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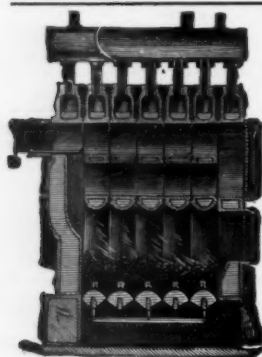
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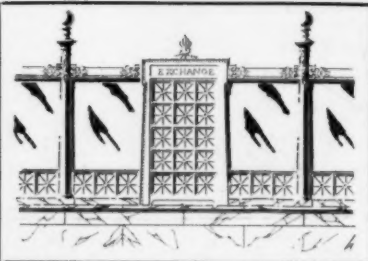
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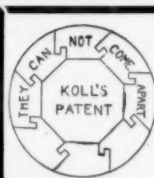
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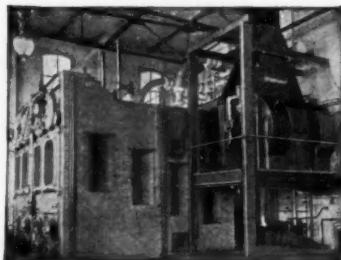
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The Perkins Ateller of Architecture announce that, owing to pressure of business, Mr. Frank E. Perkins has felt it necessary to retire to the position of Ex-officio Patron, and has secured Mr. John V. Van Pelt and Mr. Walter D. Blair, former Professors of Architecture at Cornell University and graduates of the Ecole des Beaux Arts, to continue the criticisms under the name of "Atelier Blair-Van Pelt," on Mondays and Thursdays at 8 P. M., at 122 East 2nd Street, New York City. E. DONALD ROBB, Massier. 1514

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BUILDING INTELLIGENCE.

(Reported for the American Architect and Building News.)

(Although a large part of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.)

ADVANCE RUMORS.

ASPINWALL, PA.—Plans have been completed for the administration building and superintendent's residence to be built at Aspinwall by the City of Pittsburg in connection with the new filtration plant. The buildings will cost \$70,000 and \$20,000, respectively.

ALBANY, N. Y.—Bids are desired by T. E. McGarr, Sec'y State Commission of Lunacy, the Capitol, Albany, until Jan. 4, 1905, for electric wiring for barns, soap factory, carpenter shop, piggery, paint shop, and hennery, also four 150 h.-p. boilers. Drawing and specifications may be consulted and blank forms of proposal obtained at the hospital, or by application to G. L. Heins, State Architect, in the Capitol at Albany, N. Y.

ALBANY, N. Y.—The Albany Institute and Historical and Art Society has purchased the western portion of the Rathbone lot on Washington Ave. as a site for its proposed new building. A 1-story and basement art gallery will be erected. This building will be constructed of fireproof material and will have a glass dome. It will be an annex to the main structure which will be erected as soon as the funds are available.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

ANNAPOLIS, Md.—The General Supply & Construction Co., 24 State St., New York, N. Y., has been awarded contract to erect five 2-story, fireproof buildings for the Navy Department, in connection with the naval hospital. Cost, \$200,000. Plans by Ernest Flagg, 35 Wall St., New York, N. Y.

BENSONHURST, N. Y.—It is proposed to erect a modest but handsome house in the Colonial style for the Country Club of Bensonhurst.

BROOKLYN, N. Y.—Two years ago, Mr. and Mrs. Williams Halls, Jr., promised to give \$125,000 to the Methodist Episcopal Hospital, known as the Seney, Brooklyn, if the board of managers should raise \$300,000 additional. The entire amount has been pledged. Architects have now been engaged to draw plans for renovating and completing the buildings. Work on the administration building has already begun.

The Church of Our Lady of Mercy, of Brooklyn, has purchased for \$145,900, a plot of land with a frontage of 115 feet in Schermerhorn St., and 99½ feet in State St. After the buildings there have been torn down, the new Church of Our Lady of Mercy will be built on the property. It is proposed to erect, besides the church building, a parochial school, a home for the Sisters of St. Joseph, and a rectory.

BALTIMORE, Md.—The Security Storage & Trust Co., 11 and 13 West North Ave., has awarded contract to B. F. Bennett, 123 South Howard St., for the construction of warehouse to be erected in the rear of its

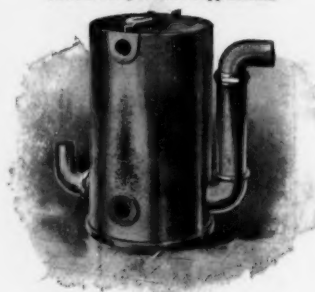
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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

present building. The structure will be seven stories, 26x64 feet, brick with stone trimmings, concrete foundation, reinforced concrete floors, elevator; cost, \$25,000.

BALTIMORE, Md.—Alexander Yearley & Son, agents for Mrs. Lydia Howard and Miss Mary Winter Davis, have awarded the contract for erection of a 6-story warehouse to be built on the site bounded by Calvert, Water, Cheapside and Lombard Sts., to John Cowan. The building is to be completed by June 1. It will be 33 feet by 103 feet, and is to be equipped with all modern conveniences. Ellicott & Emmart, architects.

BALTIMORE, Md.—Local architects will be invited to submit competitive designs for market buildings to be located on Center Market Space. Appropriation, \$435,000.

BALTIMORE, Md.—The Seventh Baptist Society has awarded contract to D. W. & G. H. Thomas, builders, 419 North Charles St., for the construction of a church at the northwest corner North Ave and St. Paul St., after plans by Edward H. Glidden, Wilson Building, 301 North Charles St. Structure to be one story high, with tower 129 feet high; Beaver Dam marble exterior; concrete foundation; steel beams and columns; cast-iron columns; sanitary plumbing and heating system. Cost, about \$60,000.

BURLINGTON, N. C.—Wheeler & Runge, Charlotte, N. C., have completed plans for a \$25,000 hotel. Address R. L. Holt.

BILOXI, MISS.—The following are the four lowest bids received at the office of the supervising architect, Treasury Department, Washington, D. C., for the construction of the United States postoffice, courthouse and custom house at Biloxi: Standard Construction Company, Chicago, Ill., \$71,970;

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BUILDING INTELLIGENCE.

(Advance Rumors, Continued.)

W. H. Bailey, Henderson, Ky., \$83,698; Miles & Bradt, Atlanta, Ga., \$84,000; Geo. Moore & Son, Nashville, Tenn., \$84,700.

BROOKLYN, N. Y.—It is reported that an addition will be built to the Jewish Hospital at St. Mark's and Classon Aves., costing about \$125,000. Nathan S. Jonas, Sec'y.

BROOKLYN, N. Y.—It is stated that about \$250,000 will be spent by the Brooklyn Rapid Transit Company for improvement to the stations on the Fifth Ave. and Bay Ridge elevated lines.

BROOKLYN, N. Y.—Bids are desired by C. B. J. Snyder, Supt. of School Buildings, at the office of the Dept. of Education, Park Ave. and 59th St., N. Y., until Jan. 9, 1905, for installing heating and ventilating apparatus in addition to and alterations in Public School 103, on the south side of Fourteenth Ave., between 53d and 54th Sts., Borough of Brooklyn; also for erecting outside iron stairways at Boys' High School, Marcy Ave. and Madison St., and for erecting outside wooden stairways and repairing fences at Public School 101, 86th St. and Eighteenth Ave., Borough of Brooklyn.

BRADDOCK HEIGHTS, MD.—Lloyd Culler, builder, has been awarded contract for the construction of a hotel to be erected here,

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

after plans and specifications by Woodruff-McLaughlin Company, 100 East Lexington St., Baltimore. The structure will be three stories high with basement, 44x159 feet; blue limestone to second story and frame construction for remaining stories; tin roofing; electric wiring and fixtures; sanitary plumbing; steam-heating system; freight lift; cost to be about \$20,000.

CHICAGO, ILL.—Herman V. Van Holst has let contracts for a chapel to be built as an addition to Grace Episcopal Church at 1439 Wabash Ave. It will be a 1-story structure, 23 x 99 feet, of stone, brick and terra cotta, and will cost \$50,000.

CHICAGO, ILL.—The school board of Oak Park will erect a high school building at East and Ontario Sts. The site was selected Dec. 3. The building will be 3-story, probably of fireproof construction, with pressed brick and stone exterior, hardwood finish, steam heat. Cost, \$160,000.

CHICAGO, ILL.—Jenney & Mundie, 171 La Salle St., are completing plans for a store and loft building to be built at 1208 Michigan Ave. for Jacob L. Kesner, general manager of The Fair, State and Adams Sts. It will be 3-story, 50 x 180 feet, have a front of white glazed tile, plate glass and iron,

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

composition roof, steam heat, electric wiring. Cost, \$35,000. It is to be ready by May 1, 1905.

CHICAGO, ILL.—Atchison & Edbrooke, 90 Washington St., have completed plans for a church to be built at the corner of Garfield Boulevard and Throop St., for the Eighth Presbyterian Church. The general contract has been let to Peter S. Romberg, 5758 Aberdeen St. It will be 55x110 feet, have pressed brick and stone front, tile roof, oak finish and floors, steam heat, electric light, ornamental glass. Cost, \$55,000.

CHICAGO, ILL.—The Falkenau Construction Company, Chicago Stock Exchange Building, has the general contract for the construction of a 5-story factory, 112x264 feet, with addition for the offices, at the northeast corner of La Salle and 23d Sts., for the occupancy of the Troy Laundry Machine Company, 389 to 401 Fifth Ave. Mrs. Laura Klotz is the owner. It will be of mill construction and cost \$200,000. Jenney & Mundie, New York Life Building, are the architects.

CHICAGO, ILL.—Architects Bishop & Co., 113 Adams St., have let the contracts for a 3-story apartment building, 50x71 feet, about to be built at 6320 and 6322 Greenwood Ave., for Frederick Grabner, as follows: Masonry, Frank Burke, 113 Adams St.; carpentry Cathcart & Anderson, 6826 Langley Ave. It will have pressed brick and stone front, oak finish and floors, steam heat, consoles and cost \$30,000.

CHICAGO, ILL.—The Pennsylvania Railroad Company will spend \$30,000,000 in the construction of a new railway station in Chicago. Twenty millions of this sum will be spent in acquiring land adjoining the present Union Depot and \$10,000,000 will be spent in buildings. Plans and specifications for a most elaborate group of structures devoted to railway purposes have already been completed. The scheme includes the construction of a tunnel or subway beneath the river by which bridge delays may be avoided.

CINCINNATI, O.—A modern hotel, containing 400 rooms and costing more than \$1,000,000, is to be erected on the site of the Pike Opera House building, which burned to the ground two years ago. New York parties are interested.

CONNELLSVILLE, PA.—It is stated that Wm. Dull will erect a 5-story hotel, 50x124 feet, on West Pittsburg St. Cost, \$100,000.

DENVER, COLO.—The United Commercial Travelers' Association of America will erect a \$100,000 brick and stone building after plans by Eldredge & White, 411 Jackson Building. Address architects or Charles B. Griffith, 2612 Williams St.

DES MOINES, IA.—It is reported that bids will be received until January 5 by Fred A. Cope, county auditor, for the following work for the county courthouse: Structural steel and fireproofing for the tower; metal work and roofing; plumbing and gas-fitting; heating and ventilating. Proudfoot & Bird architects.

ELLIS ISLAND, N. Y.—Sealed proposals will be received at the office of the Commissioner of Immigration, Ellis Island, N. Y., until Jan. 4, 1905, for installing plumbing fixtures in Main Building at Ellis Island. Particulars as to conditions and limitations governing bidders can be had upon application to William Williams, Commissioner of Immigration, Ellis Island, N. Y.

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

EATONTON, GA.—It is reported that W. J. Beeland, Macon, Ga., has contract to erect Putnam county's \$30,000 courthouse.

FARGO, N. DAK.—A handsome Temple of Fraternity will be erected by the secret societies of the country. The sum of \$35,000 will be expended in erecting the structure and \$19,130 of this has already been raised. Of the sum raised \$10,000 has been pledged by the Associated Fraternities of America.

GULFPORT, MISS.—It is said that a modern hotel building will be erected here by the Vossburg Lithia Springs Company. Capital stock, \$250,000.

JAMAICA, L. I., N. Y.—E. N. Snedeker is interested in project to erect a hotel and theatre building at Fulton and Union Sts., to cost \$175,000.

KNOXVILLE, TENN.—It is reported that E. T. and A. T. Sanford and Dr. C. Deaderick are having plans prepared by Bauman Bros. for the erection of a 7-story addition to the Empire Building, 27x64 feet, fireproof construction, cost to be about \$40,000. Contract for construction will be let in about 60 days.

LOUISVILLE, KY.—Report states that the Louisville & Nashville Railroad will erect a 10-story steel, brick and stone office building, 60x200 feet, at a cost of \$400,000.

LOUISVILLE, KY.—The Beckwith Organ Co. has been incorporated with \$250,000 capital to establish an organ factory.

MADISON, GA.—Morgan county will vote January 17, 1905, on the issuance of \$40,000 of bonds for the erection of a courthouse. Address County Judge.

MEMPHIS, TENN.—Excavation work on the residence of J. T. Fargason, Jr., on Lamar Boulevard, near Central Ave., has been completed and construction work will begin at once. The structure will be built of Bowling Green limestone and will cost in the neighborhood of \$50,000. Plans by B. S. Cairns.

NEW YORK, N. Y.—The specifications for the new Carnegie Engineering Institute to be erected on the north side of 39th St., near Fifth Ave., have been altered to come within the million dollars available. The general plans will not be altered. The building will be fourteen stories high, the basement and lower stories to be constructed of granite, with superstructure of brick and terra-cotta. The roof will have a steep slope so as to accommodate it to the lighting scheme. The library will occupy the entire top story. The three stories beneath the library will be given over to the general

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

offices of the American Society of Mechanical Engineers and the societies of Electrical and Mining Engineers.

PITTSBURGH, PA.—The contract for the \$40,000 brick business building for S. Rosenthal has been awarded to J. Siebert & Sons, 1700 Jane St. C. Bickel, architect, 624 Penn Ave.

ST. LOUIS, MO.—The Columbia Transfer Company has purchased the property at the southeast corner of 9th St. and Clark Ave., and will erect a building for storage and warehouse. The corner is at present occupied by an old building. This will be removed as soon as vacated and replaced by a fireproof structure covering the entire frontage of 90 feet on Clark Ave. and 120 feet on 9th St.

TULSA, I. T.—Lindsey Kincaid has let contract for the erection of an opera-house to cost \$50,000 and have a seating capacity of 1,200.

VALDOSTA, GA.—The city school board has accepted plans for the new \$35,000 public school building to be erected here. Architect Smith, of Columbus, furnished the plans, which call for a thoroughly modern 10-room building. The board also selected provisionally the lot now occupied by the Christian tabernacle as the site for the new building.

WASHINGTON, D. C.—The trustees of the Methodist American University have subscribed \$23,000 toward the construction of the hall of government, which is to be a memorial to President McKinley. The fund now totals \$148,000.

PROPOSALS.

Treasury Department, Office of the Supervising Architect, Washington, D. C., December 19, 1904. Sealed proposals will be received at this office until 3 o'clock P. M. on the 18th day of January, 1905, and then opened, for the low-pressure steam-heating apparatus complete in place, for the U. S. Post Office at Yankton, South Dakota. In accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Yankton, South Dakota, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1514

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(At National Military Home, Ohio)

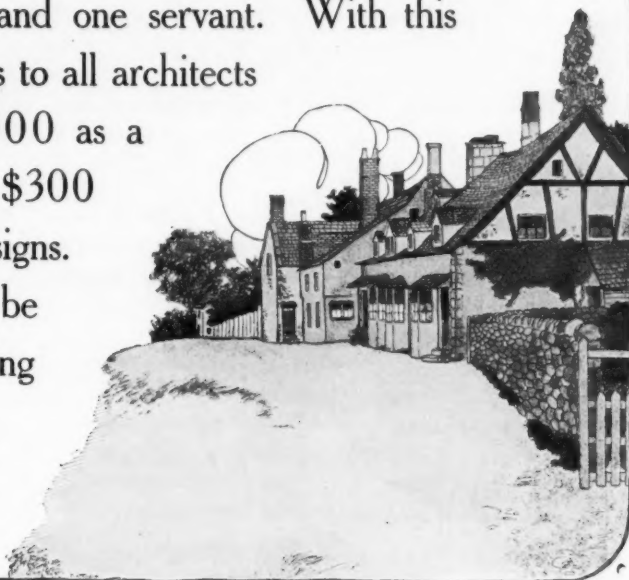
Sealed proposals will be received at office of the Commissary of Subsistence and Superintendent Post Fund, Central Branch, N. H. D. V. S. (National Military Home, Ohio), until 12 o'clock M., Jan. 10, 1905, and then opened, for the erection of three Greenhouses and Office Building, in accordance with plans and specifications on file in his office. Blank proposals will be furnished upon application to JOHN W. BYRON, Com. of Sub. & Supt. Post Fund. 1514

(Continued on page xli.)

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PROPOSALS.

(Continued from page X.)

Treasury Department, Office of the Supervising Architect, Washington, D. C., December 27, 1904.—Notice is hereby given that the time for opening bids for the construction of the U. S. Post Office building at De Kalb, Ill., has been extended from January 4, 1905, to 3 o'clock P. M. January 30, 1905. JAMES KNOX TAYLOR, Supervising Architect. (1514)

Treasury Department, Office of the Supervising Architect, Washington, D. C., December 27, 1904.—Notice is hereby given that the time for opening bids for the construction of the U. S. Post Office and Court House building at Ogden, Utah, has been extended from January 5, 1905, to 3 o'clock P. M. February 1, 1905. JAMES KNOX TAYLOR, Supervising Architect. (1514)

Treasury Department, Office of the Supervising Architect, December, 28th, 1904, Washington, D. C.—Sealed proposals will be received at this office until 3 o'clock P. M., on the 21st day

PROPOSALS.

of February, 1905, and then opened, for the construction complete, of the U. S. Post Office at Westchester, Pennsylvania, in accordance with drawings and specifications, copies of which may be had at this office, or at the office of the Postmaster at Westchester, Pennsylvania, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1515)

Treasury Department, Office of the Supervising Architect, Washington, D. C., Dec. 24, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M., on the 7th day of February, 1905, and then opened, for the construction complete of U. S. Post Office at Nevada, Missouri, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Postmaster at Nevada, Mo., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1515)

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The American Architect and Building News

Vol. LXXXVI

SATURDAY, DECEMBER 31, 1904.

No. 1514.



SUMMARY:—

Railway Terminal Stations in New York, Chicago and Buffalo.—The New York Central's Station.—Probable Advent of a New Type of Railway Station.—Death of Edward T. Potter, Architect.—Death of John O'Brien, Sculptor.—President Roosevelt on Smoky Chimneys.—Organized Labor Disregardful of the Betterment of the Physical Conditions. . . . 105

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THE character of the time we live in is very clearly shown by the magnitude of the building undertakings and it hardly excites a moment's wonderment—from the financial standpoint—to read just now in one's morning paper that Buffalo is preparing to build a fifteen-million dollar union railway station; that the Pennsylvania Railroad is preparing to spend thirty million dollars on its terminal buildings in Chicago, and that the New York Central and allied interests have finally settled on the plans for the new station to replace the Grand Central Station, in New York City, at a probable cost of twenty-five million dollars. Considered in connection with the immense station and the interesting submarine tunneling that it is already carrying out in New York, the undertaking of the Pennsylvania Railroad might be held to be the most interesting as well as the biggest, were it not for the fact that everybody is so accustomed to seeing the Pennsylvania Railroad undertaking and capably executing gigantic enterprises that they have rather got out of the habit of feeling any wonderment at all over them. But the New York Central is quite another story, and it has been, for long years, so in the habit of not doing desirable things, which it easily could do, that people are rather amazed that, at length, it has been forced by public demand and threats of prosecution into doing the desirable in what seems to be a fairly comprehensive and efficient way.

FINDING that the railroad officials had been at length spurred into action by the horrible accident in the Park Avenue tunnel two years ago, the Railroad Commissioners have sensibly refrained from compelling them to carry out at once any half measures, and now that the proposed scheme is laid before the public in some degree

of fulness it, too, is disposed to be patient and regard with awe the figures presented and the architectural treatment which the station proper is to receive. This structure is so very un-American, with its big arches, its pylons and blank wall-spaces, so very European on the other hand, and so much like a Beaux-Arts *projet* that it has rather caught the popular fancy, which is still further tickled by such general statements as these: the yards and buildings are to occupy the space of nineteen city blocks, taking up the area, roughly speaking, between Forty-second and Fifty-seventh Streets, Vanderbilt and Lexington Avenues; forty-three tracks, of which nine are for suburban use, the remainder being for through traffic, are to enter the train-shed at two levels, the express tracks being depressed to nearly the level of the street subway tracks, and finally that the convenience of the traveling public has been considered, inclined planes being substituted for stairs when possible, frequent side entrances are provided, inward and outward baggage-rooms are judiciously placed and ample room arranged for, not only in the waiting-rooms but in the concourses that abut on the track platforms. If the plans when actually published reveal the good points the descriptions particularize, the long delay may find a real justification.

WE have called the architectural treatment of the problem "un-American," but we think its commercial treatment deserves to be called so in an even greater degree; and yet, after all, extravagance and waste are pre-eminently American traits and of all known architectural structures the railroad train-shed is the most wasteful. The train-shed as developed until now is the natural outgrowth of three causes: the need of roofing-over all the tracks without many supports intervening between wall and wall, the necessity of lighting the contained area, and the desirability of avoiding the fouling of too small an enclosed space with locomotive smoke. The great arched girder with its waste of space and its cost has been the natural solution of the problem. Today, however, electric-motors have eliminated the smoke evil, electric lights can replace daylight and so it is entirely possible to get along with train-sheds low in the stud, mere subway tunnels inclosing each three or four tracks only, with walls or piers carrying heavy box or plate girders supporting a many-storied superstructure above, capable of yielding a desirable rental income, which the present arched shed roof cannot. We believe that the new station of the Pennsylvania Railroad at Thirty-fourth Street, New York, will be found to be the germ of a new type of railway station, and it is quite possible that the new station of the New York Central road may be among the last of the old type. It will be a misfortune to have the railroad station disappear as a problem in architectural design, but the commercial Philistinism which has destroyed the individual house, which is crowding the church to the wall and denies proper settings to schools, hospitals,

theatres—everything—is not much longer going to allow the train-shed roof to make unproductive so much valuable real estate.

LAST week, there died in New York an architect who was not much known to his fellows of the present generation, yet who made his mark on the face of things during the time of the Gothic Revival and the period of Victorian Gothic. One always feels strangely pitiful toward those unfortunates who tried to give architectural expression to Ruskin's poetical recommendations while fettering their ideas and feelings with the profoundest study of Gothic mouldings. Edward Tuckerman Potter, an elder half-brother of William A. Potter, once Supervising Architect of the Treasury, was born in 1831 and studied architecture under Richard Upjohn. His practice lay largely in the direction of church and college buildings, but, possessing independent means, he retired from active work earlier than is customary and devoted himself to travel, the study of music and philanthropy, to which latter study he devoted much time and thought, our own pages bearing witness to the amount of study and ingenuity he expended on devising ways and means of securing to tenement houses and their inmates not only economical and convenient planning, but the best of natural ventilation and lighting. His study of the orientation of such buildings was deep and the plan he evolved for adapting his theories to practice, although unquestionably ingenious and logical, unfortunately was impractical or, rather, was of such a nature as could best be undertaken by a municipality itself, and American municipalities are not in the habit of practising philanthropy in that direction. In all tenement and prison reform movements he took an active part, so that, quite apart from his architectural work, he led a satisfying and useful life, to which further grace was added by his musical successes as a composer of sacred and even operatic scores.

AMONG the more interesting of the battle-field memorials is the figure of a soldier by the sculptor John O'Brien, which marks the battleground at Winchester, Va. Mr. O'Brien, who has just died in Texas at the age of seventy, had rather an interesting and varied career. After serving in his youth through the Crimean War he enlisted in the Papal Guards, and during his term of service devoted his spare time to the study of sculpture under the tuition of Signor Castini. Having passed seven years in this way, he immigrated to New York where, in 1860, he secured from the State of Ohio the commission for the statue of Commodore Perry now on Euclid Avenue, Cleveland. His early military experience led him to enlist in the First Ohio Regiment, with which he served throughout the Civil War, and at its close he opened his studio in Washington, where among other things he executed life-size statues of Chief Justice Taney and Secretary Chase. During the last twenty years or so he has been living in Texas, busy with the ordinary pot-boiler work, but producing nothing of exceptional merit.

IT is not a little laughable to find President Roosevelt using his "big stick" in breaking all sorts of butterflies. The latest instance of too vigorous valor is to be

found in a letter written at his direction to the Commissioners of the District of Columbia, complaining about the smoke issuing from the chimney of the local electric light and power station. In a short note the President's secretary manages to speak of "flagrant defiance of the law," "intolerable manifestation of the nuisance," "outrage on the city," and urges them to go to the "very limit of the law," to "proceed criminally against the managers," and secure more "drastic legislation" if needful. The smoke nuisance at Washington is hardly enough of an evil to deserve such arrogant and intolerant language. Moreover, we have a distinct remembrance that private individuals have long been complaining of the smoke issuing from the chimneys of the public buildings, particularly from those serving the Treasury Building, the near neighbor of the White House.

IT is the good fortune of architects to have to do with the élite of the working classes so far as physical expression goes, healthy, fresh colored and generally intelligent; the only ones that appear to be below par being the plumbers and painters, and in both cases the cause of the difference is probably the same—some form of lead poisoning. But as they pass through the streets and travel in the cars in the early hours, architects must be aware that there are other wage-earners, of less healthy bodily aspect, and, if they are in any way warm-blooded and sympathetic, cannot but ask themselves who these men are, and why they look so anemic, and because of this so untidy and, as a class, so dingy. These dingy men are artificers—a good word that—machinists, engineers, printers, factory-hands of various kinds, most of them acutely intelligent, and others belonging to that almost hopeless class typified by the sweat-shop workers. These men are acutely intelligent in their own callings of course, but many of them have a broader intelligence, gained from the modern newspaper which, as one can find out from a half-hour's chat at any time, can put to shame many a man who prides himself on his general information. Intelligent they are, of course, yet their very air of ill-being shows their limitations, else in place of frittering away their strength as organized tradesmen over union-label squabbles, they would use it to better the physical conditions under which they work. Even out of the seventeen States which regulate the ventilation of workshops by statute, six say nothing as to whether they shall be properly lighted, and nine seem not to care whether they be properly heated, while only eight States out of the entire fifty-two divisions of the country forbid overcrowding of workshops.

ONE might think that the better physical condition of building mechanics would encourage them to enter on the strenuous career of the striker with greater frequency and more willingness than other wage earners, yet, while building mechanics do make more than their fair share of trouble in the business life of the country, statistics for nineteen years show that during that time only about one hundred thousand less clothing workers than building mechanics were thrown out of employment by strikes, and a greater contrast in vitality could hardly be found than that between the sedentary sweat-shop worker and the active building mechanic.

SANITARY PLUMBING AND THE PLUMBING LAWS—II.*

HAVING ascertained now just what degree of siphoning strain a vented S-trap can resist, we have next to compare it with various forms of unvented anti-siphon traps. If we are to be compelled to adopt so costly a method as back-venting, with all its faults and shortcomings, we have certainly a right to demand that it shall have at least as much power of resistance as our simpler methods when all the conditions are equal and the vent-pipe is new and clean.

The tests I am going to show you now demonstrate that the back-vent system is not only not equal to the anti-siphon-trap system in power of resistance, but that it is so far inferior to it as to be altogether out of competition even with the poorer forms of anti-siphon traps. Let us first try the ordinary "round" or "pot" trap, of which I have here samples in several sizes with glass faces so that you can see the results of the tests through these windows. The depth of seal is the same in all, namely, $4\frac{1}{2}$ inches.

We have, as you have seen, applied to these traps the severest strains our apparatus can produce, which is a vacuum of 26 inches, and we find the large sizes capable of resisting even this strain many times repeated. Indeed, it is practically impossible to siphon out our 5-inch pot-trap. The first application of the

has a seal 6 inches deep, but the depth of seal may be diminished at will by drawing up the inlet-pipe through the stuffing-box surrounding it, just above the top of the trap. By this device we can demonstrate in a very simple manner the truth of the law of trap-resistance which I have propounded.

Nevertheless, although the ordinary unvented pot or anti-siphon-trap is infinitely superior in all ways to the vented S, yet it has the one grave objection that it is not in all cases perfectly self-cleansing.

Figs. 9, 10 and 11 show how sediment will collect in these traps, ultimately converting them into S-traps. The mouth of the vent-pipe is shown at the crown, and, never receiving a scour by the flushing, it is precisely the place where the floating greasy matters and fatty vapors most quickly collect. It thus loses its efficiency sooner than do the cesspool traps. The body of the S-trap is self-cleansing so long as a good flush is provided. Is it possible to obtain an anti-siphon-trap which shall possess this quality of the S? If so, our trap must be so formed that its sectional area shall in no place exceed the area of the fixture waste-pipe which it serves. This requirement confines us to the use of some form of plain piping, either straight or bent, in the construction of the trap. It is evident, also, that a considerable amount of this piping will be required in the formation of the trap in order to provide the necessary water capacity

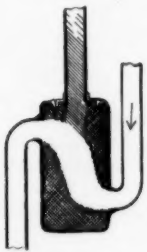


FIG. 9.

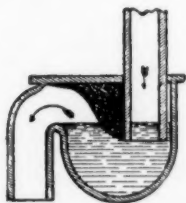


FIG. 10.

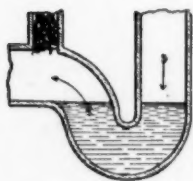


FIG. 11.

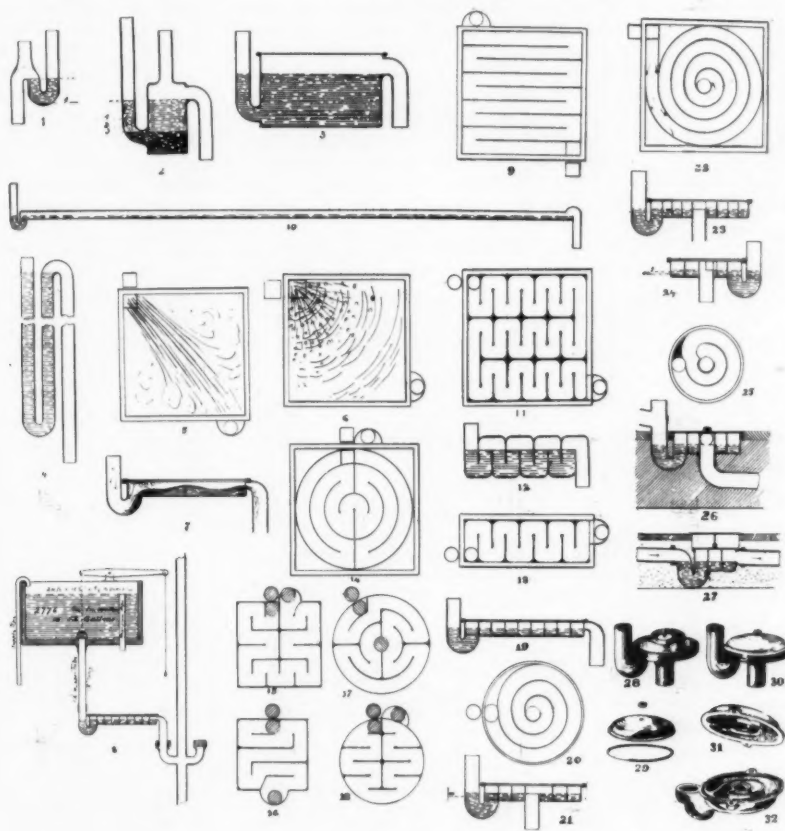


FIG. 12.

strain lowers the seal considerably, but subsequent applications, without refilling, have little effect upon it, and when the seal has been lowered to about half an inch, practically no further reduction can be attained however often the strain is repeated.

Our 4-inch and 3-inch pot-traps have a lower resisting power, but are practically unsiphonable in plumbing work, so long as they remain clean. They are thus immeasurably superior to the vented S-trap.

We find their power of resistance is directly proportional to their diameter, and has nothing to do with their depth of seal.

To illustrate this law in trap construction, I have made a number of samples of bottle-traps with glass bodies for experimental purposes. One of them, 5 inches in diameter, is shown in Fig 7 on the left-hand side of the soil-pipe, above the pump. This trap

for resistance to back-pressure and evaporation; and all the piping used must be on a horizontal plane in order to preserve the required minimum depth of water-seal as will be explained directly.

The first form of trap answering to these requirements is shown in Fig. 12 (No. 10). It consists of a $1\frac{1}{2}$ -inch S-trap-seal proper and a long horizontal body made of a plain round $1\frac{1}{2}$ -inch pipe. Opposite the trap proper is the sewer-connection piece, also made of a bent $1\frac{1}{2}$ -inch pipe. I call the long body the "reservoir chamber." The water lies along the lower half of this chamber, leaving room, undersiphonage, for air to pass above it without disturbing the water below it, provided the siphoning action is not too severe. The action is shown in Fig. 12 (No. 7). Less and less water is driven out of the trap at each siphoning action, because the air-space above the water is each time correspondingly enlarged, and the resistance to siphonage is accord-

*A paper by J. Pickering Putnam, F.A.I.A., read before the Society of Arts, Boston, Nov. 10, 1904.

ingly increased until a point is reached where no further reduction of its level by siphonage is possible; the water spray caused by the suction adheres to the long body while air escapes.

Nevertheless, this form is too long and unwieldy to be practicable. Moreover, under strong siphonage waves are formed which, when they reach the top of the pipe, act like pistons in driving out the rest of the water. The wave may be broken up and the length reduced by bending the pipe back and forth on itself as shown in Fig. 12 (No. 9). This trap has been tested and found able to withstand indefinitely the most powerful siphonage which can be applied, namely, a strain which in a single discharge destroyed the seal of a fully vented S-trap with a new vent-pipe only 10 feet long. The same strain broke the seal of an unvented 4-inch pot-trap and siphoned out an S-trap having a seal 6 feet deep. Fig. 12 (No. 4).

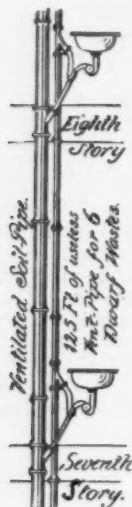


FIG. 13.

Another arrangement of the pipe is shown in Fig. 12 (No. 11), which may be reduced in size as in No. 13, when it will be seen, by comparing it with No. 12, to be nothing but a series of ordinary S-traps laid on their sides, and we have thus really succeeded in rendering an S-trap permanently anti-siphonic. The trap is, in fact, vented through its own inlet-pipe. This trap can, however, still be improved by giving it the form shown in Fig. 12, in which friction is reduced and centrifugal force aids in the separation of the air from the water, leaving the latter in the trap while the former escapes. The resisting power of this trap is now so great that we can materially reduce its size until we have the forms shown in Fig. 12 (Nos. 20-21 and 25-32). Should this trap be used under a fixture having a small outlet and therefore furnishing little or no scour, it will act like a straight pipe, and will, like it, in time suffer a diminution of its area, by accumulation of greasy or gelatinous deposit along its wall. But, as in a straight pipe, the accumulations will

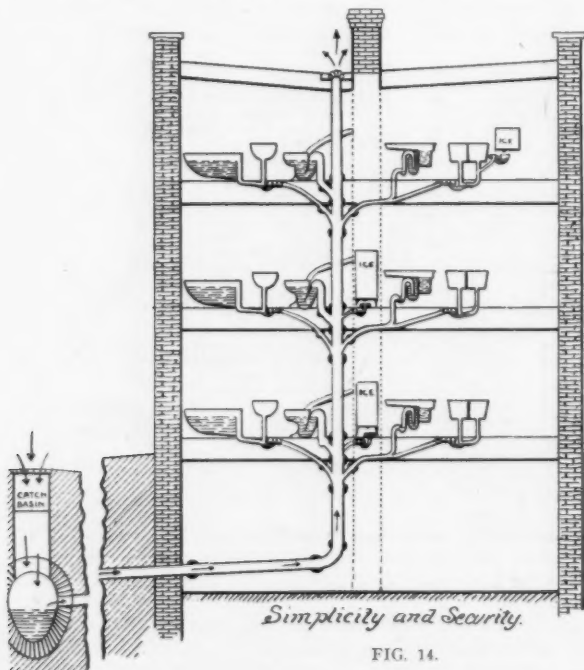


FIG. 14.

be substantially uniform throughout, because the scour and form is uniform throughout, and its resistance to siphonage will remain the same, because its principle of resistance thereto will remain unchanged. Indeed, the size of the trap in respect to its proportion to the sectional area of its waterway will increase and thus correspondingly increase its resistance to siphonage. Should it ever be completely closed, its closure will announce itself by the simple cessation of the waste-water to flow out and then the obstruction can be removed through the clean-out cap.

On the table are shown the various forms of the experimental traps we have described and shown on the screen. It remains to subject the small perfected form to the strains on our apparatus by which the other traps have been tested.

We see that this little trap has withstood the severest possible strains, repeated indefinitely, which our apparatus is capable of applying, and that it is, therefore, absolutely anti-siphonic.

In virtue of the very shallow seal of this trap, it is possible to use it as a vent for a deep-seal w. c. trap, since, being itself both a trap and a vent-pipe, it has the quality of protecting any deep-seal trap with which it may be connected. It has in this the quality of the McLellan vent, the function of the mercury seal being here supplied by the water seal itself. You see that the deep-seal trap has not been broken even though the severest possible strain has been applied to it, for the simple reason that air to supply the soil-pipe vacuum passes more easily through the shallow than through the deep seal, and the latter is thus protected.

This concludes our tests on the apparatus.

The champions of back-venting have, as a matter of fact, abandoned to-day their original claim that it served to protect trap seals from siphonage. They occasionally adhere to it, however, on the argument that it is needed to purify the branch waste-pipes by aeration.

But it is now recognized that ample water-flushing through properly constructed fixture outlets, followed by an equally thorough pure-air flushing from the room through the fixture and trap, is infinitely more effective than ventilation with foul air alone from the soil-pipe through the back-vent pipe, and is, indeed, altogether sufficient.

Hence the law should require every fixture to be constructed on the principle of the "flush-tank" by having outlet and outlet-valves large enough to fill their waste-pipes and traps "full bore" at every discharge.

Fig. 13 is a diagram of a tall building in which, in compliance with the law, I was obliged to specify trap-vent pipes 125 feet in height. As you see by the drawing, the lavatories are placed over one another in such a position that the distance from their traps to the main ventilated soil-pipe is not over 18 or 20 inches. These short branch wastes were powerfully flushed at each usage of the fixtures by a stream of water filling them "full bore," and

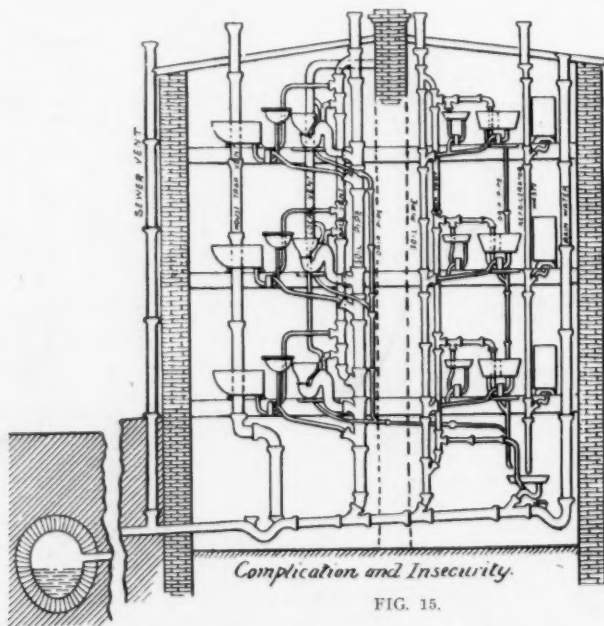


FIG. 15.

discharging at the rate of nearly half a gallon a second. Traps were specified which cannot by any possibility be siphoned out, or even have their seals seriously lowered. No better illustration of the wastefulness of this requirement could be found, except in the case of alterations where the installation of the vent-pipe may destroy much valuable property and create loss for the greatest part of the cost of the whole work. My client, in the case of this tall building, lost over a thousand dollars for the privilege of seriously endangering, through evaporation, the seals of his traps.

Figs. 14 and 15 show the same fixtures in a house plumbed in

two different ways—Fig. 14 being in accordance with my recommendations and 15 being in accordance with the manner now sometimes seen in the finest houses. On the extreme left of the latter is the outside sewer vent, and on the inside, next to this, is the house-trap and circulation-vent. We have also back-vents,

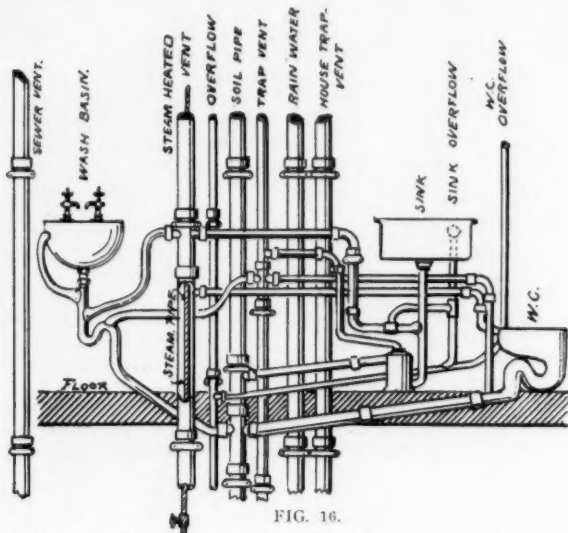


FIG. 16.

drip-vents and rain-water pipe, and all of these unnecessary stacks are very common in the modern house.

Fig. 16 shows a part of this work enlarged. It is taken from a well known house in New York. Fig. 17 is taken from two other handsome New York residences, and Fig. 18 from still another house in the same city. If this absurd complication continues at the rate it has been going for the last two decades, the public will feel disposed to return to the old-fashioned method of sewage disposal shown in Viollet-le-Duc's picture on our next slide.

My reasons for urging legislation prohibiting the use of the main house trap, or "intercepting" trap are, first, because its use prevents the best and only efficient and practical method of adequately ventilating the sewers, and, second, because it adds an altogether useless expense and complication to the plumbing.

Recent investigations by eminent scientists have shown us the fallacy of the popular idea that the air of sewers abounds in disease germs, and so sight-seers may now visit the famous sewers of some of the great cities of the world with the same feeling of safety they enjoy while seeing other regular "sights."

Germs are "particulate," as Dr. Carmichael, of Scotland, expressed it, and have no more power to raise themselves from the water or moist surfaces of sewers than have any other particles of vegetable matter, like leaves or small sticks. If, by any chance, parts of the sewage above the normal level of the flow become dried, as in periods of drought, and are then lifted and wafted along by some unusually strong air-current, it is found that they very soon fall again into the water by gravity or are carried against a wet surface in a bend or branch of a sewer by the same air-current that lifted them. Furthermore, it has lately been discovered, and the discovery satisfactorily corroborated, especially by the noteworthy and most interesting researches of the Englishmen, Laws and Andrewes, that the specific germs of disease do not thrive even in the water itself of sewers. They appear to be destroyed by other species of germs, harmless to man, which abound there.

In short, it has been determined that the dreaded germs of

specific diseases are, of all places, least to be sought for in the air of sewers. They may abound in the air of the streets above the sewers, but not in that of the sewers themselves. Hence, if they are borne into our dwellings by air-currents at all, they must enter by way of doors and windows and not by way of the drains.

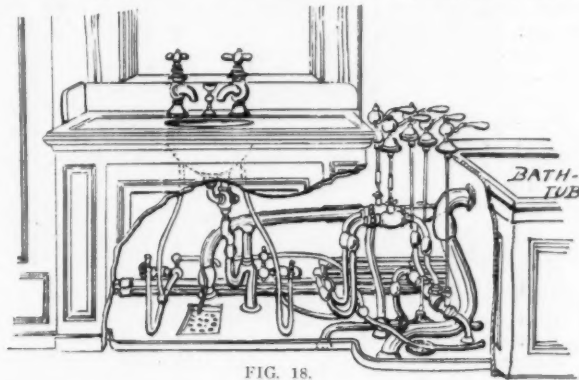


FIG. 18.

Note that we are speaking of germs and not of odors and gases. These latter do abound in the air of badly ventilated sewers and are unwholesome to breathe continuously. But they are immediately dangerous only when in an exceedingly concentrated form, and are easily excluded from houses by simple precautions and by proper plumbing regulations. One of the most effective and rational of these precautions is thorough sewer and drain-pipe ventilation.

In the past sewers were sometimes ventilated by means of tall chimneys and fans and other devices built especially for the purpose at intervals in their length. But these experiments have proved failures because they produced too powerful a suction in the immediate vicinity of the ventilators and none at all a short distance away from them, and were, withal, exceedingly costly.

Simple openings into the sewers at intervals along the streets are common; but they provide no motive-power to effect proper ventilation. The foul sewer may thus remain foul, and an opening here and there at the street level only concentrates the nuisance in the worst manner at special places for the annoyance of the public.

It is much better to carry the foul gases to the tops of the houses than to emit them at the street level under the very noses of the passers-by. Soil-pipes can now be constructed and jointed so as to be absolutely tight, and the objection that it is dangerous to carry the sewer-air through the houses is no longer tenable.

A public sewer becomes very well ventilated and practically safe when its ventilation is effected by making every house drain and soil-pipe a ventilating flue. The sewer has then, in cities, special 4-inch suction tubes every 10 or 15 feet throughout its entire length, the houses averaging, say, 20 or 25 feet in width. We know that whatever putrescible matter, excepting street washings, is to be found in the sewers, comes from the house drains themselves.

Assuming, then, that the houses average 25 feet wide and 50 feet high, the number of running feet of soil and drain pipe in each would average at best not less than 100 feet, and the interior surface would, therefore, contain probably at least twice as much decomposing matter as the 12 ft. of sewer serving each house. It would be absurd, therefore, to insert a disconnecting trap and a vast increase of extra piping for the mere purpose of excluding this small

extra drain-pipe air, even if it were not demonstrated that this very complication increased rather than diminished the chances of its entrance.

Even the foulest sewers and cesspools must cease to be foul

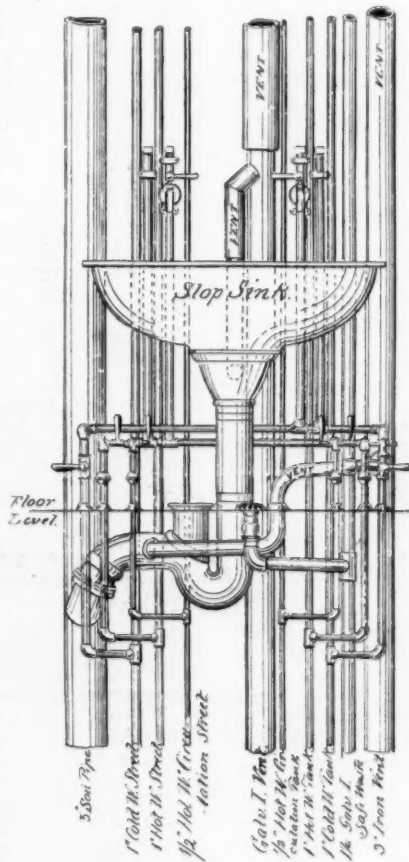


FIG. 17.

the moment they are ventilated through every soil-pipe. Probably the most dangerous substance in our sewers to-day is illuminating-gas escaping from leaky mains, which modern science has, I believe it can be maintained, at last rendered unnecessary. The house-trap is responsible for the presence of this gas in cellars and subways. It is exceedingly important that it should, where it is formed, be diluted and carried up above the houses and thus rendered comparatively harmless.

In conclusion, I will say in regard to calking cast-iron pipes with lead, that the law should rather prohibit this than specify it to-day, in view of the very recent methods discovered of jointing cast-iron both scientifically and economically, the joint permitting of a certain amount of rotation and play of the pipe without sacrifice to its soundness even under pressure.

THE STRUCTURAL DESIGN OF BUILDINGS—IV.

IN conclusion of Mr. C. C. Schneider's paper on "The Structural Design of Buildings,"* we will give as representing the discussion by sundry members of the American Society of Civil Engineers only the remarks of Mr. J. K. Freitag, and will add to these an article on one of the phases presented by Mr. Schneider that was published in *Engineering News* for Nov. 5, 1904.

J. K. FREITAG, ASSOC. M. AM. SOC. C. E. [by letter].—In view of the Hotel Darlington disaster and similar loose methods of building design and construction, the author is to be complimented on his timely presentation of this very important subject, and it is to be hoped that this paper may serve the purpose of leading to a general revision of the building laws of large cities, with especial reference to uniformity and modern practice. The same wide divergency in building regulations in the more prominent American cities has been pointed out and discussed at some length by the writer†

As regards the floor loads suggested by Mr. Schneider, the writer heartily agrees with the proposed live load of 40 lb. per sq. ft., for ordinary cases. The small live loads which have been found by such experiments as those conducted by Mr. E. C. Schankland, and by Messrs. Blackall and Everett, ranging from 12 to 16 or 17 lbs. per sq. ft., have tempted in some cases the use of unit loads as low as 20 lbs. per sq. ft., but such recommendations should certainly be questioned and even heartily condemned in conservative practice. While 20 lbs. per sq. ft. may be sufficient for average present loads in office buildings, etc., it is to be remembered that the use of an average is always dangerous, while provision should be made properly, but not extravagantly, for all possibilities of excess, either present or future. The character of a building's contents or usage is subject to extreme change. The entire building, or possibly only portions thereof, may be devoted to very different uses from those primarily assumed, so that, in spite of the provisions in building ordinances against radical change in the character or degree of floor loads, it is often difficult to balance present economy against possible maximum requirements or future possibilities. Here, as well as in the strength of materials, a sufficient factor of safety should always be applied.

The author proposes to calculate all floor beams for a concentrated load of 5,000 lbs. at any point, this being the approximate weight of the heaviest portable safe which would commonly be used in offices, etc. A safe of this weight would be approximately 4 ft. wide by 3 ft. deep. The factor of safety assumed in the calculations of the floor beams, as recommended in Mr. Schneider's specifications, would be about 4. Professor Rankine‡ gives a factor of safety of 4 which would be applicable to a reliable steel-frame structure, while for masonry a factor of safety of 8 is recommended under live loads. Again, on page 361, the same authority states as follows:

"The factor of safety in structures of stone should not be less than 8, in order to provide for variations in the strength of the material, as well as for other contingencies. In some structures which have stood it is less; but there can be no doubt but these err on the side of boldness."

All present types of fireproof floor arches would come under the classification of the poorest kind of masonry, so that, if the floor beams were calculated for a concentrated load of 5,000 lbs., consistency would require an ultimate arch capacity of 40,000 lbs. applied over any bearing area of 12 sq. ft., or 3,333 lbs. per sq. ft. Many, if not most, forms of fireproof floor arches now in general

use would fail to develop this strength. In the Denver tests, the best end-construction arch sustained a final load of only 15,145 lbs., or 1,670 lbs. per sq. ft. over a loaded area of 9 sq. ft.; while the best side-construction arch carried only 8,574 lbs., or 953 lbs. per sq. ft. over a loaded area of 9 sq. ft. These were 10 in. terra-cotta arches of 5-ft. span, hence they were fair samples of modern use. The tests made by George Hill, M. Am. Soc. C. E.,* on Melan and terra-cotta arches, by means of a self-registering hydraulic machine, show only one terra-cotta arch out of eleven tests which would fulfil the necessary requirements, viz., a 10-in. hard terra-cotta end-construction arch, which sustained a total load of 57,500 lbs. over a loaded area of 20 sq. ft. out of a total arch area of 22.6 sq. ft. The other ten arches ranged from 10,000 to 16,000 lbs. ultimate loads. All the Melan concrete arches showed an ultimate capacity of more than the required 40,000 lbs. Most, if not all, of the New York Building Department tests would also have failed to show this ultimate capacity, which would be necessary, not only under normal conditions, but under fire and water tests as well. Several of the concrete arched forms now in common use will probably exceed this required strength, but if the floor construction as a whole were to be proportioned equivalent to the concentrated load assumed for the beams, this might preclude the use of practically all flat terra-cotta arches and all slab concrete construction.

The enumeration of dead loads includes partitions, while paragraph 2 of the specifications for design state that the calculations of dead loads are to be based on the weights of different materials given in Table 16. It would seem as though this table could properly be extended to give the weights of terra-cotta and mackolite partition material for different thicknesses, as well as some general data regarding the weights of terra-cotta arch blocks of different materials and for different arch depths. Partitions are often classed as live loads, and in previous Chicago practice these were often assumed to be live loads distributed uniformly over the floor area at 25 lbs. per sq. ft. This was on the assumption that the position of partitions might frequently be changed to suit the subdivision of office areas as required by tenants. The present New York and Chicago building laws, however, both require partitions to be considered as dead loads.

As pointed out by the author, the live loads on warehouse and factory floors will vary greatly, these often being far greater than might be expected, and often much less. Mr. W. L. B. Jenney, the well-known Chicago architect, had occasion to estimate the loads in the wholesale warehouse of Marshall Field & Co., in Chicago, and the low average of 50 lbs. per sq. ft. was found for the total floor area, including all passageways, in spite of the very large quantities of merchandise usually stored there. The maximum load on limited areas was found to be 57 lbs.

In the proposed specifications, cast-iron is "practically ruled out" as unreliable and unadaptable material. This elimination of cast-iron members would be warranted if all building laws which now permit its use could be changed so as either to eliminate cast-iron columns altogether or to require the calculations of columns by reliable formulas, in which latter case there would be found to be slight, if any, economy in using cast-iron; but, as long as present building laws exist, allowing the use of cast-iron columns, the writer can see no serious objection to using them under approved methods of calculation, for buildings of medium height and considerable area where wind bracing is not required beyond the stability of enclosing and partition walls. There is now under process of construction a large department store in Boston, approximately 200 by 250 ft. in area, seven stories high, besides the basement and sub-basement, with masonry walls and cross-walls. In such a case, the writer can see no objection to the use of cast-iron columns, if proportioned and designed properly.

It would also seem that paragraph 12, relating to wind pressure, should be modified so as to limit the necessity of caring for wind pressure to those structures which would require metallic bracing. Inasmuch as the specifications refer to the structural steelwork of buildings, it would appear as though paragraph 12 were intended to require a wind pressure of 30 lbs. per sq. ft. to be calculated for all buildings having either complete or partial steel frames. This provision would not be necessary for buildings provided with exterior walls of masonry and with masonry partitions or cross-walls, especially if the base is a large proportion of, or equal to, the height.

Paragraph 54, regarding column splices, might be extended to require the breaking joints of columns alternately at any floor level.

*See AMERICAN ARCHITECT for October 15, 22 and 29, 1904.

†"Architectural Engineering," edition of 1901.

‡"Civil Engineering," page 222.

*"Tests of Fireproof Flooring Material," Transactions, Am. Soc. C. E., Vol. XXXIV., p. 542.

Paragraph 57 of Part 2, regarding field painting, should be amended to require the field painting to be of a different color from the shop coat.

The intimate relation which exists between the steel frame of a modern building and the fireproof floors and coverings makes it indispensable that the successful designer of the steelwork be also thoroughly familiar with approved fireproofing methods, and successful work along fireproof buildings would require, not only such careful specifications of the steel frame as Mr. Schneider has prepared, but also as careful specifications relating to the fireproofing. The question of floor girders could be taken as an instance. These are often designed without reference to partitions and without reference to flush, unbroken ceilings. The experience gained through the fire in the Horne Buildings in Pittsburgh, and elsewhere, has shown that far better results as regards the fireproofing are secured from flush ceilings than from paneled ceilings where the girders are allowed to project below the ceiling line. Again, the successful design of spandrel beams or members can only be accomplished by carefully considering the fireproofing possibilities of the spandrel construction. The successful designer of steel-frame buildings, therefore, should be as familiar as possible with the whole range of fireproofing, and also as familiar as possible with the architect's standpoint and the problems which he must face.

Two weeks ago, says *Engineering News*, Mr. C. C. Schneider presented before the American Society of Civil Engineers a general specification for structural steelwork of city buildings, together with a brief discussion of his points of dissent from general practice. Among the novel features of this specification is the scale of live loads for floors which the author recommends. He asserts that any floor construction should be proportioned for two alternative contingencies: (a) the highest probable distributed load, and (b) the highest probable concentrated load, at any or a specified point. This second loading in practice may be of two kinds: either a point-load or a line-load, that is to say, either a single concentrated load at any point or a load concentrated on a narrow strip covering the girders or primary floorbeams. The scale of loads recommended is as follows:

	Alternate live loads, in lbs.		
	Distributed load.	Concentrated load.	Load per lin. ft. of girder.
1. Dwellings, hotels, apartment houses, . . .	40	2,000	500
2. Office buildings	40	5,000	1,000
3. Assembly-rooms, with fixed seats: like theatres, churches, schools, etc.	40	5,000	1,000
4. Assembly-rooms, without fixed seats: like ballrooms, gymnasiums, armories, etc.	80	5,000	1,000
5. Stables and carriage-houses,	70	5,000	1,000
6. Ord. stores and light manufacturing,	40	8,000	1,000
7. Sidewalks in front of buildings	100	10,000	1,000
8. Warehouses and factories, from 120 up	Special	Special	Special
9. Charging floors for foundries, from 300 up	Special	Special	Special
10. Power-houses for uncovered floors, from 200 up	Special	Special	Special

It is a fact that the loads to which floors are actually subjected should, from the designer's point of view, be thus classified as distributed and concentrated loads. The relations between their respective effects vary with the area of floor supported and the span. While it is possible, with given concentrated loads, to select a distributed loading which will equal or exceed the maximum effects of the concentrated loads, yet in any other case, where area and span are different, or even in another part of the same floor-panel, this equivalent distributed load would have to be differently chosen. Such a procedure is more irrational, confusing, and wasteful of time than the double calculation for both classes of loading. In bridge work, and, indeed, in all structural steel work involving mainly live loads, it has long since become universal custom to compute separately the effects of the various possible kinds of loading and sum their most severe effects in a given member as the basis for proportioning the member. The same practice should find its way into building work generally. Mr. Schneider's scale of live-loads deserves approbation because it specifies, almost for the first time, that floors must be designed to stand a suitable concentrated loading as well as a distributed load. It will have done its duty if it leads to the recognition of concentrated loads in those specifications which, above all others, should prescribe carefully-chosen loadings for designing buildings—public building laws.

While agreeing with Mr. Schneider in the principle of recognizing concentrated as well as distributed loads in building calculations, we cannot agree with him in the actual loads which he specifies. His distributed loadings for floors are far below those

which may occur, and are therefore too low, in our opinion, as designed loadings. This criticism applies solely to Classes 1 to 8 in the above-quoted table, that is, to those cases where the structure is exposed to a distributed loading due to people massing upon it, rather than to loads resulting from stored material. In the latter case, of course, the loading to be used in the design depends upon the conditions of the individual case, and for the same kind of building it may be necessary, in the building law of a given city, to specify a higher loading than is used in some other locality. But crowds of people do not vary in their characteristics from place to place, and they are much alike when they invade a dwelling or an office and when they crowd a political meeting hall. It is possible to set down a loading which will apply to all cases, making perhaps a percentage addition for cases where the crowds are apt to be very lively or to move in unison—meeting halls, armories or ball-rooms. On this account, also, it is possible to criticize Mr. Schneider's scale of distributed loads, without reference to any particular case.

No argument is required to support the statement that in designing structures we should plan for the most unfavorable conditions of loading which can be foreseen. This practice is almost universal in structural designing; indeed, an evasion of it is at once stigmatized as an effort to "skin" the design, to secure business by jeopardizing the security of the structure. If this principle governs the planning of structures which must support mere dead material, structures whose failure would likely not involve injury to persons, how much more stringently should it control the design of a structure where the extreme conditions of loading are precisely those which would lead to the greatest loss of life! A certain floor, for example, may have smaller chances of experiencing the load of a maximum crowd of people than has a coal-bunker of experiencing its most unfavorable loading, but in the former case a collapse is far more disastrous, and safety therefore should engage the greater consideration.

Some careful experiments on the maximum weight of crowds of people were reported by Prof. L. J. Johnson in *Engineering News* of April 14, 1904. These gave weights up to 157 lbs. per sq. ft., with the suggestion that a weight of 160 lbs. might be reached in an absolutely compacted stationary crowd. To amplify the evidence on the subject, we have abstracted from a German contemporary the report of similar tests made in Germany, and reprint the abstract in this issue. The German tests showed weights up to 145 lbs. per sq. ft., with a degree of crowding that still allowed motion within the mass. Few people have not experienced a degree of crowding where the interior of the mass was compacted to absolute standstill. And judging by the German as well as the American experiments, this may give a loading exceeding 150 lbs. per sq. ft.

On what grounds, then, are we justified in using a loading of 40 lbs. per sq. ft., such as Mr. Schneider prescribes for dwellings, hotels, apartment houses, office buildings, theaters, churches, schools, stores, and light manufacturing establishments? That dense crowding does occur, and by no means as an exceptional occurrence, in the case of theaters, churches, and the like, is known to all. That it may occur in hotels, in apartment houses, and even in private dwellings, is equally evident, though it is recognized as being less frequent and for a given case less probable. We are not accustomed to designing for average or probable loads; on the contrary, we cannot in good conscience plan for anything less than the greatest loading which the conditions of the case make possible. It would be curious engineering were we to design the framework of an apartment house on the basis of average loading, or were we to neglect the higher loading that would occur only once in a year, or once in five years, or once in ten years. Do we build apartment houses to fall once in ten years?

The author's *expressed* argument for this scale of loads is brief and unsatisfactory, and need not be gone into at present; it is based on a single statement covering a few chance observations, which are mere negative testimony in the present discussion. But if we inquire what grounds may have led the author to be satisfied with his ultra-low loadings, we may find two explanations; first, he assumed that the distributed load is of little importance, since ordinarily the concentrated loads would predominate in effect, or second, he relied upon the mysterious margin of the factor of safety. These reasons need no lengthy discussion here to controvert them, but may be left to stand on their merits. For our part, if, as a matter of approximating actual conditions, we are to classify loads as distributed and concentrated, we should wish to select the design load in each class as near as possible to actual maximum. And if we use a given factor of safety in a design, to

*The actual weights of engines, boilers, stacks, etc., shall be used, but in no case less than 200 lbs. per sq. ft.

cover *unknown* and largely unknowable dangers from variations in assumed conditions, we should preferably not encroach upon that margin by a neglect of *known* dangers. It is to be borne in mind that the actual possible loading of 150 lbs. per sq. ft. is nearly four times as great as Mr. Schneider's specification of 40 lbs.



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The first of these subjects is copied from *Building News*, the other from *Deutsche Bauzeitung*.

Additional Illustrations in the International Edition.

ENTRANCE-FRONT: HOUSE OF CHARLES W. COOPER, ESQ., TUXEDO PARK, N. Y. MESSRS. HOPPIN & KOEN, ARCHITECTS, NEW YORK, N. Y.

CHIMNEYPICES IN LIBRARY AND GATE-TOWER: CHATEAU DES PINS, SELLE-SUR-CHEF, FRANCE.

This and the following subject, like certain plates in our issue for last week, are copied from *l'Architecture*.

ENTRANCE-HALL AND DRAWING-ROOM IN THE SAME CHATEAU.



EQUESTRIAN STATUE OF WADE HAMPTON.—The commission on the equestrian statue of General Wade Hampton has accepted the model prepared by F. Wellington Ruckstuhl. The monument will stand in the grounds of the State Capitol, at Columbia, S. C. The amount appropriated for it is \$20,000.

A NEW EQUESTRIAN STATUE FOR HANOVER, PA.—Cyrus E. Dallin, a Boston sculptor, has completed an equestrian statue of a "Picket on Duty," which will be erected in Hanover to commemorate the battle of Hanover, preceding the battle of Gettysburg, in 1863.

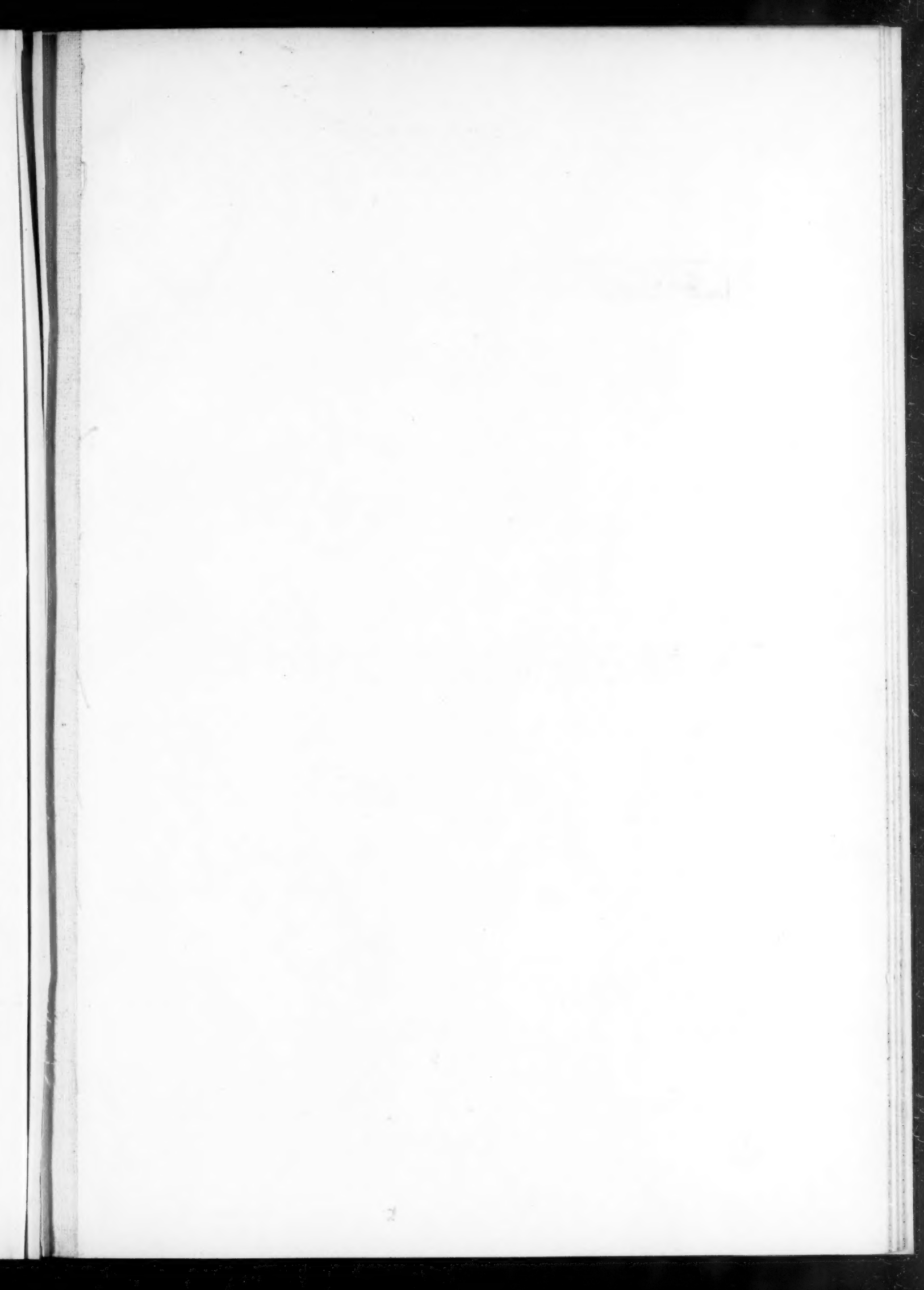
SIR ASTON WEBB, R.A.—At the distribution of Honors on the King's last birthday, the distinction of Knighthood was bestowed upon Mr. Aston Webb, R.A. Following so closely upon his brilliant term as president of the R. I. B. A., this recognition by His Majesty of the eminent services Sir Aston has rendered to his art, and of the distinguished position he holds among his professional brethren, is peculiarly well timed.

AMERICAN ENGINEERS BARRED.—Mayor A. B. Crosby, of Halifax, N. S., sprang a sensation Wednesday night when he vetoed the employment of a Boston firm of engineers to report on the city water system. A week before, the city council unanimously passed a resolution to accept the offer of Snow & Barbour, civil and sanitary engineers, of Boston, to prepare a report for \$2,000 on the best method of increasing the water supply of Halifax. The Boston firm was officially notified by the city clerk of the acceptance of its tender, and Mr. Barbour was to have left Boston Wednesday night for Halifax to commence work. When the city council met Mayor Crosby read his veto of the council's action, on the ground that Mr. Barbour was a citizen of the United States; that competent Canadian engineers could be obtained, and that no city in the United States would similarly employ engineers resident in Canada. The council thereupon concurred in the mayor's veto, and the city clerk telegraphed the Boston firm, rescinding the previous acceptance. A legal contest is likely to follow.—*Toronto (Ont.) Globe*.

EXHIBITION OF VERESTCHAGIN'S PAINTINGS AT ST. PETERSBURG.

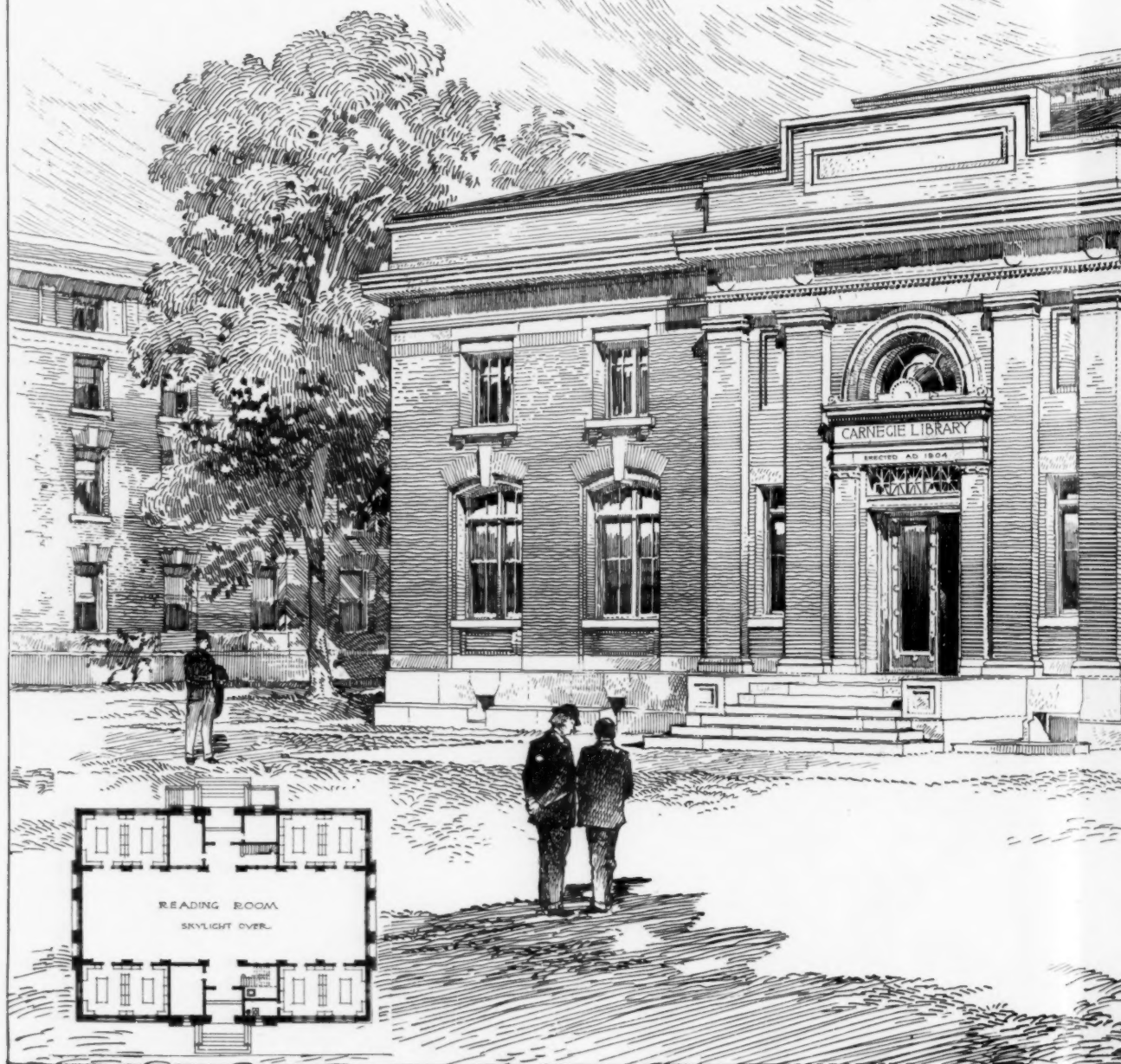
—Great crowds have been attending a posthumous exhibition of the last works of Vassili Verestchagin in the galleries of the Great Morskaja at St. Petersburg. This event has taken the character of a patriotic demonstration, and it affords also a very impressive idea of the loss suffered by Russia in the death of Verestchagin, who, it will be remembered, went down on the battleship *Petro-pavlovsk*, off Port Arthur. By a singular irony of fate, it happens that a series of pictures which he brought back with him from Japan forms the major part of the collection. Verestchagin painted many figure pieces there, and his very last work is a charming study of a little Japanese girl in a clinging robe smelling a flower. Other figure studies of Japanese priests recall the picturesque and faithful sketches which he formerly brought home from Tibet. There are also many landscapes. Jules Claretie writes in *Le Temps*: "There is a special kind of sadness in these last canvases, which is due to the consciousness of the fate of this poet-painter, in love with the country which was to kill him. Yet the pictures are bright and gay. That little Japanese girl with the soft smile makes one think of a creation of Pierre Loti, whose brother or whose betrothed shall load the mine that is to blow up the artist with the sailors." The entire Verestchagin collection was to have been sold by auction, but has been bought by the Czar for his private gallery.—*Exchange*.

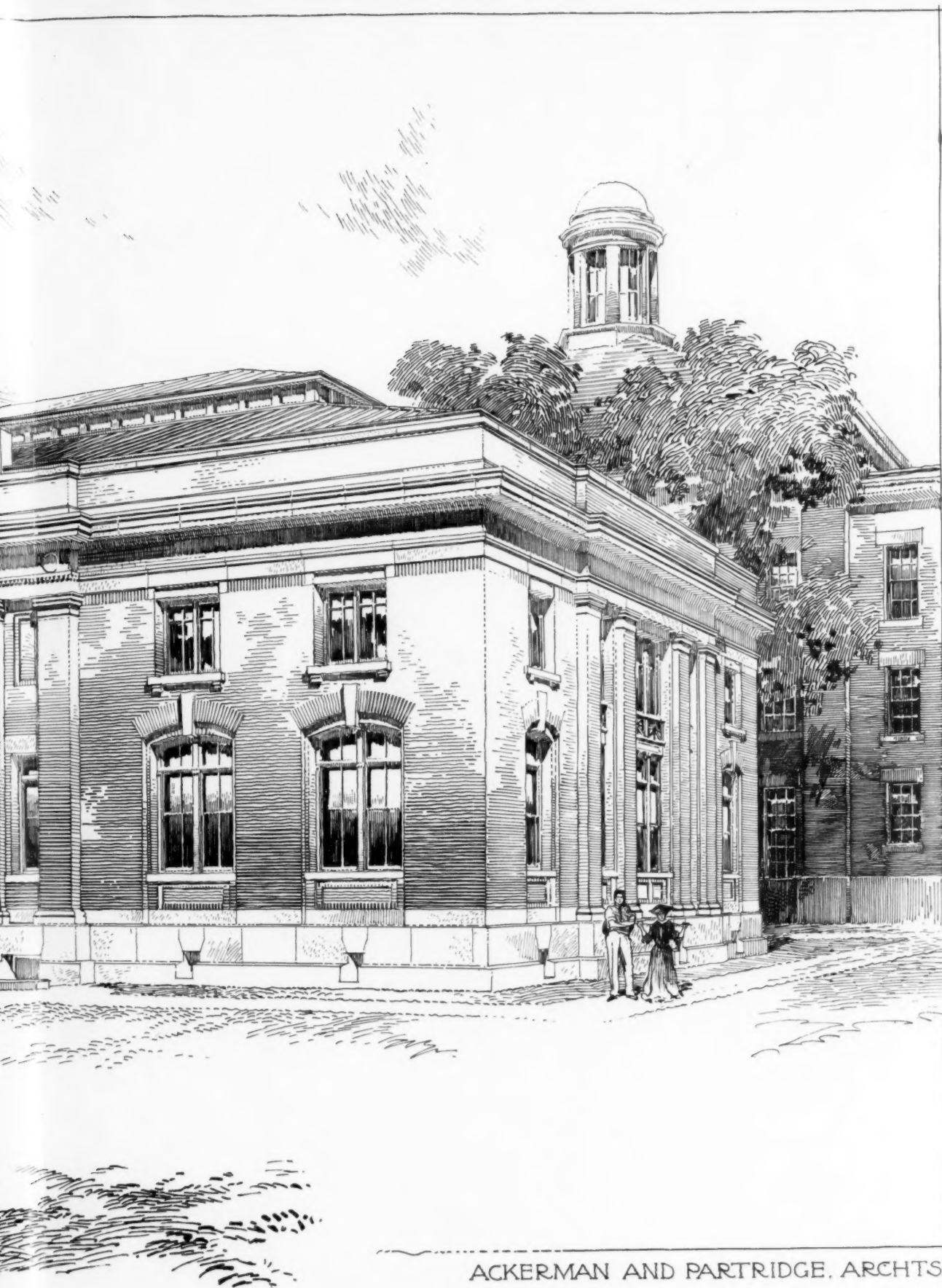
ONCE MORE THE TARRANT EXPLOSION.—After a lapse of over four years the Tarrant explosion and fire of October 29, 1900, has emerged from oblivion, owing to the Appellate Division of the Supreme Court having reversed the verdict of the trial court in favor of the defendant Hartford Fire Insurance Company and ordered that the plaintiff, Effens, Smith & Wieman Company, should be granted a new trial. The property insured was machinery, etc., contained in a building on the south side of Warren street, Manhattan, New York, between Greenwich and Washington streets. Diagonally across and on the northwest corner of Warren and Greenwich streets stood what was then known as the Tarrant Building, in which occurred the fire which caused an explosion that wrecked that building. The plaintiff company claimed that its building was ignited by the fire resulting from the explosion, and that the property insured was destroyed by that fire. The insurance company claimed that the explosion blew down the front wall of the building in which the insured property was, whereupon the policy terminated. Incidental to the claim of the company was the further contention that the loss of the insured had been caused by the explosion only. On behalf of the insurance company Chief Croker, Deputy Chief Ahearn and others testified that the explosion wrecked the whole front wall of the plaintiff's building, while others engaged in business in the immediate neighborhood (including the president of the Irving National Bank) present at the fire testified quite the other way. Among the errors of the trial court was that of the judge charging the jury that, if it found that Tarrant's front wall had been "shattered" by the explosion, the insurance then terminated. The plaintiff's counsel contended that the jury must find that the wall had actually "fallen." In other words: "Even though there were a fire in the Fahys' building, still, if the front or Warren street wall of the Fahys' building, or a substantial part thereof, were shattered before fire had consumed this property, a verdict must be for the defendant." This was excepted to. The decision of the Appellate Court, in criticising that charge, says that, "although, on the one side, the testimony tended to show that no part of any wall of the Fahys' building, had fallen before the fire in that building, and, on the other, that a substantial part of the Warren street wall had fallen, yet the jury was not bound to accept the testimony upon either side literally. It might well be that the wall was shattered and still remained standing, and that no substantial part of it fell until after the destruction of the property insured by fire. The jury would very likely infer that the phraseology of the question in this regard was significant. The language of the policy on the point was plain and simple. Counsel for the defendant was not content to adopt the language of the policy in framing the question, and we think the court was led into an error. Even though the wall may not have been razed by the explosion, yet it is probable that the glass in the windows was shattered, and it may well be that the wall was cracked and weakened in consequence thereof, and that it subsequently, from the heat of the fire within the Fahys' building, fell the more readily, yet, under the terms of the policy, this would not relieve the insurance company of liability, and still the jury was given to understand that it would." A new trial was, therefore, ordered.—*Fire and Water Engineering*.



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American Architect,
December 31, 1904.
No. 1514.



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W. COOPER, ESQ., TUXEDO PARK, N. Y.
en, Architect.

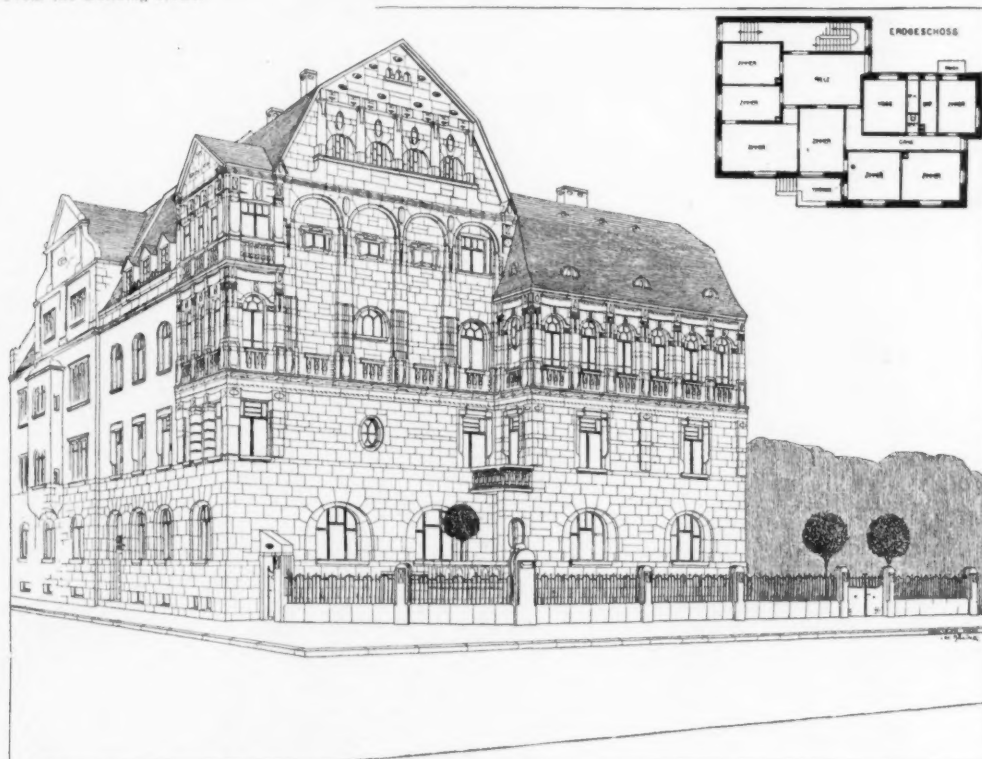
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HOUSE OF ROBERT LESLEY, ESQ., HAVERFORD, PA.
Lindley Johnson, Architect.



From the Building News.



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HOUSE OF HERR KOHLBECK, KARLSRUHE. BADEN.
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