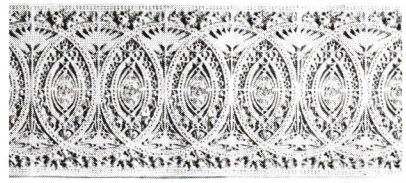
47 Inland Architect and News Record, XVII (June, 1891), fol. p. 64.

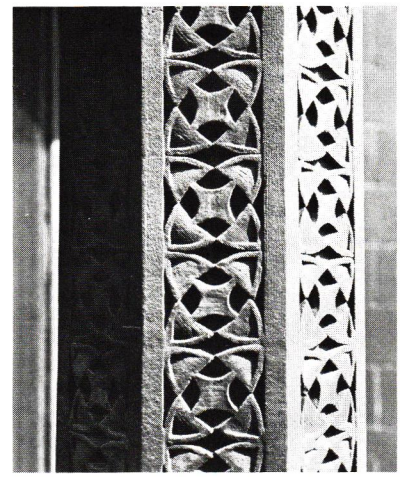
48 On microfilm in the Burnham Library, Roll 4.

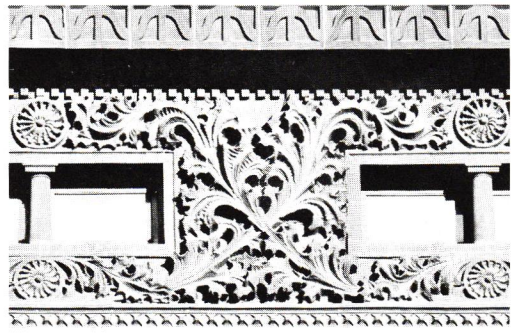
49 Wright, An Autobiography, pp. 103-104. There is a myth, begun by Wright, to the effect that eventually he became so proficient in the design of Sullivanesque ornament, that even Sullivan himself could not distinguish between their work. To disprove this assertion requires more space than is available here. It should suffice, however, merely to observe that Wright's belief that he had mastered Sullivan's ornament represented no more than an egotistical delusion on his part. No disrespect to Wright is intended here; his virtues and achievements were of an entirely different order for which he deserves the greatest admiration. His reputation is not likely to suffer much by being denied the authorship of "some of Sullivan's best ornaments," as has recently been written, see John Burchard and Albert Bush-Brown, The Architecture of America, Boston: Little, Brown and Co., 1961, p. 258.

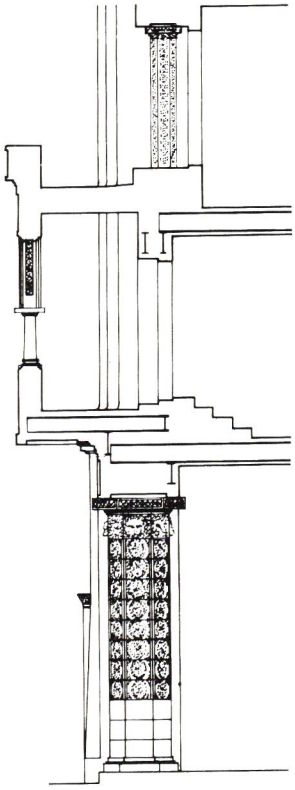
*On this page are photographs of representative examples of the terra cotta and plaster ornament from the Schiller Building and its theater.*

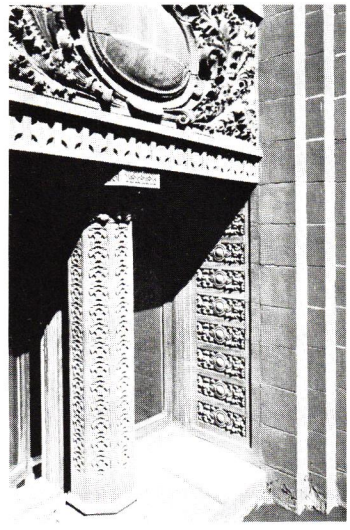


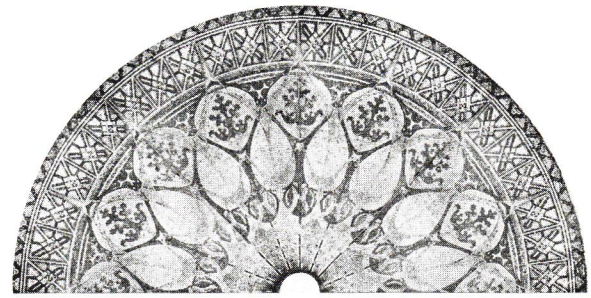












This composite photograph shows the mosaic stair landings of Adler and Sullivan's Schiller Building. Chicago, 1891-1961.

unimaginative. The interlocking circles of the cornice, on the other hand, repeat those of the perspective except that the surfaces between them contain another dry interlacing pattern instead of the intricate foliage of the perspective that Sullivan had inserted as a foil to the geometrical motifs. The window jambs of the central tower were decorated with a series of maple leaves. Such simple representational motifs would have been a heresy to Sullivan who, in his ornament, always sought to abstract from natural form. But these maple leaves were not unique in the Schiller; they could also be found in Chicago decorating the second floor balcony of Wright's Harlan House designed in July, 1891![50] According to the perspective the Schiller balcony was to have had an intricate open-work frieze along its upper edge similar to those set into the faces of the great arches within the theater. But in the executed building this design was replaced by one of no particular merit. The only correspondence in ornament between perspective and building is to be found in the spandrels of the arcades at the second and seventeenth floors[51] and in the lower frieze of the second floor balcony. The obviously superior design of the latter, by comparison with the rest of the facade ornamentation, is particularly evident in the intertwining spirals framed by elliptical motifs which grace its middle. Is it not something of a paradox that this now demolished masterpiece is presently best known by these panels of inferior ornament that were most likely the work of the youthful Wright?

Inside the theater, however, the master was present once again. To be sure, there are many heavy-handed passages, usually among the minor moldings, that presumably were the work of the "pencil", as Wright called himself.[52] But in general the quality is that of Sullivan. And why not, for here in the theater his designs could be studied in all of their intricacy and elegance. There are no drawings extant for the Schiller Theater ornament, but we do not need them in any case to establish Sullivan's part in the ornamentation. Certainly the designs for the balcony face, wall frieze, proscenium vault base frame, proscenium vault soffit, proscenium arch faces, and the balcony and gallery air grilles were by Sullivan himself. Also the frieze in the banquet hall on the thirteenth floor was surely his personal creation as well. These designs were made most likely in the spring of 1892 when the steel framework of the Schiller was nearing completion and interior construction about to begin. The final revision of the exterior ornament was made on December 24, 1891[53] and certainly by January or February of the following year Sullivan would have returned refreshed from his respite in the South eager to reestablish for the duration of the 1892 building season his complete authority in matters of design.

Adler's role in the firm is generally considered to have been that of securing the commissions and of handling all aspects of building technology. Sullivan is regarded as having had responsibility for all matters relating to design. While this distinction between the two is essentially correct, it is obvious that in such a complex building as the Schiller the partners had to work in close accord. Its design naturally would depend to a degree on the nature of its steel frame, and in turn that frame and its related technology would in part depend upon the design. In general Adler must be thought of as having had charge of foundations, steel frame, fireproofing, plumbing, heating and the like, yet the questions remain: to what degree did Sullivan himself take an interest in these matters; to what degree was building technology permitted to affect the artistic design; and to what extent were artistic considerations allowed to compromise the structural and mechanical facilities?

In later years Sullivan evidently was no longer content to be remembered only as a designer and not also as a technologist. In a talk given in 1916 he said in reference to the Schiller Building, "There had been no progress yet in foundations, and it occurred to me when we had the Schiller Theater to build that we would have some disastrous settlement with the old style of footings, and thought it would be a good idea to put in foundations that would not settle. I suggested to Mr. Adler that we put in piles and he agreed with me. So we went ahead and put in 770 piles under the Schiller

50 Building notices for the Harlan House were carried in the Economist, VI (July 11, 1891), p. 92; Chicago Tribune, LI (July 12, 1891), p. 14; Inland Architect and News Record, XVII (July, 1891), p. 73.

51 The ornament of the arcades may seem more Sullivanesque than it really is because of the authority excercised over its final form by the modeler. It is said that Sullivan trained men at the terra cotta companies to execute his designs, and it is likely that the ornament created by Wright, Elmslie and perhaps others in the office became more Sullivanesque in the hands of these modelers than it actually was in their drawings. Such would have been even more the case when it came to molding leaves, for there Sullivan himself seems to have allowed the modeler a greater freedom than elsewhere. The arcades of the Schiller Building were so generously endowed with leaves that all individuality in those areas tended to disappear, the result of which is to make it nearly impossible to determine the authorship of these parts.

52 Some of the ornament was probably designed by Elmslie and perhaps by other staff members as well, but so far there is insufficient evidence by which to distinguish between these various designers.

53 According to microfilmed plans in the Burham Library, Roll 4.

Theater Building, and it is my belief that that was the first time piles were used in a downtown building."[54] Sullivan's statement cannot be true, however, and must be considered more wishful thinking than fact. In an article in the **Economist** for June, 1891, Adler wrote with great authority on the history of foundations in Chicago and fixed upon pilings as the ultimate solution for city buildings (an opinion later changed in favor of caissons). To this conclusion he added, "I have endeavored myself to go a step further in the design of the foundations of the new German Theater...."[55] At an architectural meeting held a year and one-half later Adler again referred to the Schiller foundations, this time leaving no doubt at all that they were his idea not Sullivan's; "After consultation with Gen. William Sooy-Smith and Mr. Beman, it was determined to drive piles fifty feet down and load fifty-five tons per pile."[56] From these statements it should be clear that Adler was indeed firmly in charge of foundation design and from his various articles on building science published during the nineties, we can be quite confident that he was also fully in charge of structural design and all mechanical aspects such as heat, ventilation, light and plumbing. It is not likely, therefore, that Adler needed much if any advice from Sullivan on any of these problems.

More important is the question of the degree to which he allowed Sullivan's aesthetic sense to modify or influence structural and mechanical necessity. Here again, the answer seems to be that Sullivan generally had to conform his design with Adler's structure rather than the reverse. As we shall see Adler evidently had a great deal to say about planning, circulation, structure and, most important, about the final form of the exterior and interior surfaces which it became Sullivan's task to decorate. In fact, it was Adler and not Sullivan who was the dyed-in-the-wool functionalist and who genuinely believed in working from the plan through the structure to the final shape letting the chips fall where they might. He was not, however, content with leaving things at that, as a twentieth century functionalist most assuredly would have been; that is why he had associated himself with Sullivan in the first place. For Louis was an artist with an inborn sensitivity to the effects of color, scale, proportion, materials, light and shade and the like. As much as Adler may have coveted these traits, he simply did not have them and his virtue lay in his being honest enough to admit it.

This observation is not intended to depreciate the genius of either man. Sullivan approached architecture primarily from the point of view of art and Adler primarily from the point of view of technology. During the time that he was associated with Adler, Sullivan seems to have been content to let Adler develop on the basis of technological and utilitarian considerations the basic interior volumes and exterior masses of the building. Sullivan seems to have been satisfied to adjust and refine these elementary rectilinear forms according to artistic impulse and to design for them a suitable artistic envelope that would give the building dignity, interest and beauty. Speaking of the art of expression Sullivan once wrote, "Hers it is to clothe the structure of art with a form of beauty; for she is the perfection of the physical, she is the physical itself, and the uttermost attainment of emotionality."[57]

Together Adler and Sullivan produced a series of magnificently designed buildings and projects during the nineties all of which exhibit a just balance between art and technology; between subjective and objective; between feeling and reason. In Sullivan's buildings designed after the dissolution of their partnership, when he was forced for the first time to be both artist and technologist, his ability to adjust quickly to the latter role argues well for the experience that he had acquired in this area while working with Adler. " 'Form follows Function?' " wrote Frank Lloyd Wright many years later. "Has it occurred to no one, then, that Dankmar Adler, not Louis Sullivan, deserves the credit for that dogma? It was Adler's contribution to his young partner when he was teaching him practically all the young man knew about architecture below the belt. As an architect Louis Sullivan went to school, not to the Beaux Arts, but to Dankmar Adler. Out of his association with Adler came Sullivan's whole sense of building as a functional experience in Function."[58] Even so, in many of Sullivan's later independent commissions the subjective seems to have gained the upper hand; in Adler's later independent



54 Louis Sullivan, "Development of Building, II," **Economist**, LVI (July 1, 1916), p. 40. Sullivan was wrong in his belief that the use of pilings for the foundations of the Schiller Building represented the first time that piles were employed in a downtown building. According to Adler it was S. S. Beman who revived the use of pile foundations for city buildings in the Northern Pacific Railway Station, 1889, see Dankmar Adler, "Piling for Isolated Foundations Adjacent to Walls--A discussion," **Inland Architect and News Record**, XX (Jan., 1893), p. 63.

55 Dankmar Adler, "Foundations," **Economist**, V (June 27, 1891), p. 1137.

56 Adler, "Piling," **Inland Architect**, XX, p. 63.

57 Louis Sullivan, "Emotional Architecture as Compared with Intellectual," 1894, as reprinted in **Kindergarten Chats** (revised 1918) **and other Writings**, Isabella Athey, ed., New York: Wittenborn Schultz, Inc., 1947, p. 193.

58 Frank Lloyd Wright, "Review of Morrison, **Louis Sullivan**," **Saturday Review of Literature**, XIII (Dec. 14, 1935), p. 6, as reprinted in the **Journal of the Society of Architectural Historians**, XX (Oct., 1961), p. 142.

work the subjective all but disappears.

To realize the extent to which Adler was involved in determining the form of the exterior masses of the Schiller Building, one need only turn to an article by Adler published in November 1892 called, "Light in Tall Office Buildings."[59] There Adler described how he arrived at the basic forms of the Schiller "by narrowing the central part of the upper stories of the building, forming two external courts so situated with regard to neighboring properties that the owners of these will probably find themselves compelled to join in the enlargements of the courts...."[60] He also called attention to the setbacks above the ninth floor of the facade. Because "the building fronts south," he wrote, "a greater volume of light is admitted into the side courts than would be the case had the full building been carried to full height."[61] Perhaps these statements were no more than rationalizations on the part of a nineteenth century functionalist to justify his partner's design, but I think not. Adler was very sincere in this and other articles without any trace of egotism and we must conclude that it was he, and not Sullivan, who gave the building its three-dimensional form through the use of functionally motivated setbacks. Certainly both partners worked in close accord to establish the final form; however, because the primary masses of the Schiller Building are so obviously the result of a rational response to the requirements of light, structure and internal volumes, Adler emerges as the person mainly responsible for establishing them.

The same was true of interior volumes. The language of Adler's article of 1894, "Theater-Building for American Cities,"[62] makes it certain that functional requirements, particularly those of acoustics and vision, dictated the basic shape of the auditorium and the nature of its bounding surfaces. Again Sullivan's task was primarily to devise a decorative system that would weld the walls into an artistic unity. "Following the principal of Scott Russell's well known isacoustic curve," wrote Adler, "but using the stage floor at or near the curtain line as the center to which the lines which determine the curves are drawn, there will result a banking of seats which gives spectators a good view of the entire stage."[63] His prescription for a space, both acoustically and visually perfect, involved "an auditorium approximately fan shaped in plan which cuts off a number of front side seats from which but an unsatisfactory view of the stage can be obtained."[64] In order to avoid what Adler called "reverberations" the enclosing surfaces of the auditorium should be "broken by artificial means, such as the introduction of galleries, pillars, pilasters, arches, beams, coffers, panels, etc...."[65] The ceiling of such an auditorium should begin at a low proscenium, "not a foot higher than is necessary to permit a full view of any possible grouping at the back of the stage from the last and highest seat in the house,"[66] but, in order to provide "reasonable headroom over balconies and galleries," the ceiling should gradually increase in height...from the proscenium outward. This upward tendency of the ceiling lines should be modulated into a profile which deflects the sound waves downward toward the rear of the lower portion of the house."[67] All of these principles were employed in the Schiller Theater and are primarily responsible for the final form of that auditorium and of its enclosing surfaces.

Although it may appear that this analysis has sought to reduce Sullivan's role to that of decorator, no such aim is intended. We have been so bombarded during the past half-century by functionalist propaganda that it is difficult for us to see architecture in any but technological terms. Furthermore we are so obsessed with the spatial potentialities of architecture that we fail to appreciate those periods of architecture when space was not regarded with such reverence. In Sullivan's day architecture was regarded as more of an art of surfaces than it is now, and he was first and foremost an organizer and designer of surfaces. This to his generation was more essentially the art of architecture. What we call functionalism today was for them a kind of science of architecture. An architect of the time might be both a good scientist and a good artist but the combination was not usual. Rather the best architectural artist and a great architectural technologist. This was the virtue of the firm of Adler & Sullivan wherein the engineering genius of the one partner and the artistic genius of the other both contributed to the final design. Either of these men working alone surely would never have risen to the great heights that they did by working together. And together they formed a perfect architectural team which produced in the Schiller Building a rare blend of Sir Henry Wotton's three famous ingredients--"firmness, commodity and

59 Dankmar Adler, "Light in Tall Office Buildings," Engineering Magazine, IV (Nov., 1892), pp. 171-186.

60 Ibid., p. 182.

61 Ibid., p. 183.

62 Dankmar Adler, "Theater-Building for American Cities," Engineering Magazine, VII (Aug., 1894), pp. 717-730; (Sept., 1894), pp. 815-829.

63 Ibid., p. 722. See footnote 4, "The Theater," by Dankmar Adler and edited by Rachel Baron, page 27 of this issue of The Prairie School Review.

64 Ibid., p. 724.

65 Ibid., p. 726.

66 Ibid., p. 724.

67 Loc. cit.

delight."[68] The first two were Adler's province which he handled magnificently in the structural and circulatory aspects of the building. Had he been a functionalist of the twentieth century variety who equated firmness and commodity with delight, he would have had no need for an artist in the office; he as an engineer would have been sufficient. But it is to Adler's lasting credit that not only did he

This stair and hallway in its simplicity and precision could be mistaken for the work of an architect of today. Frank Lloyd Wright's hand may be seen in the stair railing. Note the lightness and elegance achieved by the perforated ornamental insteps. The clerestory windows, above walls as well as doors, gave the interiors a natural illumination.

refuse to equate beauty with necessity, but that he chose to associate himself with one of the foremost designers of his century, if not of all time, and that he gave the younger Sullivan as free a hand as possible to follow and refine his aesthetic consciousness.

The designs prepared by the firm during the years 1890 to 1895 were the finest Adler & Sullivan ever produced, either as partners or as individuals. With few exceptions the thirty-five major buildings, remodelings and projects undertaken during that period were of the highest caliber both technologically and artistically. During these same years Sullivan's ornament reached its greatest heights. The construction of the Schiller Building falls directly in the middle of this era of great achievement. It is, in fact, a worthy candidate for their finest building. The Guaranty Building, sometimes cited as their finest, suffers by comparison because of its excessively ornamented surfaces. The Guaranty, Wainwright and Stock Exchange Buildings all suffer as well from the accidents of site which prevented their facades from being carried completely around them. Also, by comparison with the Schiller, they suffer from their box-like forms which did not permit their being brought to so exciting, so monumental and so dignified a climax.

But although the Schiller Building may some day be regarded as their finest work, it is not likely to be considered their most significant. That laurel rightly belongs to the Wainwright Building in St. Louis which was the first building in the Western world to completely embody an entirely new spirit in architecture. But the Schiller did have a certain significance, despite the prestige lent the Wainwright because of its earlier date. The Schiller Building by virtue of its location had the greater influence. Of the hundreds of foreign visitors to the Fair, few visited St. Louis, but many sought out the Schiller Building. The Wainwright remained an important but silent manifesto. The Schiller became the elegant, beautiful and living symbol of the new age and of the new architecture. It announced the beginning of a creative architecture divorced from historical reminiscence. The Renaissance is dead said the Schiller; long live classical tradition said the Fair.

For a penetrating analysis of the Schiller facade by a visiting foreign architect let us turn again to the phrases of the English academician, Sir Banister Fletcher:

> It would appear, in the first instance, as if the cardinal principle to be adopted in designing a building would be to make it appear what it really is, namely, one building, or, in other words, to follow up the principle of unity. It was one of the greatest principles insisted on by the Greeks, this one of unity,--variety in unity, if you will, but you must have unity. Now this is not to be obtained by laying one floor on another with strongly marked lines, as we note in some of the designs produced for these buildings, but in applying the same principle as the Greeks did to their one-story buildings.
>
> The classic column is primarily suggestive of unity in both expression and purpose; with its entablature complete, we can take away none of the parts without spoiling the whole. Apply the same principle to a tall building, and what do we get: Firstly, a base,--the lower one, two, or three stories

68 Sir Henry Wotton, The Elements of Architecture, 1624. This phrase is a direct adaptation from Vitruvius, De Architectura Libri Decem, Bk. I. Chap. iii.

(according to the height of the whole comsition) bound together by strong horizontal lines corresponding to the molding on the base of your classic column; next the upper stories, answering to the capital of the column with projecting cornice and binding horizontal lines. In what building do we find these principles carried out? In the Schiller Theater, by Messrs. Adler and Sullivan. This building appeals at once to me as being the best designed tall structure, not only in Chicago, but in the States. The architects, by clever manipulation of the front, have made the central part what it really is, what every tall building is more or less,--i.e., a tower; by keeping down the end portions and letting the central part disengage itself from above them, it freely expresses itself. The two lower stories of the whole facade are bound together, as they should be, by strong horizontal lines, emphasized in this case by a happily proportioned projecting balcony, which, with the deep shadow it casts, aids the horizontal effect to be aimed at in these lower stories; then follow the ten or twleve stories (I forget how many), corresponding to the shaft of our classic column, the windows recessed, as it were, in the hollows of the flutes and plainly treated. The tops of the piers are connected by arches, without moldings of psuedo-capitals,--in fact, as the arrises between the flutes in our classic column; and the remaining stories are tied well together by horizontal moldings and crowned by the overhanging abacus of our capital or cornice. I take it, in fact, that the Schiller Theater is in the same relation to the new style of tall building as the Parthenon bears to the architecture of Greece. [69]

As is implicit in Fletcher's analysis, Sullivan's designs were not entirely without foundation in the nineteenth century. He, not unlike Brunelleschi, stands as a great transitional figure. Although in the Schiller Building he eliminated the outward imitation of the forms of historical architecutre, [70] he retained, nonetheless, certain classical canons of design. Such classical conceptions as bi-lateral symmetry; base, middle and top; cornice; facade design and articulation through ornament are controlling factors in the Schiller design. Whether or not these concepts should be considered of universal validity transcending the boundries of Renaissance and modern architecture remains a moot question; such conceptions for the moment remain at best dormant in current architectural theory. Furthermore, the architect of the Schiller was not especially fascinated with the aesthetics of complex spaces. This was an obsession that began only with Wright. The spaces within the Schiller are involved, to be sure, but for functional rather than aesthetic reasons.

This is not the place to reply to the various criticisms that have been leveled from time to time against Sullivan's buildings by essentially functionalist critics. [71] Sullivan simply was not a functionalist in the most usual twentieth century terms. By his frequent use of the word function he referred not to some rational necessity, but rather to an unseen, non-intellectual and subjective essence within society that sought to achieve through the individual architect its appropriate expression in architectural form. This use of the word function did not prevent him from also accepting the principle that design, in general, should be consistent with the plan, structure and interior volumes of a building. But he rejected the idea that these should be permitted to dictate the architectural treatment of the exterior and interior surfaces. "A building," wrote Sullivan, "which is truly a work of art (and I consider none other) is in its nature, essence and physical being an emotional expression." [72] An architecture, which in practice is "divorced from thought, feeling, imagination and the art of expression," which is "emptied and barren of any subjective quality or quantity whatsoever" is according to Sullivan "mere building materials...." [73]

69 Banister Fletcher, **Engineering Magazine**, VII, p. 318. Fletcher is still well known for his useful but now rather outdated, **A History of Architecture on the Comparative Method**, London: B. T. Batsford, Ltd., first published 1896.

70 The belvedere or cupola is an exception. Such classical touches can be found in many of his buildings during the nineties.

71 Unfavorable criticism by functionalist writers seems to have begun in earnest about the time of Lewis Mumford's **Brown Decades**, 1931. Morrison sought to counter these in his study of Sullivan published in 1935, but his attitude was curiously ambivalent. In various places he correctly characterized Sullivan as an architect entirely absorbed in emotional expression while in others he attempted to justify Sullivan's designs in functional terms. Interpretations of Sullivan as a functionalist architect still continue to be published, see, for instance, Winston Weisman, "Philadelphia Functionalism and Sullivan," **Journal of the Society of Architectural Historians**, XX (Mar., 1961), pp. 3-19. But gradually, as functionalist theory moderates, see Lewis Mumford, "Function and Expression in Architecture," **Architectural Record**, CX (Nov., 1951), pp. 106-112; more sensitive assessments of Sullivan's architecture and theory are beginning to appear, see Albert Bush-Brown, **Louis Sullivan**, New York: George Braziller, Inc. 1960.

72 Louis Sullivan, "Ornament in Architecture," 1892, as reprinted in **Kindergarten Chats**, p. 188.

73 Louis Sullivan, **Kindergarten Chats**, Claude Bragdon, ed., Lawrence, Kansas: Scarab Fraternity Press, 1934, p. 160. Sullivan eliminated this sentence in the revised edition.

These are hardly the words of an uncompromising functionalist.[74]

For at least fifty years before Sullivan designed the Schiller Building architects had debated the problem of achieving a creative architecture which would be unhampered by the imitation of historical forms. A number of architects, led by Pugin and Viollet-le-Duc, evolved theories which, as theories, almost attained that goal; yet when it came to design, no architect was successful in breaking away from historic form. Aside from the elegance, refinement and grace that Sullivan brought to his architecture and to its ornament, his greatest achievement and that which places him in the front rank internationally was his success in moving from the realm of words to that of action in advance of any other architect in the nineteenth century. His design of the century's first original and nonhistorical building was announced to the world in December, 1890 with the publication of a perspective drawn for the Wainwright Building in St. Louis.[75] But while that building, whose design preceded that of the Schiller by three or four months, remains Sullivan's most significant in point of time, the Schiller has the edge in terms of art and influence. In each building he produced coincidently an extremely happy solution to the problem of tall-building design, but this was incidental to, and a natural corollary of, his success in breaking through the restraints of historicism. It was in these designs for the Wainwright and Schiller Buildings that Sullivan wrought the tremendous change which was to have such lasting effects on architecture in both Europe and America. It was Louis Sullivan--and he alone--who in the area of design intitiated the process that was to put to an end nearly five centuries of Renaissance tradition in architecture. His nearest rivals were the Art Nouveau architects in Europe, yet none of them was able to make the transition as early as he. And, as opposed to Sullivan, when they did succeed in about 1893, they chose to reject rationalism as a foundation on which to build with the result that their work, which could not be accomodated to the advance of industry, ended in failure.

These are the reasons why the wanton demolition of the Schiller Theater Building in 1961 was so criminal an act.[76] Here was a work of art which will surely come to be equated with the early monuments of Hellenic, Gothic and Renaissance architecture. Sullivan was truly the Brunelleschi of his age and his Schiller building, its Pazzi Chapel. The destruction of so important a work of art, of a building that will be ranked among the greatest architectural monuments of all time, can only have been the direct result of an almost unbelieveable moral apathy. The blame is not to be particularized, although its consequences will weigh most heavily on Chicago. This was a grave loss to the heritage of Western man and for it there is no excuse, whatever the economic problems involved! If such monuments as the Schiller Building, themselves comprising only a minute fraction of the wealth of so affluent a nation, cannot be preserved for future generations, what hope can there be for the ultimate survival of so avaricious and amoral a civilization? As Sullivan once exclaimed many years ago when told that his ornament was being stripped from the Union Trust Building in St. Louis, "If you live long enough, you'll see all of your buildings destroyed. After all, it is only the IDEA that really counts!" [77] Perhaps he was right.

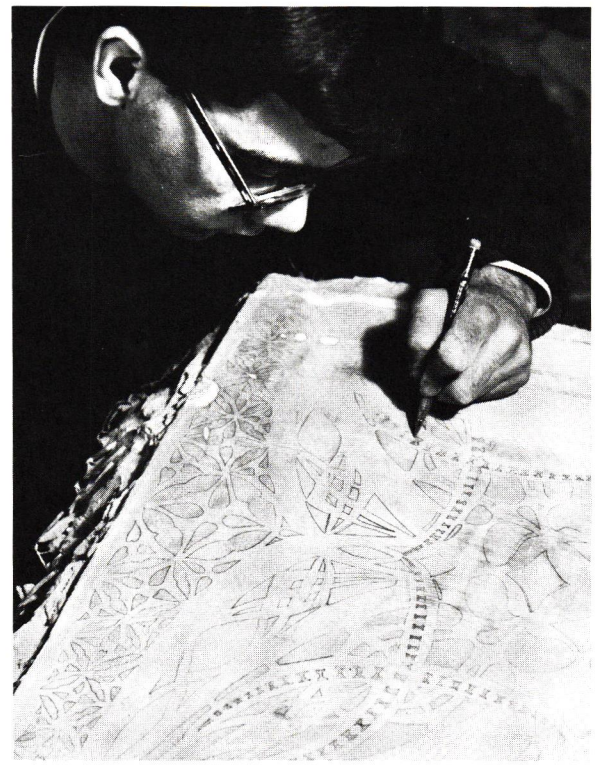


74 Sullivan's theory is best summed up and most effectively presented in his "Kindergarten Chats," 1901-02. These are currently available in book form together with his other excellent essays, "Ornament in Architecture," 1892, "Emotional Architecture as Compared with Intellectual," 1894, and "The Tall Office Building Artistically Considered," 1896, in **Kindergarten Chats**, 1947.

75 **Inland Architect and News Record**, XVI (Dec., 1890). The first announcement of the Wainwright commission, where it was stated that the architects were then "making drawings," was carried by the **Economist**, IV (Nov., 29, 1890), p. 1900.

76 For a complete account of the demolition proceedings and of the various attempts to preserve the Schiller Building, see Carl Condit, **The Chicago School of Architecture**, Chicago: The Univ. of Chicago Press, 1964, pp. 130-135.

77 Related to the author by the Chicago architect and former writer for the **Architectural Record**, Andrew N. Rebori, who was Louis Sullivan's friend during the last decade of Sullivan's life.



The interior of the Auditorium Theater designed by Adler and Sullivan.

# *The Theater*

by Dankmar Adler

Rachel Baron, Editor*

*Dankmar Adler died in 1900. In that year, W. C. Sabine, American physicist, ushered in the modern science of acoustics by publishing Architectural Acoustics. But Adler, a practising architect without scientific training, had been having remarkable success in acoustics for at least twenty years prior to 1900. Sullivan called Adler the only man of his time who really understood acoustics as an art as well as a science. Adler's credo was predicated upon functionalism and belief in democratic theater. The following article is based upon a partially completed manuscript and fragmentary notes by Adler which he may have been preparing for an architectural encyclopedia.** The first part is Adler's rationale for democratic theater; the latter part is probably his final statement on acoustics.*

The art of designing theaters, as exemplified by those built up to the beginning of the last part of the nineteenth century, has not reached the standard attained for man's other achievements in carrying out his manifest destiny: the subjugation of the materials and forces of nature to his uses.

The designers of bridges, ships, and machines must foretell with accuracy the structural and economic results expected from their works. If these works fail under stress of actual service to fulfill their predicted performances, the modern world has no use for them and no place for their authors.

Not so in the case of a theater. Not all of those who occupy its seats may be able to see. Few may be able to hear what is presented upon the stage. Yet theaters in which these things are experienced are considered normal. When a theater is found in which all can see and hear, the result is regarded by the public as something abnormal; a phenomenon which cannot be repeated except by luck.

It should not be more difficult to predict the behavior of sound waves within a theater than it is to determine the interactions of sea-waves, ship, and propelling screws, or the conduct of steam in the cylinders of an engine; and when compared with the conservation of sound and its transmission to distant space through the telephone, or into time and space



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** Adler's notes for this article were found sporadically and some quite accidently in the home of his granddaughter, Mrs. Irving Saltzstein of Milwaukee. The reader is cautioned that the material for this article had not been completed and may have been expanded or revised by Adler had he lived longer. At least two references anticipate a 19th century publication. It is also possible a published version may be discovered which would render the following obsolete. These fragments include those referred to by Hugh Morrison in his biography of Louis Sullivan.

by means of the phonograph, how trifling are the problems of sound control and transmission within the enclosing walls of a theater.

But theater building is old. It has a history whose baneful influence upon contemporaneous theater design, like many another architectural aberration, is the result of a mental attitude which sees in a brilliant and admirable achievement of the past, not a legitimate evolution from the conditions of its own environment, but a creation standing out for all ages to be blindly idolized and imitated. Were our mental

Dankmar Adler

vision trained to take note not merely of the **historical** in architecture, but also of the **history** of architecture, we should perceive that all structures owe their origin to evolutionary spiritual forces and processes, changing and adapting to each successive phase of the human environment, and not embalmed or rigidly crystalized in the structures to which they have given being.[1]

The true history of architecture is the history of the evolution of human civilization. Each structure which has been conceived and reared by man is but the visible manifestation of a phase of that evolution. This is the spirit in which the author of this article sees the theater that has been, the theater that is, and the theater that should be.

Tracing the origins of the theater, we find that the span of time between the dawn of man's first efforts at histrionic presentations and the Coliseum is but partially bridged by records and ruins left for our examination. The next chapter of history is as interesting, and in the earlier stages, as tantalizingly obscure. Beginning shortly after the period when the Coliseum and antecedent structures were converted into ruins by inswarming hordes of barbarians, the art of producing and housing histrionic presentations again had to be conceived and developed, and so has been carried on to our day. Later in both of these periods, documentary and monumental remains become more frequent. From the Periclean period to the shattering of Roman civilization, and from the day of the miracle-play and the great Italian Renaissance to the contemporary play-house, authentic illustrations of the growth and development of the theater are within our reach.

In Continental Europe, until recently, theaters and opera houses were built by kings and potentates as part of the glory and splendor of their courts. Their designers found it necessary to give foremost consideration to arrangements for display of gorgeous costumes by the court nobility. Thus, the practice of surrounding each auditorium by tiers upon tiers of stalls or boxes, so disposed that the magnificence of the apparel and jewels worn by their occupants was fully in evidence, was as important and essential a feature of the spectacle as the play presented upon the stage. The space thus enclosed formed a deep pit, in which the commonality and those in the lower ranks of the military were crowded together, standing, or at best seated on hard benches, looked down upon by the occupants of the boxes. Finally, at dizzy height, amidst heat and vapor arising from innumerable burning candles and lamps and from the audience below, one or more narrow galleries were occupied by beings of still less social import than those who filled the pit of the theater.

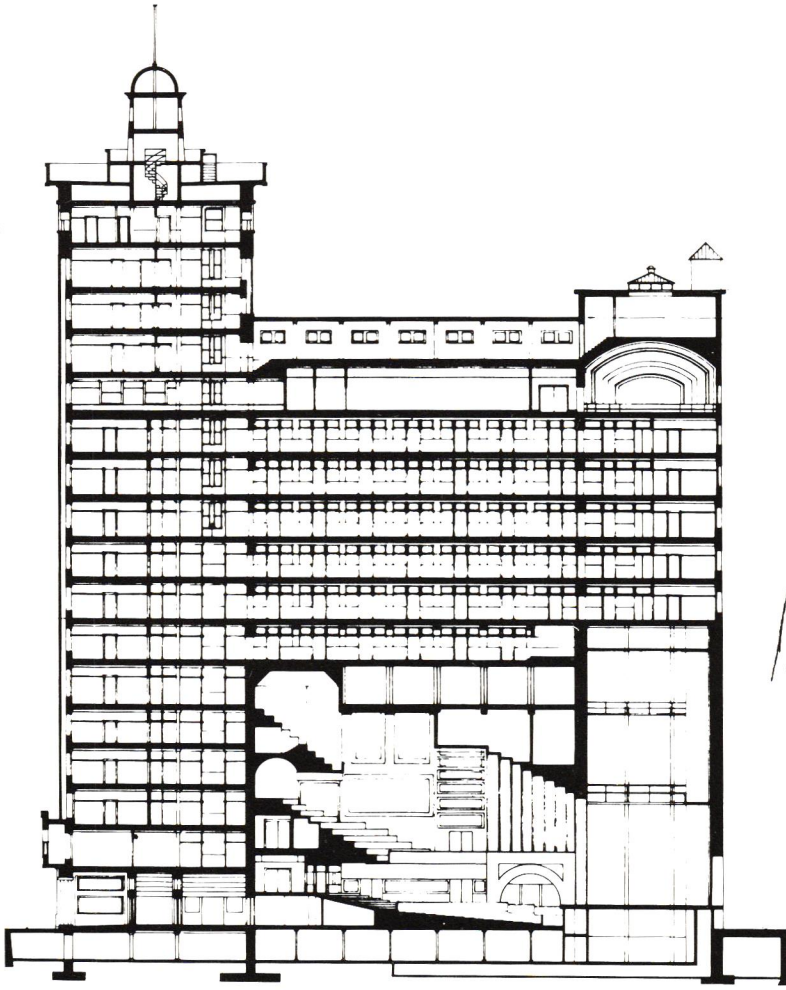
In England, puritanic influence prevented support of players, plays and playhouses by contributions from the public purse. There were long periods when the play was not even tolerated. It was late in the 16th century before theaters were built in London, only to be closed half a century later by order of Parliament. These first English theaters were commercial ventures of actors, playwrights and speculating carpenters---cheap structures of wood and plaster, modeled upon prototypes with which their builders were familiar. These prototypes were the enclosed courtyards of inns, surrounded by galleries, the stage improvised in the corner or at one side, the guests of the inn and their friends looking down from the galleries, while trades people and servants filled the level spaces of the court itself. Thus, when Architecture and its conventions took possession of the English theater, it found a type of construction, crude and inelegant, yet in its general lines almost identical with the plans developed on the Continent in the style of the Renaissance and of the Rococo from the classic theater of Bitruvius.

The beginning of this century found just one type of theater design common to the civilized world. The typical characteristics of its auditorium were:

1 Adler's emphasis.

level or nearly level pit; high surrounding walls masked by many balconies and galleries; a ceiling raised high above these high walls by the interposition of an entablature or cove, or of both; within the ceiling a dome rising high enough to allow the main central chandelier to be hung above the line of vision of the greater part of the audience; and a proscenium fashioned and decorated according to the rules conventionally accepted for the proportions of the doorway in a palace of the period of the Renaissance.

Almost the entire nineteenth century has lapsed, and theater design is still dominated by reverence for this historically transmitted type, whose strongest manifestation is found in efforts to fashion with historical correctness and academic accuracy the proportions of the proscenium opening.



LONGITUDINAL SECTION

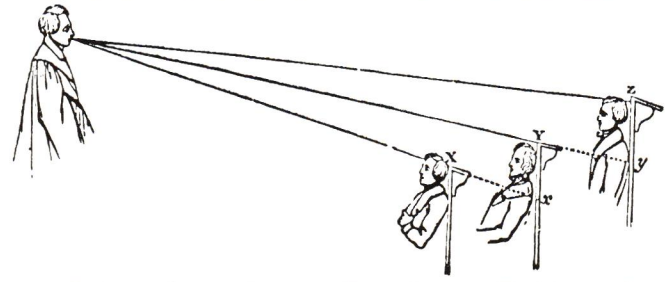
This is a longitudinal section through the Schiller Building showing the theater. This was perhaps Dankmar Adler's greatest achievement in small theater design, being equal in quality to the much larger Auditorium Theater designed four years earlier. HABS drawing.

Neither historical nor conventionally aesthetic considerations justify the use of forms and types which do not adapt to practical requirements. The following summary of the essential conditions underlying theater design is given as justification for non-historical theater design.

Without a play to be produced upon the stage there will not be a theater. When there is nothing which excites a desire to see and hear a performance, there will be no spectators and no audience. If the actors are hampered in their work by faults and imperfections of stage construction and equipment, they may be unable to render the play in a manner which attracts the public and stimulates attendance. Therefore, no theater design can be considered as fulfilling legitimate requirements unless there has been provision for everything which furthers scenic illusion, facilitates movement upon the stage, and makes for comfort and convenience of actors and all others employed upon the stage. Yet after all this has been done, if each spectator cannot see every actor in the play and all the minutiae of scenic setting, if every member of the audience is not able to hear distinctly and effortlessly every word spoken upon the stage, no matter how perfect the stage and its consideration and appointments, and how consummate the art of the performers, the structure will not have fulfilled its purpose.

* * *

The auditorium of a theater, as its name implies, is a place whose occupants have come for the purpose of hearing. Therefore, the circumstances and conditions which affect the conservation and trans-



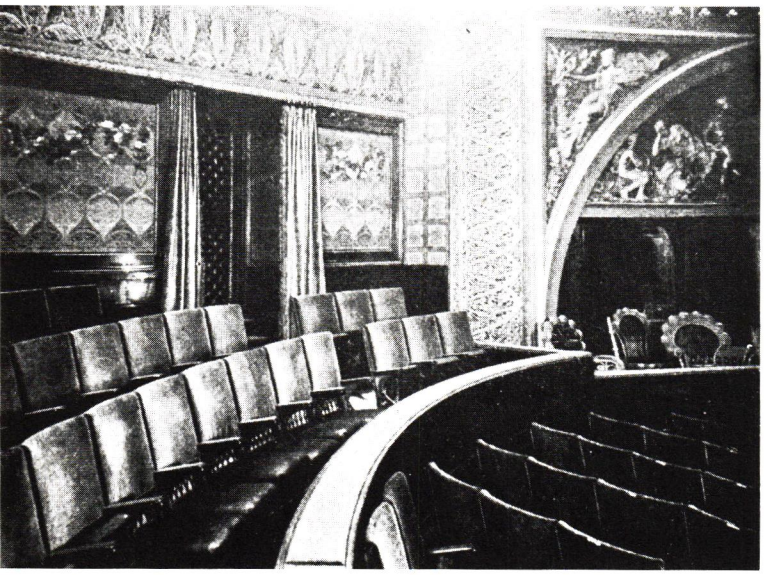

mission of sound, as well as the peculiarities and limitations of the human ear, must be the dominant elements in the design of any auditorium.

When atmospheric air is made to assume a wave movement having a frequency of between ____ and _____waves per second,[2] and a velocity of about 1100 feet per second, the sensation transmitted to the brain by an interposed ear is called **sound**, and the waves producing this phenomenon are called **sound-waves.**

There are no recorded observations which give

2 Adler's blank spaces which he undoubtedly meant to fill.

air an exceptional status among the substances which compose the universe. In common with other substances, therefore, air must be considered subject to the laws of gravitation and of the conservation of energy, and as possessing inertia. It must be assumed that air movements are accompanied and impeded by friction; that when in unobstructed motion, air waves follow the line of original impluse; that when reflected, the angles of incidence and reflection



This very early photograph shows the interior of the Schiller Building theater with its original seating, drapery and sculpture.

of their movements are equal; and that a line of least resistance is sought and followed by any air movement which meets with obstacles in its progress through space.

Sound may be defined as the effect upon the auditory nerves of certain atmospheric wave movements. These wave movements travel in all directions from their point of origin with volume and energy greatest in the axial line of the sound producing impluse. Their intensity and energy are greatest at the point of origin and diminish in force with increasing distance of travel, until finally they die in the calm of the surrounding atmosphere.

We may see on the surface of a pool into which a pebble has been thrown, a series of concentric waves whose motion grows feebler and feebler as distance from the point of impact increases. So is the impact of a sound impulse thrust into the air followed by a series of concentric air waves encircling the line of direction of sound impulse, their progress in every direction cumulatively impeded by inertia and friction until the initial energy of the impulse has been exhausted. If a sound wave in its progress through space encounters an interposed object, changes of condition will ensue in conformity with general physical laws. Whatever these changes may be, the sum total of effect will not exceed the residuum of energy which efforts to overcome inertia and friction have left to the intercepted sound-wave at the moment of contact. Therefore, the manifestations consequent upon such contact will be strongest if the interposing object is placed near the origin of sound impulse, and feeblest if it is placed at a distance from this point, the ratio of difference, by reason of cumulative effect of opposing inertia and friction, being as the squares of the respective distances.

Certain physical limitations of the auditory nerves of the average human being are important factors in the science of acoustics. Among them is the inability of the average human ear to recognize or distinguish time differences of less than about one-tenth of a second.

Therefore, if an original sound wave proceding from any given sound impulse strikes the ear, and reflections of other waves emanating from the same impulse strike the same ear **within** less than one-tenth of a second, their combined effect upon the auditory nerve will be as that of one sound. Although unable under this condition to separate these individual sound manifestations, the ear cannot ignore their cumulative impact; the sensation will sound stronger and louder in direct proportion to the number of sound wave impacts crowded into the period of one-tenth of a second. If the time interval between impact upon the ear of original wave and of reflected waves **exceeds** one-tenth of a second, the sensation sent by the auditory nerve to the brain will be that of two or more sounds, neither having the strength of united effect, but each strong enough to induce confusion and indistinctness. If **within** one-tenth of a second, the ear is assailed by original and reflected sound wave movements which owe their origin to **two or more** sound impulses, the ear will be unable to distinguish and classify wave rhythms coming so closely upon each other. The effect will be unintelligible in proportion to the number of individual sound-wave movements thrust into such periods of less than one-tenth of a second. Therefore, there are two reasons for placing the sound reflecting surfaces as near the point of sound production as practicable.

First: that the waves to be reflected may retain enough of the strength of their original impulse to be within the ear's range of perceptiveness. Second: that the difference in time required by original and by reflected sound waves to travel to the ear of the auditor shall be less than one-tenth of a second.[3]

3 All emphasized phrases in this paragraph are the Editor's.

Sound being an air movement, and air being a substance which obeys the laws of statics and dynamics, the movements resultant upon the impingement of sound waves upon floors, walls and ceiling may be predicted with a reasonable degree of certainty.

If sound waves in their progress encounter interposed objects, such as walls, floors or ceilings, a new series of wave movements will be set up within the substances which form these surfaces. These new wave movements will be modified in rhythm and intensity by the structural characteristics of the solid materials encountered. The new sound wave so formed will take on a quality which may differ considerably from that of the original sound wave.

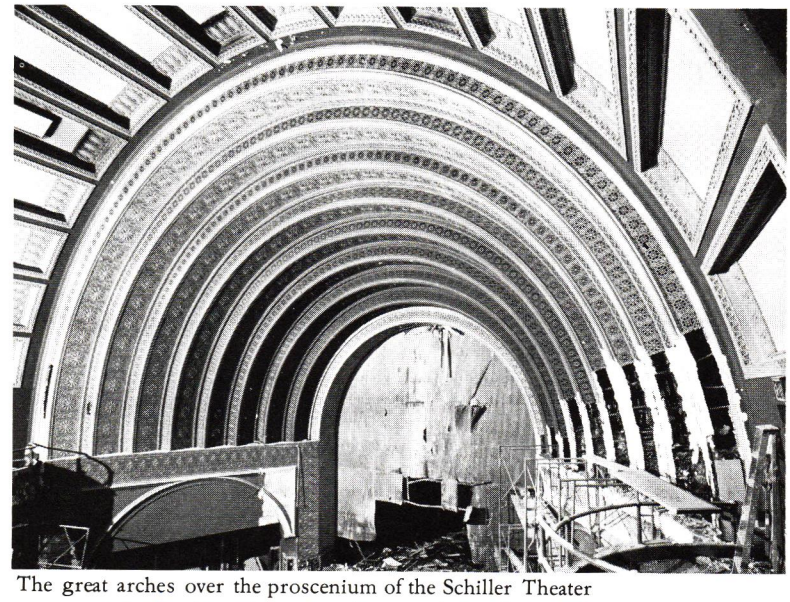
If sound waves are reflected upon contact with an interposed surface, the result will conform with the natural law that the angle of incidence is equal to the angle of reflection. If the direction of impulse of sound waves is known, the intercepting plane can be so placed that the sound waves are reflected in any desired direction. Furthermore, as a billiard ball strikes the cushion, the vigor of its further movement will be diminished in proportion to the indentation upon the cushion made by its impact; such also is the effect of a sound wave when it strikes an interposed object.

If the progress of sound waves is arrested by a body or surface having a hairy, wooly or fluffy texture, most, if not all of their energy will be taken up in effort to induce sympathetic wave movement within this fibrous mass. The greater or lesser length and frequency of the fibers will determine the relative degree of absorption and reflection of sound. Observation has shown that there will be little or no sympathetic sound-wave motion within the hair covered object, and but little if any movement of reflected sound waves from its exterior.

When the object interposed is a mass of hard material, such as a brick or stone wall, its molecules respond promptly to the sound-wave action of the air and a large volume of sound progresses within the interposed wall. These internal sound vibrations induce the formation of new aerial sound waves, while the original sound wave, with whatever energy is left in it, travels away from the wall in whatever direction the angle of reflection may take. Observation has shown that the sound wave movement within the wall is more rapid and produces a sound of higher pitch than that caused by the original sound wave. Both rhythm and pitch of the induced aerial wave are different from that of the original sound. So, in all cases where sound waves are allowed to impinge upon enclosing brick, stone or concrete walls, a confusion of sounds arises. The effect will resemble the original sound produced upon the stage mingled with a mixture of sharp, rattling or barking sounds, which break into the rhythm of speech or music in a most aggressively discordant manner.

If the intercepting medium is somewhat less hard and firm in texture and at the same time elastic, like wood, part of the energy of the sound wave will expand itself in producing a sympathetic wave movement in the interposed medium. The wave, diminished in energy by as much of its movement as has been taken up by the intercepting medium, will be reflected into space. This sympathetic wave movement in its turn engenders new sound wave movements in the enclosed atmosphere.

Besides this difference in quality of wave movement, there is also a difference in the velocity. When on a pool table the cue ball strikes a group of object balls, the motion imparted to all of the object balls, plus that remaining in the cue ball, represent a sum total which, less the energy expended in friction, is equal to the original energy which has set the cue ball in motion. If one of the object balls in its motion encounters the cue ball it will accelerate the movement of the cue ball while its own will be correspondingly diminished. The effect, therefore, which is produced by the impinging of a series of sound waves upon wall and ceiling of an auditorium is fully as manifold as that produced by the striking of a cue ball on a pool table against a group of object balls.



The great arches over the proscenium of the Schiller Theater never ceased to be dramatic, even as they were being destroyed.

Generally speaking, the sound wave is reflected from the interposed surface back into the room, but not all its energy is so reflected. Part of its force

expends itself within the substance which forms the interposed wall or ceiling. The reflected original sound wave may pass directly to the ear of one of the audience, or it may encounter another surface or object, and be reflected again.

If the wall and ceiling surfaces are large and the distances traversed great, the difference in rate of progress of corresponding sound waves in air and in solid will eventually become great enough to exceed one-tenth of a second, and will result in a reverberatory effect which makes for unintelligibility and confusion of sound. (This is something entirely different from the phenomenon of Echo which occurs when a sound wave encounters a surface so situated to reflect the sound directly back to the point of origin in a period exceeding one-tenth of a second from the time when the original sound becomes sensible to the auditor.)

On smooth surfaces the difference in progress of sound wave movement and action and reaction of air and enclosing surfaces invaribly produces confusion of sound. If, however, the enclosing surfaces are well broken up---the floors by steps, seats and audience; the walls by pilasters, pillars and galleries; the ceiling by heavy beams, arches and deep coffers ---the effects are also broken up and cannot be sufficiently cumulative to impinge upon the ear in periods greater than one-tenth of a second.

The sounds which the audience has come to hear are produced upon the stage. But the exigencies of stage setting leave vast open spaces and no reflecting surfaces behind, above, to the right and to the left of actors or singers. Even when the scene of stage action is small, the enclosing surfaces must be formed of canvas from which active sound reflection cannot be expected. Therefore the sound-waves, the axes of whose movements trend toward the interior of the stage, are to a great extent unavailable for transmission into the auditorium. Whatever is done towards conserving and controlling the energy of the sound-waves in general must be almost wholly confined to the auditorium.

There can be no sound dispersion downward, either on stage or in the auditorium, because the floor of each is so near the mouths of speakers, singers and musical instruments, that it intercepts and reflects the sound-waves long before the vigor of their original formative impulse has expended itself. But not all the waves travel downward. Assuming a horizontal line drawn from the mouth of a speaker on the stage, one half of the sound-waves produced will travel upward toward the ceiling. Meanwhile, the sound-waves which strike the floor are reflected upward to join the ceilingward movement where half of the sound-waves have been sent by their original impulse. Inasmuch as the floor is comparatively near the mouth of the speaker or singer, the waves so reflected will retain much of their original vigor. As they move upward and forward, they will form an important element in the formation of the total volume of sound. The sides of the room also received sound-waves and reflect them upward and into the body of the room. Thus, a very large proportion of the sound-waves produced by any sound impulse will move upward until they strike the ceiling and are reflected downward. If the ceiling is placed very high above the stage, the upward moving sound-waves will lose much of their energy in travel. Those sound-waves reflected downward into the room toward the audience will have even less strength and will add little to the general volume of sound.

There is further danger when the ceiling height is great. The difference in time between the arrival of a directly propelled sound-wave at a given ear and the arrival of a wave reflected from the high ceiling by the same impulse will be too great for synchronous action and instead will create confusion of sounds. If the distance to the ceiling is made small enough, these upward tending wave movements may be arrested and reflected back toward the audience before their energy is expended in the effort to propel themselves through the air.

If sound conservation and its propulsion were all that is to be attained in the design of a theater, ceiling lines would be established at levels little above the heads of the actors. But there are other considerations. There is the necessity for allowing space between the heads of the people and the ceiling to prevent a sensation of oppressiveness. There must be room for formation of a stage picture. As essential portions of the stage picture may be on the back wall of the stage, no part of the ceiling, beginning with the proscenium arch, should extend below a line drawn from the eye of the highest spectator to the upper line of the essential parts of the stage picture. Whatever distance the proscenium opening and the ceiling may be raised above this line, there will be corresponding dissipation of sound and impairment of acoustic qualities of the theater.

There may be reluctance to accept as final and decisive a dictum so antagonistic to time hallowed practice. But upon reflection this reluctance cannot but disappear. The acoustically improper proportions of proscenium opening and consequent excessive ceiling height which have become characteristic of the theater owe their origin to Vitruvius, Palladio, and Vignola. They knew no wall opening

except the door or window. As the architecture of whose canons they expounded had established certain proportions of height to width of doors and windows, the proscenium opening had to follow these proportions. An opening of so great size must have the most dignified and grandiose treatment known to the style. That implied the use of pilasters or pillars surmounted by an entablature and crowned by a cove forming a background for emblematic sculpture or a field for a great decorative fresco.

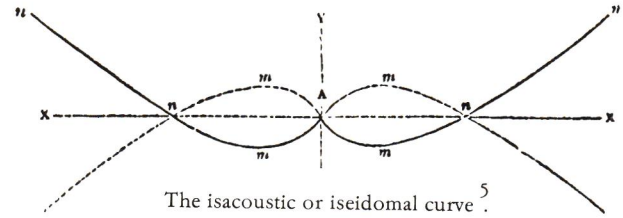
When the splendors of the more important part of the audience were displayed in many tiers of galleries, the structure as well as the decorations of these were made to blend quite naturally with the treatment of the high proscenium---which, in fact, from the standpoint of decorative art, formed a logical and appropriate feature at once terminating the lines of the galleries and dominating the entire design. Coming nearer home in time and place, the abhorance of 'squattiness' which forms one of the most marked traits of the attitude toward architecture of the average American, has also maintained the proscenium of classical proportions, at the same time bowing to the practical limitations of height by imposing a painted rag called a 'valance.'

While the low proscenium and ceiling contribute more than any other feature to the acoustic success of a theater, there are many other factors which must not be neglected. Where walls and ceilings are smooth and unbroken, many sound-waves by impact with other sound-waves are thrown into lines parallel with walls and ceilings. These sound-waves creep along at modified speed, gathering volume by the addition of others also influenced by the vibrations of walls and ceilings. They finally assume a rhythm varying from that of the waves moving freely in air, and thus blur the sensation of the auditory nerves. Therefore, it is always advisable to break up ceiling wall surfaces.

The materials of the floor, walls, and ceiling surfaces are an important factor in the determination of acoustic qualities. Large areas of very hard surfaces, such as marble, metal, tiles, brick or plastering applied directly to brick, will impart hardness and harshness of tones which are apt to engender rattling vibrations. On the other hand, drapings of woolen cloth, velvet or plush or upholstered surfaces absorb sound and fail to reflect it and thus serve to greatly diminish its volume, thereby rendering hearing difficult.

The use of resonant materials such as wood or rough plaster on metallic laths is advisable particularly as wall covering when separated by an airspace from the walls themselves. The value of resonance of the materials composing walls and ceiling facings seems to be due to sympathetic synchronous vibrations which are set up by impinging sound-waves.

There is a configuration of the floor which, if constructed upon the lines of Scott Russell's well-known 'isacoustic' curve, will also give 'isaoptic' lines.[4] This is of no mean importance, for many people hear partly with their eyes by watching play




The isacoustic or iseidomal curve.[5]

of features. This configuration also enables people to see all that is enacted upon the stage. The isacoustic sloping of the floors not only removes obstacles to direct progress of sound-waves to ears, but also interposes sound reflecting surfaces sooner and more effectively than would be the case were the floor either level or uniformly sloped.

If artistic thought and development tends to recognize practical requirements, and if willingness to accept these practical considerations becomes the basis of artistic design and decorative treatment, it is probable that the few tentative efforts recently made toward adaption of acoustic requirements for proscenium opening and ceiling height of theaters will bear fruit. When in later years future editions of this work are published, the readers may deem it strange that anyone should have thought it necessary to attack what will then have become obsolete, or at least obsolescent, practice.

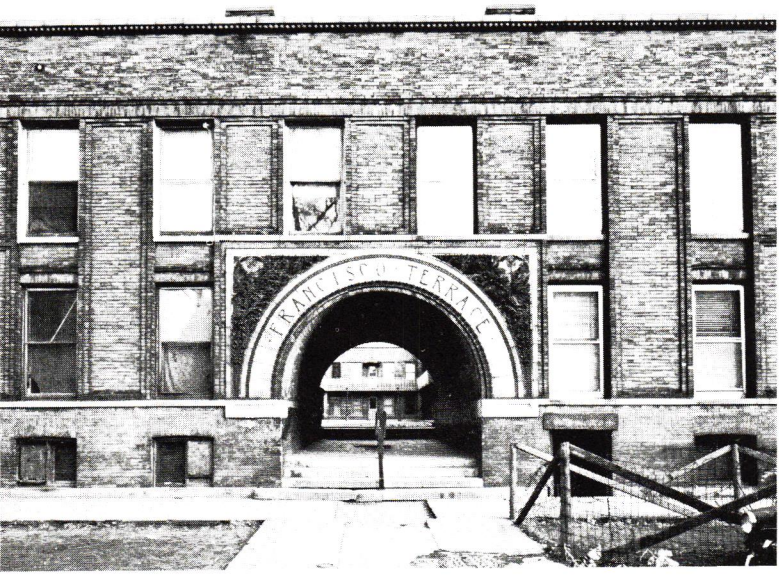
4 John Scott Russell (1808-1882) Scottish civil engineer, described isacoustic curve for the auditorium in the **Edinburth New Philosophical Journal**, Vol. XXVII; (See: Gwilt, Joseph, **An Encyclopedia of Architecture**, 1899, p. 1068f.)

5 "Isacoustic Curve. A. A line or surface connecting points in a room having the same acoustical property, particularly that of the intensity of sound issuing from a particular point....B. The curvature of a bowled floor of an auditorium, so designed that the apparent elevation of each auditor above the auditor immediately in front of him, as viewed from the speaker's position, shall be the same." (Sturgis, Russell, **Dictionary of Architecture and Building**, 1901, New York, Vol. II, p. 519.)

"A being the place of the speaker, and the heads of the spectators being placed on the line **Amn**, continued as far as the voice will reach, **XAX** being the axis of the curve, and **YY** its parameter. This curve has two branches on opposite sides of **A**, showing that if the building extends behind the speaker, or if the spectacle be visible or the sound audible on every side, the same may be continued all round. By means of this curve, the position of seats in a theatre may be satisfactorily determined." (Gwilt, **op. cit.**)

# *Book Reviews*

*CHICAGO'S FAMOUS BUILDINGS, a Photographic Guide to the City's Architectural Landmarks and Other Notable Buildings, edited by Arthur Siegel. University of Chicago Press, Chicago, Illinois, 1965. 230 pp. illustrated, $2.95, cloth, $1.00, paper.*




"The Chicago School of Architecture is famous the world over, but visitors seeking out its best works have sometimes had difficulty in locating them." With this considerably understated sentence, Chicago Commissioner of City Planning Ira J. Bach begins his foreword to Chicago's Famous Buildings, a photographic guidebook sponsored jointly by the City Council and the Graham Foundation for Advanced Studies in the Fine Arts, and edited by Chicago photographer Arthur Siegel.

Prior to the publication of this book, there has been no source easily available to the public. Commissioner Bach is surely correct in saying that the need for such a book has been clear for some time. Of the three other guidebooks listed in the back of this one, two have been privately produced in small quantities and the other, presently available only at the Art Institute museum store, is quite limited in scope. Devotees of Chicago architecture have looked forward anxiously for at least two years to the publication of this volume, and perhaps long anticipation has raised our hopes too high. When the first blush has faded, the book reveals some disappointing flaws.

Several things indicate that the amount of care taken in the production of the book was not consistent with the amount of time and backing which attended its gestation. The layout abounds with minor inconsistencies which are vaguely irritating and occasionally jarring. There are two major errors which must be listed here. One is the mismatching of the plan and photographs of Paul Schweiker's churches on pp. 178-79, and the other is the inclusion of a detail photograph on p. 188 of the corner column of the 900 Lake Shore Drive apartments representing the 860-80 apartments. Most of the photographs are good and a few are excellent, but some should have been left in the darkroom. The Mercedes-Benz on p. 108 is beautifully done, but is it architecture? Carson Webster's commentary which accompanies the photographs tends to become speculative rather than analytical whenever it ventures beyond the spare, official remarks of the Landmarks Commission, thereby illuminating the author's opinions rather than the building themselves.

The book lists perhaps 20% of the important buildings in Chicago and some of the inclusions seem curiously inappropriate to such a circumspect list. The buildings are categorized under four major headings:

I. Buildings of historic importance
II. Buildings of architectural merit
III. Recent buildings
IV. Buildings of general interest

The latter two headings seem much too broad to have meaning in such a short list. Category III would have been more significant (and included fewer buildings) as a sub-heading under category II, and whatever one's architectural preferences or prejudices, it is somewhat puzzling to find the Civic Center Building and Federal Center in the same category as McCormick Place or the Sun-Times Building.

The two essays on the Chicago School by Hugh Dalziel Duncan and Carl W. Condit provide excellent background and put the events of Chicago's architectural past and present in proper perspective. Mr. Duncan's discussion of the human factors underlying the rise of the Chicago School is powerfully and knowledgably written and is complemented by Condit's clear explanation of the development of Chicago School techniques.

It is refreshing to find a guidebook with photographs big enough to be descriptive, and it is particularly enjoyable to find well drawn plans accompanying those photographs. The book is a valuable addition to the growing body of documentation of Chicago's architectural heritage, but much remains to be done.

Reviewed by Joseph Griggs

*LANDSCAPE ARTIST IN AMERICA, The Life and Work of Jens Jensen, by Leonard Eaton. University of Chicago Press, Chicago, Illinois, 1964. 240 pp. illustrated, $10.00.*

One of the least recognized of the arts is that of landscape design. Very few people practice landscape architecture and gardening, and those who do are not at the present too vociferous. Consider, though, how important this art is to the form of cities such as Chicago which exist on a flat uninteresting countryside. A discussion of Jens Jensen is particularly timely in reminding the public of the value of a beautiful landscape. The present city landscape of Chicago, including much of Jensen's best work in the west parks, is being brutally and needlessly ruined by a recreation-oriented park administration and the pressures of highway building and street lighting.

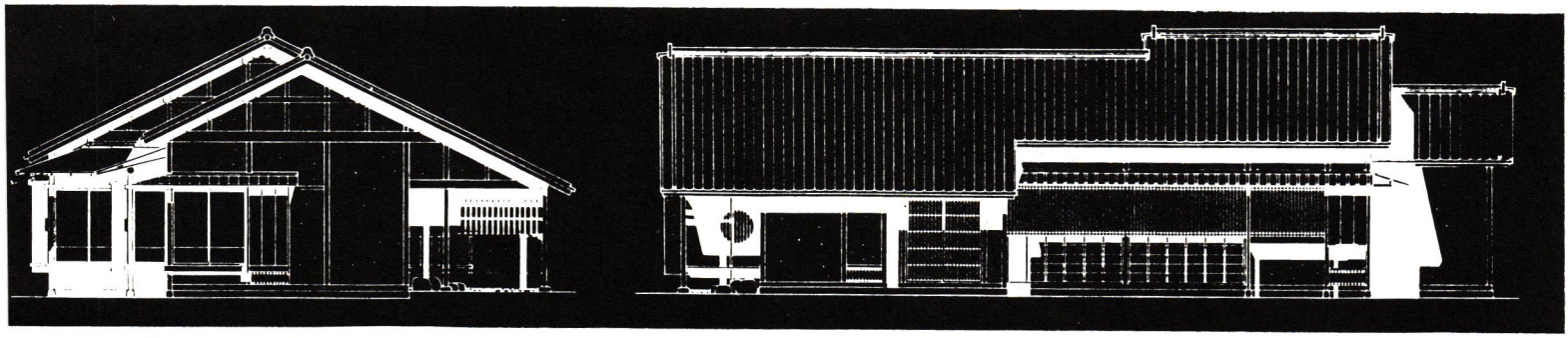
Chicago has benefited greatly from its gifted immigrants who have made creative use of their background to evolve a higher art. One such immigrant was Jens Jensen who arrived with his wife and family via Denmark, Florida, and Iowa in 1886. He started as a laborer in Humboldt Park and by his energy and ability rose to the park superintendent post in 1900. Jensen was not pliant to the politicians and was fired from the superintendency of Humboldt Park for rejecting shoddy materials. After a six year struggle in private practice, he was made superintendent and landscape architect of the West Park System. During the period from 1906 to 1920, when he retired to private practice, he created a series of splendid urban parks for the West Park System.

The author points out the while Jensen provided active recreation in his parks, he laid greater emphasis on passive recreation than would be customary today. As Jensen matured as an artist, he made the cornerstone of his principles the use of flora indigenous to the area and refused to import exotic European or non-native plant materials. He created works of impressive beauty with the plant materials of the region. Jensen thought of a park as a complete work of art rather than a mere collection of recreational services. In common with Emerson, Whitman, and Louis Sullivan, he believed that the common man was capable of appreciating a fine work of art whether poetry, architecture or landscape.

While reading this book, one wonders if the Chicago Park District officials understand the importance of the parks in their keeping. If lagoon filling, commercial parking lots, convention halls and airfields are to be permitted to continue encroaching on park land, the question will soon be merely academic.

Leonard Eaton undertook the difficult task of explaining the life and philosophy of a major artist in an impermanent art medium. The excellent quality of the photographs, particularly those of Robert Fine, and the interesting, lucid and poetic text make the resulting book a work of art.

Reviewed by Douglas Schroeder



*THE JAPANESE HOUSE, a Tradition for Contemporary Architecture, by Heinrich Engel. Charles E. Tuttle Company, Rutland, Vermont, 1964. 495 pp. illustrated, $27.50.*

The Japanese house is an extremely complex problem which has been reduced to the ultimate in simplicity. Like the Japanese print, it is lovely to behold but difficult for the Western mind to comprehend. Heinrich Engel has provided us with this magnificent work of readable scholarship which goes far towards providing an understanding of the Japanese living unit.

The Japanese house is primarily of wood and the framing and assembly of the house rival most western furniture construction. In a sense the Japanese house is in reality enclosing furniture and is so constructed.

The numerous drawings are beautifully executed and the photo plates are equally fine with careful attention to layout. This book is expensive but is the best and most complete structural study we have seen concerning Japanese residential architecture. It is an invaluable reference for a dedicated student of the modern movement in contemporary architecture.

Reviewed by L. H. Hobson

# *Letters to the Editors*

Dear Sirs:

Like John Howe, I would very much like to see published in the REVIEW the Evanston and other domestic works of W. B. Griffin. I feel the Australian version of WBG fell far short, giving only a smattering of his domestic work....

Karl Kamrath
Houston, Texas

Dear Sirs:

I own the Coffee Shop inside of the Wainwright Building. The building itself was finished before my place was added on and I haven't been able to find out when it was added or what it looked like. I'm now trying to trace the officers of the Wainwright Real Estate Company to find out who was the owner. The name of the place was originally the Gentlemen's Cafe.

I'm trying to find any information at all about the inside, to put it back to somewhere near the original condition. I have taken off all of the junk that has been added over the years. I've still got the original floor. My main trouble is getting the time and money to do all of this, and finding the pictures.

Could any of your readers help me?

Richard E. Tyler
St. Louis, Missouri

# *Preview*

The next issue of THE PRAIRIE SCHOOL REVIEW will be devoted to the "Sutton" house at McCook, Nebraska. This prairie house was the only one of its type actually built on the prairie. We will present its complete history from conception through construction based on a thesis prepared by Don L. Morgan at the University of Nebraska.

To be reviewed . . . .

**You and Architecture**
Alfred Browning Parker

**The Chicago School of Architecture,**
Early Followers of Sullivan and Wright
Mark L. Peisch

The editors welcome constructive criticism by subscribers and invite comments and suggestions concerning future issues.

Dear Sirs:

Our copy of THE PRAIRIE SCHOOL REVIEW, Volume II Number 1, has arrived and I was very happy to see the beautiful presentation and the excellent text. I am quite sure that my brother-in-law, William Gray Purcell, would have been very pleased and approved of everything. I am so sad that he was unable to see this copy.

Dorothy O'Brien
Pasadena, Calif.

*Ed. note: Mr. Purcell passed away on April 11, 1965.*

Dear Sirs:

A clipping from a major city newspaper---

. . . is a harpsichordist---when she's not changing diapers or guiding curiosity seekers through her house. . .

Her handicap is that they live in a Frank Lloyd Wright house . . . and at one time were showing 350 people through a month. . .

Robert Kostka
Chicago

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The Chicago Chapter of the Society of Architectural Historians met on the evening of April 8, 1965 at the Art Institute of Chicago where they heard Earl H. Reed, FAIA, present a progress report on "Recent Accomplishments of the Chicago Program of the Historic American Buildings Survey". Mr. Reed included a brief outline of the 1965 program which will be devoted in a large part to the recording of Prairie School residences.

On June 10, 1965 the Chicago SAH Chapter was privileged to hear Mr. Paul Sprague speak on "The Origins of Louis Sullivan's Architectural Ornament".

The Chicago Chapter will continue its very active program by hosting the annual August Tour for 1965 on August 19 through 22. A number of important Prairie School houses will be included on the tour.

The Committee of Architectural Heritage of the University of Illinois is sponsoring a Frank Lloyd Wright Summer Sketch Competition for students of the Department of Architecture. This is part of their program to raise funds for the restoration of Robie House. There will be a three week exhibition in late September of Mr. Wright's work and a program booklet prepared from the best drawings of buildings or their details from Wright or contemporary houses of the Prairie School architecture. The booklet will be offered for sale. The Prairie School Press has offered a copy of **The House Beautiful** by Wright and Gannett to the student submitting the best drawing.

# Bibliography


*Real Estate and Building News, XXXII (Mar. 15, 1890), p. 203.*

*Economist, III (Apr. 12, 1890), pp. 429-430*; IV (Nov. 1, 1890), pp. 705-706; V (Jan. 24, 1891), p. 127; (Jan. 30, 1891), p. 168*; (Feb. 7, 1891), p. 208; (Feb. 14, 1891), p. 253; (Mar. 21, 1891), p. 470*; (May 30, 1891), p. 950.*

*Flinn, John J., Chicago, Chicago: The Standard Guide Co., 1892, p. 123, pen perspective fol. p. 121. [Information for this guide was gathered before June, 1891.]*

*"The Building Interests," Industrial Chicago, Chicago: Goodspeed Pub. Co., 1891, Vol. I, pp. 223-224.*

*Adler, Dankmar, "On the Inspection of Buildings," Economist, V (May 30, 1891), pp. 946-947.*

*Inland Architect and News Record, XVII (June,. 1891), fol. p. 64.*

*Adler, Dankmar, "Foundations," Economist, V (June 27, 1891), p. 1137.*

*Economist, VI (July 3, 1891), p. 15.*

*Chicago Tribune, LI (July 12, 1891), p. 14.*

*Economist, VI (Sept. 5, 1891), p. 412*; VII (Jan. 23, 1892), p. 124*.*

*Architectural Record, I (Jan.-Mar., 1892), p. 277.*

*Adler, Dankmar, "Light in Tall Office Buildings," Engineering Magazine, IV (Nov., 1892), pp. 175, 179-183, 185.*

*Ferree, Barr, "Architecture," Engineering Magazine, IV (Nov., 1892), pp. 297-298.*

*Schiller Building Rental Pamphlet. Chicago: C. P. Dose & Co., 1892.*

*Adler, Dankmar, "Piling for Isolated Foundations Adjacent to Walls—A Discussion," Inland Architect and News Record, XX (Jan., 1893), pp. 63-64.*

*"Letter from Chicago," American Architect and Building News, XXXIX (Feb. 4, 1893), p. 72.*

*Economist, IX (May 13, 1893), p. 668*.*

*Ferree, Barr, "The High Building and Its Art," Schribner's Magazine, XV (Mar., 1894), pp. 312-315.*

*Twose, G., "Schiller Building," Brickbuilder, III (Jan., 1894), p. 4.*

*Fletcher, Banister, "American Architecture Through English Spectacles," Engineering Magazine, VII (June, 1894), p. 318.*

*Adler, Dankmar, "Theater-Building for American Cities," Engineering Magazine, VII (Aug., 1894), pp. 717-730; (Sept., 1894), pp. 815-829, plans p. 825, section p. 826.*

*Schuyler, Montgomery, A Critique of the Works of Adler & Sullivan, D. H. Burnham & Co., Henry Ives Cobb, New York: Architectural Record Pub. Co., 1896; reprinted in American Architecture and Other Writings by Montgomery Schuyler, William H. Jordy and Ralph Coe, editors, Cambridge: Harvard Univ. Press, 1961, pp. 388-389.*

*Ferree, Barr, "The Modern Office Building," Inland Architect and News Record, XXVII (June, 1896), pp. 45-47.*

*Birkmire, William H., The Planning and Construction of High Office Buildings, New York: John Wiley & Sons, 1900, pp. 67-70.*

*Sullivan, Louis H., "Development of Building, II," Economist, LVI (July 1, 1916), p. 40.*

*Woltersdorf, Arthur, ed., Living Architecture, Chicago: A. Kroch, 1930, pp. 75-76, 167.*

*Morrison, Hugh, Louis Sullivan, New York: W. W. Norton & Co., 1935, 1962, pp. 156-163, 302, fig. 11, pl. 50.*

*Wright, Frank Lloyd, An Autobiography, New York: Duell, Sloan and Pearce, 1943, p. 123.*

*Hitchcock, Henry-Russell, In the Nature of Materials, New York: Duell, Sloan and Pearce, 1942, pp. 13, 28, pl. 5.*

*Randall, Frank A., History of the Development of Building Construction in Chicago, Urbana: Univ. of Illinois Press, 1949, pp. 126, 195, 197, 209.*

*Wright, Frank Lloyd, Genius and the Mobocracy, New York: Duell, Sloan and Pearce, 1949, pp. 61, 63.*

*Condit, Carl W., The Rise of the Skyscraper, Chicago: The Univ. of Chicago Press, 1952, pp. 178-180, pls. 2, 46.*

*Hitchcock, Henry-Russell, "Sullivan and the Skyscraper," Journal of the Royal Institute of British Architects, LX (July, 1953), p. 358.*

*Manson, Grant, "Sullivan and Wright; An Uneasy Union of Celts," Architectural Review, CXVIII (Nov., 1955), p. 299.*

*Hitchcock, Henry-Russell, Architecture Nineteenth and Twentieth Centuries, Baltimore: Penguin Books, Inc., 1958, p. 246.*

*Bush-Brown, Albert, Louis Sullivan, New York: George Braziller, Inc., 1960, p. 23, pl. 50.*

*Condit, Carl W., The Chicago School of Architecture, Chicago: The Univ. of Chicago Press, 1964, pp. 128-135, pls. 87-90.*

*_____, "The Structural System of Adler and Sullivan's Garrick Theater Building," Technology and Culture, V (Fall, 1964), pp. 523-540.*

*Historic American Buildings Survey No. I11/1058. Schiller Building. Eleven sheets: Site plan, Five Sheets of floor plans, Longitudinal Section, Front Elevation, Three sheets of ornamental details.*

*Burnham Library Microfilm Project, Roll 4, Frames 1-99. Schiller Building. Plans, Elevation, Ornamental details, Structural diagrams.*


This bibliography consists of all references so far discovered by Mr. Sprague in which some significant statement--documentary, analytical or aesthetic--is made about the Schiller Building. Its order is chronological. Those entries marked with an asterisk were kindly supplied by Richard Nickel.