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NO. 1503



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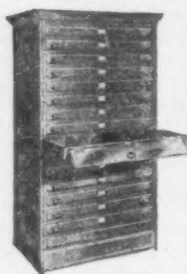
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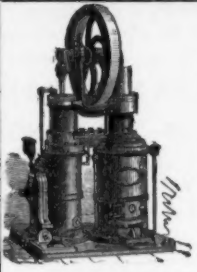
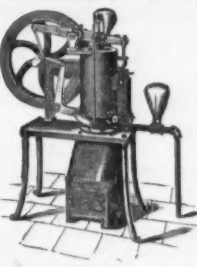
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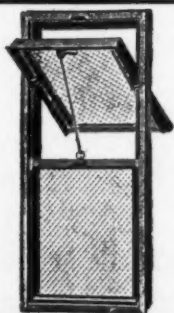
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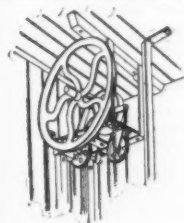
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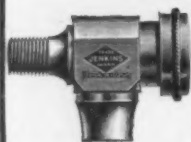
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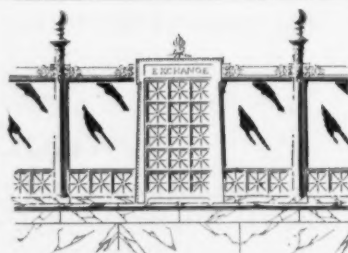
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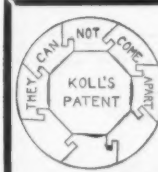
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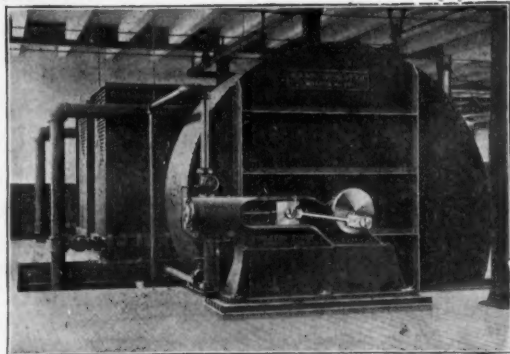
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See the first issue of the month for the following advertisements:—

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ADDRESSES WANTED.

We shall be obliged to anyone who can provide us with the present addresses of any of the subjoined parties.

American Architect Co.,
238 Tremont St., Boston.

Barlow, W. F., lately of Bar Harbor, Me.

Beeson, E. W., Jeffersonville, Ind.

Benkert, G. F., lately of 302 East Grace St., Richmond, Va.

Carpenter, R. W. E., lately of Pittsburgh, Pa.

Colbert, H. W., lately of Shawnee, Okla.

Cupperwell, E. W., lately of Union Stock Yards, Chicago, Ill.

Dans, F. L., lately of Ithaca, N. Y.

Hayes, Jas. T., lately of Syracuse, N. Y.

Hutchinson, Geo. H., lately of 31 Triangle Bldg., Troy, N. Y.

Knox, Pierce & Duryea, lately of Worcester, Mass.

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McCarthy, P. A., lately of Indianapolis, Ind.

Martling, J. H., lately of Kansas City, Mo.

Maydwell & McClintock, lately of 22 Sheldon Block, El Paso, Tex.

Novek, Bernard, lately of 914 Lumber Exchange, Minneapolis, Minn.

O'Brien, James, lately of Bridgeport, Conn.

Rice, Joe, lately of Beaumont, Tex.

Shaffer, Matthew, lately of Johnstown, Pa.

Stone, Edwin J., lately of Worcester, Mass.

Webster, W. H., lately of "The Naseby," Toledo, O.

Wilcox, F. O., lately of 614 Commercial St., New Orleans, La.

Wolf, James, lately of 125 Broadway, New York, N. Y.

ARCHITECTS' REMOVALS, Etc.

DISSOLUTION OF PARTNERSHIP.—The co-partnership heretofore existing between Claude F. Bragdon and J. Con Hillman, under the firm name of Bragdon & Hillman, Architects, Outlier Building, Rochester, N. Y., was dissolved October 1, by mutual consent, Mr. Hillman retiring.

ANNOUNCEMENT.—George A. Ross and David H. MacFarlane announce that they have formed a partnership for the general practice of architecture under the firm name of Ross & MacFarlane, Room 51, Bank of Ottawa Building, St. James Street, Montreal. Telephone Main 227. They will be pleased to receive samples and catalogues.

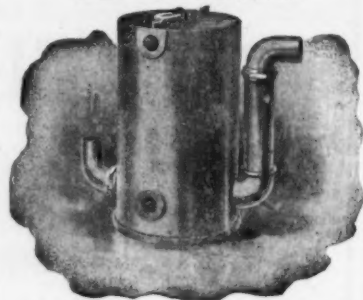
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BUILDING INTELLIGENCE.

(Reported for the American Architect and Building News.)

(Although a large portion 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.

ATLANTA, GA.—College buildings are to be erected at Butler and Armstrong Sts. by the Atlanta College of Physicians and Surgeons, at a cost of \$100,000.

AURORA, ILL.—The West Side School Board, it is reported, has accepted plans prepared by Patton & Miller, 153 La Salle St., Chicago, for the new high school. Cost, \$50,000.

BALTIMORE, MD.—William Lanahan & Son have commissioned Simonson & Pietsch, Hoen building, to prepare plans for a six-story warehouse, to be erected at 20, 22 and 24 Light St. The new building will be fireproof, and provided with all improvements.

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

over St., the other three will face in Lombard St., two will be 24 x 80 feet, the third 48 x 84 feet.

Sperry, York & Sawyer, Builders' Exchange Building, are preparing plans for a brick and stone structure to be erected at 16-18 East Fayette St. for the Maryland Bible Society. The building will have a frontage of 55 feet and a depth of about 106 feet.

Wyatt & Nolting are preparing plans for a six-story warehouse to be erected at W. Baltimore and W. German Sts., for the millinery firm of Armstrong, Cator & Co.

Morrow Brothers, 212 Clay St. have received the contract to erect a four-story brick building on German St. for the Merchants' Club, which is to cost about \$75,000.

Otto G. Simonson and Theodore Wells Pietsch have been selected to make plans for a large high school building to be erected at North Av. and Broadway, at a cost of \$375,000.

BINGHAMTON, N. Y.—The Binghamton Society for the Prevention and Cure of Tuberculosis will erect a sanitarium on a plot of 60 acres.

BROOKLYN, N. Y.—Plans have been filed for a four-story brick school to be erected at Sixth Ave. and 55th St. to cost \$250,000; owner, City of New York; C. B. J. Snyder, Archt., 500 Park Ave., N. Y. City.

BUFFALO, N. Y.—Report states that O. H. Foster will erect a residence at 895 Dearborn Ave., at a cost of \$125,000.

CALIENTE, NEV.—It is stated that Wm. A. Clark, of New York City, has purchased the Vegas Ranch in Lincoln County, and intends erecting a hotel and sanitarium, at a cost of about \$300,000.

CHICAGO, ILL.—Henry L. Newhouse, 4,630 Prairie Ave., has completed plans for a three-story flat, 50 x 160 feet, which John Reinach will build at 49th St. and Michigan Boulevard, at a cost of \$55,000.

HARRISBURG, PA.—The Harrisburgh School Board has commissioned Architect C. Howard Lloyd, 15 South 2d St., this place, to prepare plans for the proposed an-

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

nex to the Technical High School. Dr. William P. Clark is the chairman of the Manual Training Committee in charge.

INWOOD, N. Y.—Plans have been completed by W. W. Bosworth, F. H. Bosworth, Jr., and Carlton Greene, C. E., for the new home of the Magdalen Benevolent Society, to be erected at Inwood. The building will have four stories and basement, 200 feet long, with an average depth of 40 feet. It will be of fireproof construction, with exteriors of rubble stone and stucco work. The cost is estimated at \$150,000, and the building is to be finished by Aug. 1st, 1905. The Andrew J. Robinson Company, of 123 East 23d St., have received the general contract.

JERSEY CITY, N. J.—John W. Ferguson, United Bank building, Paterson, has received the contract to erect a five-story factory on York St., for Colgate Company, at a cost of \$60,000.

KANSAS/CITY, Mo.—The City Council has accepted plans prepared by F. C. Gunn, Shukert building, and Root & Siemens, Postal Telegraph building, associated architects, for the new City Hospital, to be erected at 24th and Locust Sts. The hospital is to consist of four different buildings, and is estimated to cost, including equipping, etc., about \$230,000.

LOUISVILLE, KY.—Report states that Jas. B. Camp, former manager of the Auditorium, has had plans prepared for an auditorium having a capacity of 3,500 people, to be erected at a cost, including site, of \$50,000.

LUDINGTON, MICH.—Jos. Fruechtel, of Saginaw, has received the contract to erect a school here, at about \$20,000.

MADISON, WIS.—Timothy C. McCarthy has received the contract to erect a Y. M. C. A. building at the University of Wisconsin, at about \$60,000. The building is to be five stories, of brick and stone, 57x123 feet.

MEMPHIS, TENN.—Report states that the erection of a court-house, at a cost of about \$500,000, is under consideration.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Archer & Allen, 3 East Lexington St., are preparing plans for two warehouses to be built for the trustees of the Johns Hopkins Hospital, one at Lombard and Frederick Sts. and the others at Exchange Pl. and South St. The former structure will be four stories, the latter five.

Ellicott & Emmart, 323 North Charles St. will prepare plans for eleven five-story warehouses to be built by James E. Ingram, Sr., on the northeast corner of Hanover and Lombard Sts. Eight with a frontage of 22 and depth of 100 feet will face in Han-

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

MENOMINEE, MICH.—It is stated that the Sisters of the Order of St. Francis have decided to erect a \$30,000 hospital here.

MINNEAPOLIS, MINN.—The contract to erect the Trinity Baptist Church, at Lincoln and Bryant Aves., has been awarded to H. N. Leighton Company, 213 South 6th St., at \$40,000.

It is reported that the N. W. Life Insurance Company will erect a music hall and office building in this city, to cost about \$249,000.

MONTEREY, MEX.—Alfred Giles, of San Antonio, Tex., has prepared plans for alterations and additions to the Casino at Monterey, to cost \$50,000.

MT. VERNON, ILL.—The contract to erect the Township high school has been awarded to the Southern Illinois Construction Company, of East St. Louis, at about \$27,255.

NEW HAVEN, CONN.—Richard Williams, 82 Church St., has completed plans for the proposed church to be built on Chapel St. by the St. Louis French Roman Catholic Church. It will be a brick structure, about 50x100 feet, with slate roof.

NEW YORK, N. Y.—Plans have been filed for a four-story brick Public Library, to be erected at 1,465 Ave. A, to cost \$50,000; owner, New York Public Library; Babb, Cook & Willard, architects, 3 West 29th St.

Plans have been filed for two additional free libraries of the Carnegie endowment, to be erected by the New York Public Library, one at 209-211 West 23d St., to be a three-story limestone structure, and cost \$60,000; the other, a two-story brick structure, with stone trimmings, to be erected at Leroy St., at St. John's Park. Cost, \$65,000. Carrere & Hastings, architects, 28 East 41st St.

Plans have been filed for a parish school to be erected at 318 to 322 East 29th St., by the monks of the Carmelite priory, Rev. Edw. P. Southwell, prior. The building is to be five stories high. Estimated cost, \$65,000. T. H. Poole, architect, 13 West 30th St.

OMAHA, NEB.—Geo. A. Hoagland has secured a permit to erect a six-story mercantile building at 16th and Howard Sts. Cost, \$180,000.

A building permit has been granted to Arthur D. Brandeis for a brick residence and barn, to be erected at 34th and Dewey Aves. at a cost of \$40,000.

ROME, N. Y.—Archimedes Russell, 321 The Bastable, Syracuse, N. Y., has prepared plans for a three-story pressed brick building, 100x50, for stores, offices and apartments.

SYRACUSE, N. Y.—A building permit has been granted to the Central New York Tele-

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

phone & Telegraph Company for a \$200,000 building, to be erected at 321 and 323 Montgomery St.

TAUNTON, MASS.—Louis M. Witherill, 29 Court St., has been awarded the contract for erecting the North Pleasant St. school, at \$26,947.

THREE RIVERS, MICH.—Plans have been accepted for a \$25,000 school. B. E. Andrews, president Board of Education.

WASHINGTON, D. C.—Architects Wood, Dunn & Deming, 808 17th St. N. W., Washington, D. C., are preparing plans for an office building, to be erected for James F. Mitchell.

WHEELING, W. VA.—T. C. Kennedy is preparing drawings for the new manual training school, to be erected near Elm Grove. Plans for beautifying the grounds and laying out walks are also under consideration.

Report states that a \$50,000 technical school is to be erected here. Address Rev. P. J. Donahue, Wheeling.

PROPOSALS.

BUILDINGS.

[At Columbia, S. C.]

Bids will be received until October 20 by E. O. Watson, President of the Board of Trustees, Spartanburg, S. C., for erecting administration, dormitory and other buildings for Columbia College at Columbia. 1503

CUT STONE.

[At Washington, D. C.]

OFFICE OF THE COMMISSION, WASHINGTON, D. C.

Sealed proposals will be received at the office of the Supervisor of Construction, 14th and E Sts., N. W., Washington, D. C., until October 27, for furnishing cut stone for the Municipal Building. Information on application to Capt. Chester Hard, U. S. A., Supervisor of Construction, Municipal Building, Washington, D. C. Leslie M. Shaw, Secretary of the Treasury; Henry B. F. MacFarland, Henry L. West, John Biddle, Commissioners of the District of Columbia, Municipal Building Commission. 1503

PROPOSALS.

ADDITIONS TO CAPTAINS' QUARTERS.

[At San Francisco, Cal.]

Bids are wanted October 24 for constructing additions to captains' quarters at Infantry Cantonment, Presidio of San Francisco. WM. S. PATTEN, Asst. Q. M. Gen. 1503

CHURCH.

[At Cleveland, O.]

Bids are wanted October 25 for erecting a \$35,000 church for the First Christian Society. 1504

CONSTRUCTION.

[At Brooklyn, N. Y.]

Bids will be received October 29 by Mordecai T. Endicott, Ch. Bureau Yards and Docks, Navy Department, Washington, D. C., for constructing an addition to Commandant's quarters, Navy Yard here. 1504

SCHOOLHOUSE.

[At Dayton, O.]

Bids will be received October 20 by the Board of Education for furnishing material and erecting a 13-room brick school and an auditorium on Haynes St.; a mechanical steam heating system will be used in said building. Peters, Burns & Pretzinger, Architects, 26 Kuhn Building; WM. G. HAEUSSLER, Clerk. 1503

TWO BRICK BUILDINGS AND WATER AND SEWER SYSTEMS.

[At Wittenberg, Wis.]

DEPARTMENT OF THE INTERIOR, OFFICE OF INDIAN AFFAIRS, WASHINGTON, D. C.

Sealed proposals will be received at the Indian Office until October 25 for furnishing and delivering the necessary materials and labor required to construct and complete a brick school building and brick dormitory, both with plumbing, steam heat and acetylene gas piping or electric light wiring, and water and sewer systems with acetylene gas piping or electric light wiring for pump house, at the Wittenberg School, Wisconsin; in strict accordance with the plans, specifications and instructions to bidders. For further information, apply to Axel Jacobson, Superintendent, Indian School, Wittenberg, Wis. W. A. JONAS, Commissioner. 1503

Treasury Department, Office of the Supervising Architect, Washington, D. C., October 6, 1904. Sealed proposals will be received at this office until 3 o'clock P. M. on the 14th day of November, 1904, and then opened for the construction complete of the U. S. Post-office at Adrian, Michigan, in accordance with the drawings and specification, copies of which may be had at this office, or at the office of the Postmaster at Adrian, Michigan, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1504



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PROPOSALS.

Treasury Department, Office of the Supervising Architect, Washington, D. C., October 7, 1904. Sealed proposals will be received at this office until 3 o'clock P. M. on the 3d day of November, 1904, and then opened, for the installation of a conduit and electric wiring system for the U. S. Post-office and Court-house, Athens, Georgia, in accordance with the drawings and specifications, copies of which may be obtained at this office, or at the office of the Superintendent of Construction at Athens, Georgia, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1504

Treasury Department, Office of the Supervising Architect, Washington, D. C., September 29, 1904. Sealed proposals will be received at this office until 3 o'clock P. M., on the 9th day of November, 1904, and then opened, for the construction (except heating apparatus) of the U. S. Post-office at Flint, Michigan, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Postmaster at Flint, Michigan, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1503

Treasury Department, Office of the Supervising Architect, Washington, D. C., October 1, 1904. Sealed proposals will be received at this office until 3 o'clock P. M. on the 7th day of November, 1904, and then opened, for the construction (including heating apparatus, electric wiring and conduits), of the U. S. Post office at Lawrence, Kansas, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Postmaster at Lawrence, Kansas, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1503

Treasury Department, Office of the Supervising Architect, Washington, D. C., October 1, 1904. Sealed proposals will be received at this office until 3 o'clock P. M. on the 27th day of October, 1904, and then opened, for the low pressure steam heating apparatus, complete in place, for the U. S. Post-office and Court-house at Greeneville, Tennessee, in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Greeneville, Tennessee, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1503

Treasury Department, Office of the Supervising Architect, Washington, D. C., September 28, 1904. Sealed proposals will be received at this office until 3 o'clock P. M., on the 2d day of November, 1904, and then opened, for the construction (including plumbing, heating apparatus, electric conduits and wiring), of the U. S. Post-office at Oak Park, Illinois, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Postmaster at Oak Park, Illinois, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1503

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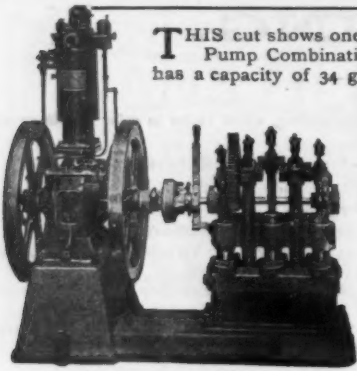
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THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. LXXXVI

SATURDAY, OCTOBER 15, 1904

No. 1503



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THE American public first gained knowledge of Frederic Auguste Bartholdi, who died at Paris last week, through the great frieze he modelled for Richardson's new "Brattle Street" Church in Boston, and it was probably this introduction to an American audience that suggested to him the modelling of the great statue, "Liberty Enlightening the World," which, whatever may be its merits as a piece of sculpture, constituted one of the most colossal pieces of self-advertising that sculptor ever devised. Through these two works of art and the statue of Lafayette, in Union Square, New York, Bartholdi possibly had a more extended reputation in this country than did any of his fellows. The work by which he is most generally known in Europe is the colossal "Lion of Belfort," which commemorates the defence of that place during the Franco-Prussian war, and being erected on French soil never ran the risk of having but a brief existence. Such, however, was not the case with another memorial he created in memory of that struggle, for the latter owes its existence at this time on Alsatian soil to a species of magnanimity on the part of the Germans. This monument or memorial is at Colmar, where the sculptor was born in 1834, which is also adorned with other of his statues and fountains. It is to be found in the rural burying ground, and a correspondent of the *Boston Transcript* describes it in these words: "There on the ground was a bronze slab upheaved from below, at one corner, by the convulsive effort of the spirit of the tomb. There was no face or form, but a bare arm, in bronze, protruding from a shoulder, with half-disclosed neck swollen with the agony of the strain, stretched out from beneath with wild despair to clutch a sword of Spartan length, on the slab just beyond the reach of the tips of the fingers bent in the tension of the supreme struggle. It was the spirit of the French of Alsace who had perished in the war with Germany, striving to rise from the tomb to renew the conflict for

their native land." It is a new rendering of the rather hackneyed and morbid theme of resurrection, which French sculptors have delighted in during many generations, one of the latest and best examples being the tomb in Notre Dame, Paris, of Monseigneur Darboy, the beloved Archbishop of Paris, murdered by the Communists.

BARTHOLDI'S preference was for colossal work, and in this category may be included his scheme for the Palais Longchamps and the great fountain at Bordeaux and the equestrian statue, "Vercingetorix," which for years had a place as a plaster model in the Museum at Clermont-Ferrand, was later exhibited at the Exposition of 1900 in Paris and has since, we believe, been cast in bronze. Besides these, he modelled statues of Rouget de l'Isle at Lons-le-Saulnier, of Vauban at Avallon, of Champollion in the Collège de France, Paris, and many others, besides executing the monuments to Gambetta at Villed'Avray and Paul Bert at Auxerre. At the time of his death he was engaged on a large order for the city of Paris; but what is not unlikely to prove one of his most interesting efforts is the design for his own funerary monument, which, knowing his disease was about to result fatally, he just had time to conceive and complete before his busy hands were stiffened by Death.

AN incident occurred in New York last week that has a bearing on the proposed congregating of seventy-five hundred school children under a single roof, and shows how, even if the builders should succeed in making the structure positively and actually fireproof, it may be unwise to collect so many impulse-guided beings in a single building. On the day in question, one of the Italian newspapers published a statement that the notorious "Black Hand Society" had announced its intention of dynamiting two of the schoolhouses. The news spread like wildfire, and the threatened buildings were speedily besieged by a frantic mob of women—fortunately the fathers were scattered over the city, busy with their ordinary work—each determined to get her child out before the explosion came. The teachers fortunately kept their heads, and, locking the doors, managed to control the panic-stricken children, while the police reserves at length succeeded in quieting and dispersing the frightened mothers. All went well in this case; but we question whether in the case of a serious exposure fire seventy-five hundred children in an incombustible schoolhouse, equipped, too, with metallic desks and chairs, could be successfully controlled, and it is certain that no doors and stairways could be planned to give safe escape to so large a crowd of children once panic really got possession of them.

MUCH comment and complaint are caused by the action of the New York Department of Water, Gas and Electricity in depriving, through reasons of economy, a large portion of the schoolhouses of the electric lamps they have recently benefited by. This

action of course entails a return to the use of the open gas-jet, and is so distinct a backward step, sanitarily speaking, that every effort should be made to prevent the change from being carried out. The electric lamp has been so improved, and the methods of installing so as to get even distribution through the agency of proper reflecting surfaces are now so well understood, that there is little reason why, so far as eyesight has to be considered, the electric light should not be regularly used in schoolrooms to the exclusion of gas. But an occultist of high standing has recently issued a warning against one growing use of the electric light, and his warning suggests that the list of nuisances which may be suppressed by legal process is likely to be increased before long by the addition to it of one form of the electric light. He points out that not only are the "winking" electric lights, now so much used as advertising announcements along the shop-fronts, very trying to the eyesight of passers and the occupants of premises fronting such intermittent signs, but that it is absolutely impossible for persons of a certain nervous temperament to sleep healthfully in rooms which are subjected to the alternation of light and darkness through the operations of a "winking" electric sign nearby.

THE new society of sculptors is seeking to justify its formation, as is the custom of new societies, by doing something, and that something is the holding of a large exhibition in New York early next spring, possibly in Madison Square Garden. The backbone of the projected exhibition, which is intended to have the character and value of a Paris *Salon*, is to be the best of the works of sculpture and painting exhibited at the St. Louis Exhibition, reinforced by such other works of merit as can be secured. There is abundant material of worth and interest to fill acceptably even so large a place as the Garden, and a triennial *Salon* would prove a grateful addition to the educational attractions of the metropolis; but heaven defend it from an annual affair of the kind! Even Paris, with its vastly greater artistic resources to draw from, cannot keep its annual exhibition at the high level of quality it once maintained, and it would be of doubtful advantage for our artists, old or young, to spend their time upon canvases of proper exhibition-size only to find that there was no market for them, there being no government to buy them and no government museum in which to hang or store them. On the face of things this American *Salon* is intended to help American artists to find customers for their wares, and yet we understand that a committee is already soliciting exhibits from foreign artists. This is grateful news from the viewpoint of the public, and will serve to dispel any notion that the tenets of the new society could in any way be reduced to the expression "America for the Americans," so far as sales are concerned.

THE younger men who have recently studied in Paris will probably not share our own surprise in learning how the American Art Association of Paris, which was established a very few years ago, has grown in size and usefulness. Thinking of it merely as a rather loose, small and effectively Bohemian affair, altogether admirable in its aims and accomplishments, of course, we have been quite taken aback by learning

that it has a library of three thousand volumes, an exhibition hall, café, etc., and an active membership of three hundred and fifty. With such a centre of interest as this, student life in Paris, while losing none of its charm and local coloring, must obviously be safer than it used to be, when each foreigner lived nearly an isolated life and there was no one to know whether he had quietly slipped into the Seine in a moment of discouragement or because he no longer had sous enough to buy his daily roll and bowl of coffee or bouillon. The first thing a student should do on reaching Paris obviously is to steer his way to No. 74 Rue Notre Dame des Champs, and there put himself under the temporary guidance of the officials of the Association.

WE are very glad to aid in the dissemination of the information that the librarian of the National Library of Turin, which was totally destroyed by fire early this year, has appointed as its agents in this country the firm of Brentano's, Union Square, New York, through whom may be forwarded any books which American authors may be willing to present to make good the losses of one of the most important libraries in the whole world. As during the last score of years American architects and engineers have made large contributions to the literature of their several professions, a very sizeable and welcome shipment might be made if each author should request his publisher to send to the Turin National Library a presentation copy of his book, to be forwarded by the Brentanos. Although nothing was said about photographs, we feel assured that the Library would gladly welcome any good photographs, in complete series if possible, of the most noteworthy examples of recent American architectural achievement.

WHEN one realizes that the Cape of Good Hope was known to the Phœnicians six hundred years before Christ, that the East Indian Company established a trading-post at Cape Town in 1650, and that it was finally ceded to Great Britain by Holland in 1814 and now has a population rising one hundred thousand, it is only reasonable to assume that the city has all the qualities and attributes that are to be found in any modern city of its size. And yet there certainly is a certain unexpectedness in the appearance amidst our mail matter of a copy of an architectural journal published at Cape Town. This journal, *The South African Architect and Builder*, is published monthly at sixpence per issue, and, unless there are in other towns of the Colony a goodly number of architects and builders, it is not easy to see how it can be maintained, for we find listed in the "directory" it publishes the names of only eight building firms and twenty-six architects. It has, however, a hold on the general public, since every subscriber becomes *ipso facto* a policy-holder, in the amount of one hundred pounds, in an accident-insurance company, which assures against accidents that may be encountered while travelling in any conveyance on wheels. The publication, which is excellently printed, is stronger on the engineering than on the architectural side, its single half-tone illustration being a two-story store-front, in which French and German Renaissance details are combined with Dutch forms, so that the result has really a rather foreign air.

ENGLISH ARCHITECTURE OF THE FIFTEENTH CENTURY.¹—II.

WHEN spires are used they are well proportioned, the broach of earlier days being discarded, and the spire now rising from behind a parapet. The entasis formerly used is omitted, the spire lights either omitted or much reduced in size, and the relative height of the spire to the tower increased. At Hemingbrough, in Yorkshire, the spire is twice the height of the tower, the latter being 60 feet, and the total height of tower and spire 180 feet. This is a charming example.

Polygonal towers are sometimes used. There is an hexagonal one at Cotswold, in Yorkshire.

WOODWORK.

The woodwork of this style is not the least of its beauties. We have comparatively little woodwork earlier than the end of the fourteenth century, but after that time we find innumerable examples of beautiful work in screens, pulpits, lecterns, font-covers, stalls, bench-ends, doors, etc. Many of the screens are of great magnificence, and in spite of the unfortunate destruction of many there are still a great number left. Oak was the material used, and it was nearly always decorated with color and gilding. In many cases this is still remarkably fresh, and in most examples traces of it can be detected.

The principal feature in the interior of a church at this date was the rood-screen stretching across the entrance to the chancel, and often continued across the side aisles. The lower part is solid to about

ing of one or more bands of carving surmounted by a cresting. There is a splendid example in Aysgarth Church, in Wensleydale, brought from Jervaulx Abbey. Upon the screen stood the rood, a crucifix, with attendant figures of St. Mary and St. John. It is improper to use these figures when there is none on the cross, as in our cathedral, as St. Mary and St. John left before the body

was taken down, and did not stand gazing at the empty cross. Often there was a panelled parapet on the boldly canopied top of the screen, forming the rood-loft in which a concealed choir or a small organ was sometimes placed. The expression, a "pair" of organs, used by old writers, does not mean two instruments, but is used as some people use the term when they speak of a step-ladder as a pair of steps. The screen at Hexham Abbey is a fine example of one with loft. The access to the lofts was by winding stairs in one or both piers of the chancel arch, or in turrets built specially for the purpose. The traces of these stairs and doors can often be seen, as at the Cathedral of St. Andrew. In addition to the rood-screen there were others at the side of the chancel separating it from the aisles, besides screens forming enclosures to altars in other parts of the church.

In cathedrals there were numerous altars with their enclosing screens. Screens also were used to enclose chantry chapels. There is a good example at Hexham in the screen to the Ogle shrine. There are traces in all old churches showing where the head beams of the screens were let into walls and pillars. This is very noticeable at Durham in the chapels of the transepts.

One of the great mistakes made by our early restorers was the removal of screens

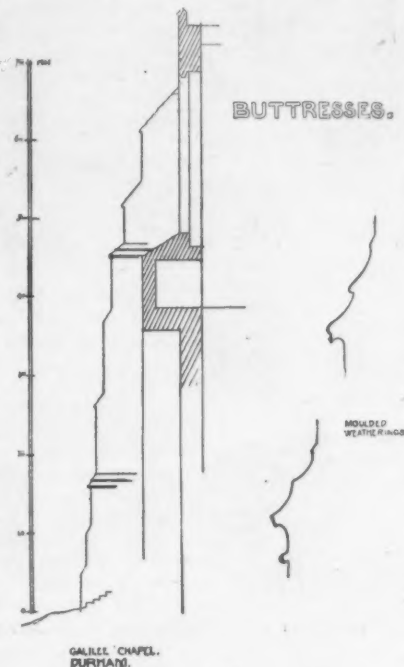


FIG. 9.

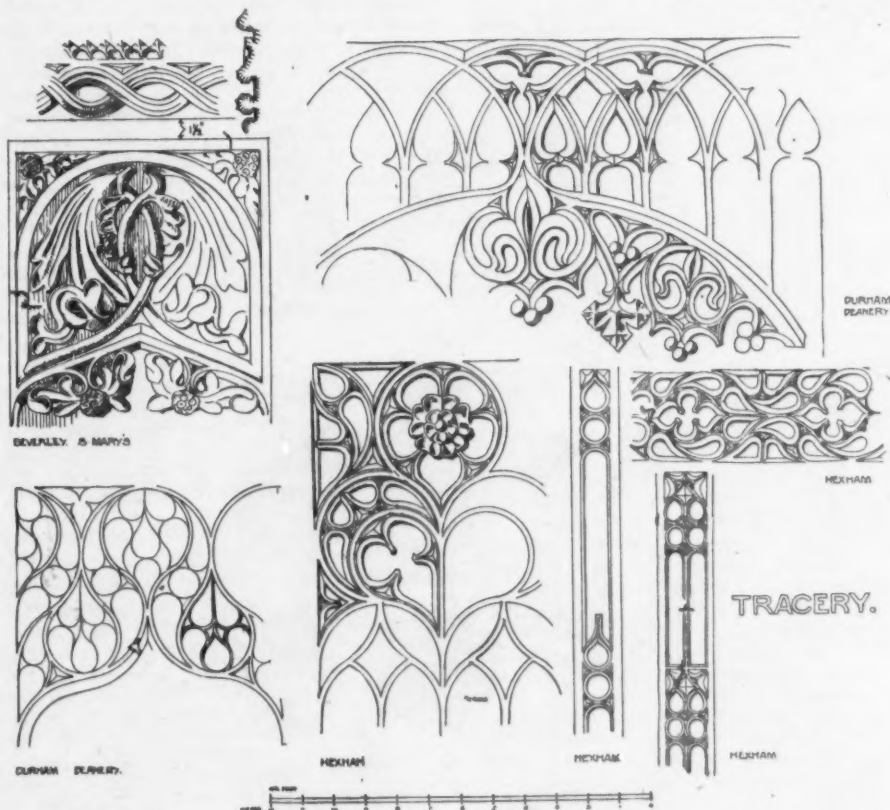


FIG. 10.

three feet high, with panels often with paintings of saints or the nine choirs of angels. Above this are mullions with tracery, and a bold cornice usually carried on fan or other vaulting, and consist-

ing in order to obtain a vista. A vista is still looked upon by many people as the great thing to strive after. They fail to appreciate the element of mystery which accompanies partial concealment

¹ A paper, by W. H. Wood (Newcastle-on-Tyne), read before the Northern Architectural Association, February 10, 1904. Continued from No. 1502, page 15.

and the pleasure of discovering new beauties and objects of interest by degrees, instead of having everything staringly visible. Can anything be more charming than the eastern portion of Westminster Abbey, with the chapels screened off from the aisle, and the way new beauties unfold themselves as one walks round towards the entrance to Henry VII's Chapel? There is perhaps no place which possesses the charm of mystery in such degree, or gives one a better idea of what a great church of the Middle Ages was like.

One peculiarity of Perpendicular wood-work should be pointed out—viz., that as the style matured the tracery became more flowing and more varied. In much of it there is not a rectangular feature.

There is a very beautiful piece of work in Brancepeth Church, near Durham, fixed above the chancel arch, and supposed to have come from Durham Cathedral. It is a coved canopy divided into thirty-nine panels by moulded ribs with carved bosses at the intersections and each panel filled in with tracery of a different design. This work is oak and not ivory, as often asserted. There is some beautiful panelling round the hall of the Deanery at Durham with varied tracery of more or less flowing type. Tracery formed solely by intersecting arches is not uncommon.

Beautiful work is found in bench-ends and stalls, of which magnificent examples exist at Ripon, Chester, etc. Those in Henry VII's Chapel are particularly fine. The canopies which surmount the stalls are all on much the same general plan, consisting of diminishing polygonal stages finishing with a crocketed spire. Those at Durham, though of Renaissance work, are an imitation of the earlier ones, and are of very good outline, but the detail is poor. There are some very fine carved bench-ends in the chapel of the Castle at Durham, and two, evidently by the same hand, at Wensley Church. Bench-ends are in old work nearly always got out of thick stuff, so as to get plenty of depth for the tracery and carving, and to this they owe a great deal of their success

IMITATIONS.

The architects of the fifteenth century appear to have had great respect for the work of their predecessors, and often adapted their work to it. The nave of Westminster Abbey is a well-known example where the design and proportions of the Early English choir are faithfully kept, and the difference of date can only be detected by the mouldings, showing that they considered their own sections superior—an opinion I think many will share. In this example the Early English wall-arcade is faithfully copied, although this form of decoration had been superseded by panelling. At Hemingbrough

the arcade on the south side of the chancel is an imitation of Early English, even to the characteristic three-lobed leaves in the caps: this is early sixteenth-century work.

At Durham, in the Galilee Chapel, the coupled marble columns of the transitional Norman period have been carefully copied in freestone by the fifteenth-century architect; while at Pickering, in Yorkshire, is an example of fifteenth-century Norman. Thus we see that the imitation of earlier styles did not originate with the architects of the eighteenth and nineteenth centuries, as is generally supposed, and for which practice they are so often condemned; indeed, in slavishly copying old work and misapplying it to totally different purposes from those for which it was originally used they certainly lay themselves open to condemnation. This has been done by both schools, though the classicist of the eighteenth century who tried to force the architecture of Greece into uses for which it was not adapted was more in error than his nineteenth-century successor who tried

to build Early Gothic mansions. There is, however, no more reason why we should not take the fully developed Gothic of the fifteenth century, and, carrying it on a stage farther, adapt it to modern requirements, than that the architecture of the Renaissance should not be used for present-day purposes. We have justification for it in its exclusively national character, while its greater lightness of design, the possibility of obtaining any area of window-surface desired without losing scale, the absence of the large entablature which is so apt to lead one into bad arrangements of windows above and below, and the great elasticity of the style, render it peculiarly suitable for modern business requirements.

Among the most beautiful works of this style are the chantry chapels and tombs, which are full of the most varied and beautiful details. The measuring up and drawing out of these is quite an education in Perpendicular, as they are in most cases the work of experts in their profession, and constitute perfect miracles of art. I hope that young students who have heard me will be induced to study Perpendicular work perhaps more than they have done, and make measured drawings of such examples as they may come across. I would particularly impress upon them the advisability of getting mouldings and details, full size, on the spot. In wood tracery work the nosing can often be impressed on the paper with the finger, and the cusping and details filled in by hand. It is always ad-

visable to measure with a view to making a finished drawing afterwards; but where there is no time for this, at least one or two leading dimensions should be taken, as with a good sketch these prove very helpful; for example, in a sketch of a window



RIPON CATHEDRAL.

ARCHITECTURAL MUSEUM



HENRY VII'S CHAPEL.

FIG. 11

carefully made and in proportion, if one is only able to get the width of a light and the breadth of a mullion, it is much more useful for reference.

THE STRUCTURAL DESIGN OF BUILDINGS.¹—I.

THE object of this paper is to submit a set of specifications, for the structural work of buildings, for discussion and criticism.

As this subject has never been brought before this Society, it is expected that an exhaustive discussion will bring out some valuable suggestions from those who have had experience in building construction, and that this may result finally in a more uniform practice as well as in more uniformity in that portion of building ordinances relating to structural work.

These specifications were prepared originally for the instruction and guidance of the engineers employed in the various offices of the company with which the writer is connected. They were to be used not only in places where building laws do not exist, but also to supplement those local building laws which do not give sufficient data.

Since then the writer has made changes and revisions, which, in some instances, might be regarded as departures from the usual practice, but, beyond this, it has been his aim to select what he considers the best practice of the present day.

These specifications are intended to cover only the structural features of buildings of the modern type, in which steel forms a part of the construction, such as would come naturally under the supervision of an engineer, and, therefore, they are not intended for the building trade, but for the use of educated engineers.

A proper and timely subject, to be included in specifications for structural work of buildings, is that of steel-concrete construction, of which a great deal has been used in later years in fireproof buildings, etc. However, as this Society has recently appointed a committee to investigate and report on this subject, it was deemed advisable to omit steel-concrete construction from these specifications until the committee's investigations have given additional light on the subject.

The Appendix to this paper contains, in tabulated form, extracts from the various building laws which the writer has been able to obtain up to the present time. It will be noticed that the most striking feature in these building laws is their lack of uniformity as to the specified live load. The minimum live loads per square foot prescribed for floors of dwellings, hotels and apartment-houses vary from 40 to 75 pounds; for floors of office buildings, from 60 to 150 pounds; for public assembly rooms, churches and theatres, from 80 to 150 pounds; for schools, from 75 to 150 pounds, etc. To make the variation still greater, some building laws allow a reduction for columns and foundations on the permissible live loads specified for floors; others do not.

A similar variation also exists in the permissible unit strains allowed for different kinds of material.

In order that the specifications may be understood properly, it will be necessary to explain some of the more important clauses, and give the reasons which led the writer to adopt them.

LOADS.

Dead Load.—The dead load, or the weight of the structure itself, including permanent fixtures, can be ascertained easily by careful computation, and is a permanent and reliable quantity.

Live Load.—Attention has been called to the great difference in the live loads specified by the various building laws for buildings to be used for the same purpose, the differences being in some cases more than 100 per cent. These differences should be harmonized, and a more rational method of loading devised, which would produce a structure of ample strength, more particularly in its details and connections, without waste of material in places where it is not needed.

The writer's attention was first called by Theodore Cooper, M. Am. Soc. C. E., to the irrational practice of specifying a uniform live load per square foot; he thought the specified live loads should be a little more than mere guesswork. Since then the writer has been working in accordance with these suggestions, following the lines which have been recognized for years by engineers in specifying live loads for bridges.

The possible maximum superimposed or live loads on buildings for special purposes, such as warehouses or stores for particular kinds of goods, power-houses, department-stores, etc., after their interior arrangement has been decided upon, can be accurately determined.

However, there are classes of buildings, the rooms of which may be occupied for various purposes at various times, such as office buildings, stores, hotels, apartment-houses, dwelling-houses, etc. Dwelling-houses are sometimes used for offices, and rooms in office buildings for light manufacturing purposes.

While it is impossible to foresee and provide for all possible contingencies, it is within the limits of possibility to provide for the varying conditions of loading which may occur in a building if used for the purpose for which it was intended.

Live Loads on Floors.—Mr. C. H. Blackall states:²

"The writer has repeatedly counted the number of persons in the various portions of theatres and music-halls, without once finding, even in crowded aisles and standing-room, an average of more than 40 or 50 pounds per square foot extended over more than a few square feet."

This agrees also with the writer's observations.

A live load of 40 pounds per square foot, therefore, may be considered the maximum load to be provided for as a distributed load for all floors on which crowds of people may be expected to congregate, such as all kinds of rooms in dwelling-houses, apartment-houses, hotels, office buildings, schools, churches, theatres, concert-halls, ballrooms, drill-rooms, etc.

Mr. Blackall, in conjunction with Mr. A. G. Everett, made a thorough investigation of the actual existing live loads of three office buildings in Boston. These loads were obtained by taking the actual weights of the furniture and contents and the greatest number of people known to be at any one time in an office, the average weight of one person being estimated at 150 pounds. The greatest load was found in one of the offices of the Ames Building, amounting to 40.2 pounds per square foot.

In only 12.4 per cent of the offices was the floor load in excess of 25 pounds per square foot, and in only 26 per cent did it exceed 20 pounds per square foot. The greatest maximum average for all floors of any one of the three buildings was 17 pounds per square foot.

In accordance with these data, it may be considered safe to assume that a distributed live load of 40 pounds per square foot will be sufficient to provide for a crowd of people as well as for the ordinary loads carried on floors used for offices or similar purposes.

The writer has investigated this subject and endeavored to discover extreme cases in order to find a method of concentrated loading to cover the same.

For this purpose, weights of all kinds of furniture were collected and their contents estimated. The weights were not taken as they actually existed, but as they would be if completely filled with the material for which they were intended.

It was found that the ordinary furniture, such as desks, tables, wardrobes, counters, chests, small safes, etc., may be discarded for extreme loads. The heaviest concentrated loads found in any office were safes.

The portable safes used in offices rarely ever weigh more than 5,000 pounds, with contents. This load may be carried by one beam, and, as a safe of this weight is likely to be placed in any office, every floor joist should be calculated for a concentrated load of 5,000 pounds in any position.

The maximum weight of safes generally used in dwelling-houses is 2,000 pounds.

The heaviest portable safe manufactured weighs 16,000 pounds, and occupies a floor space of 69x45 inches.

Safes of such excessive weight, however, are not placed on floors of office buildings in which no special provisions are made for them, unless arrangements are made to distribute the load over at least several beams.

In offices, the weights of all other furniture with contents do not approach that of safes.

Only a few cases of combinations of extreme loads were found to produce results similar to that of a concentrated load of 5,000 pounds. They were as follows:—

In a large room used as an engineering office, a number of cases with drawers holding drawings were placed in a double row, back to back, in the middle of the room, and used as a table on which to spread drawings. These cases were 31 inches wide and 36 inches high, weighing when completely filled 160 pounds per linear foot, or both together 320 pounds per linear foot; but as their total width was 62 inches, they may be considered as being carried by two beams.

¹ A paper read by C. C. Schneider, M. Am. Soc. C. E., before the American Society of Civil Engineers, October 19, 1904 and published in its *Proceedings*.

² *American Architect*, August 26, 1893.

A case of drawers for drawings, 31x44 inches and 5 feet high, if completely filled, would weigh 1,200 pounds. As there is a possibility of having a whole row of such cases placed along a partition, this would give a load of 326 pounds per linear foot, which may extend the whole length of a beam.

The weight of a "Wernicke" bookcase about 6½ feet high was found to be 170 pounds per linear foot when completely filled with books.

A row of bookcases might be placed on each side of a partition for the whole length of the room, in which case the load would be 340 pounds per linear foot. If the partition, instead of running parallel to the beams, should be placed at right angles to them, and if the beams are spaced at the usual distance of 5 or 6 feet apart, the concentrated load would be only from 1,700 to 2,040 pounds on each beam.

These investigations appear to indicate that a concentrated load of 5,000 pounds on any point of a beam, and a uniform load of about 340 pounds per linear foot of beam, will probably cover all possibilities of extreme loading of floors used for office purposes.

A concentrated load of 5,000 pounds is equivalent to the following uniform loads per linear foot of beam of different spans:—

Spans	10	20	30	40
Uniform load per linear foot	1,000	500	333	250

If the span of the beam is 30 feet and more, then the load of 340 pounds per linear foot would govern. However, as offices are rarely more than 30 feet long, and as the probability of having an available continuous space of more than 30 feet on each side of a partition fully occupied with bookcases, completely filled, is extremely small; and when it is considered that this load will not be carried entirely by one beam, the floor acting as a distributor, this may safely be neglected, and it may be assumed that a concentrated load of 5,000 pounds covers all ordinary contingencies.

In order to have a comparison between the system of concentrated loading and the uniform loads usually specified, Table I gives the equivalent loads per square foot for beams of different lengths and spacing.

TABLE I.

Span of beam, in feet.	DISTANCE BETWEEN CENTERS OF BEAMS, IN FEET.			
	4	5	6	7
10	250	200	166	143
15	166	133	111	95
20	125	100	83	71
25	100	80	66	57
30	83	66	55	48
35	72	57	48	41
40	62	50	42	36

The application of a concentrated load to each beam has the additional advantage of having all beam connections proportioned for a load of 5,000 pounds, and, therefore, not only obtains stronger connections and additional stiffness, but also makes provision for excessive concentrated loads during erection.

A concentrated load of 5,000 pounds applied to floor girders, that is, girders which carry beams, is not sufficient to cover all cases of extreme loading.

By laying out a great number of arrangements of office floors, with different spacings of columns and beams, and by applying different combinations of maximum loads, it was found that a uniform load of 1,000 pounds per linear foot of girder will generally cover all possible contingencies, unless the uniform load of 40 pounds per square foot gives greater results.

The floor girders, therefore, have to be tried by three methods in order to ascertain which gives the greatest result:—

First.—For a concentrated load of 5,000 pounds.

Second.—A uniform load of 1,000 pounds per linear foot.

Third.—A uniform load of 40 pounds per square foot of floor area.

This method of loading, as specified for office buildings, will also provide ample safety if any rooms should be used for light manufacturing purposes.

By applying, in actual examples, the rules for floor loads of office buildings, as recommended by the writer, it is found, if the columns are spaced at 20 feet between centres in either direction, and the beams at 5 feet between centres, that the live load on the beams will be equivalent to 100 pounds, and on the girders 50 pounds per square foot of floor area.

If the columns were spaced at 25 feet between centres, and the beams 5 feet, as before, the live load would be equal to 80 pounds per square foot on the beams and 40 pounds per square foot on the girders.

For buildings occupied as dwellings, a concentrated load of 2,000 pounds is recommended for beams and a uniform load of 500 pounds per linear foot for girders, in connection with a uniform floor load of 40 pounds per square foot.

As it has been demonstrated that a uniform load of 40 pounds per square foot will scarcely ever be exceeded by a crowd of people, this load, with the excess loads specified for office buildings, will be sufficient for floors of schools, churches, theatres and places where seats are provided, but for places where strong vibrations may be expected, such as ballrooms, drill-rooms, gymnasias, etc., 100 per cent. should be added to the uniform live load for impact and vibration, and, in order to reduce the deflections, and consequently the vibrations, the depth of the beams and girders should be limited to one-fifteenth of their span.

LOADS ON COLUMNS.

It has been the practice of many engineers and architects to allow smaller live loads on columns than those specified for the floor system, or to reduce the loads per square foot of floor area on columns from story to story downward toward the foundations. Rules to that effect are also incorporated in some building laws.

In the specifications proposed by the writer, the rules of the New York building laws have been adopted, *viz.*, to reduce the live load on columns in buildings more than five stories high 5 per cent for each story (commencing with the columns carrying the second floor from the top), until a reduction of 50 per cent is reached.

In order to provide for any possible excessive loads, and to keep the dimensions of the lighter columns within reasonable limits, it is specified that columns carrying floor loads shall be proportioned for a minimum live load of 20,000 pounds, and the proportion of length divided by least radius of gyration of section shall be limited to 125.

Applying these rules to the columns of an office building gives, for the columns carrying the top floor, a live load of 40 pounds per square foot of floor area (unless this load is exceeded by the concentrated load of 20,000 pounds), which is reduced to a minimum load of 20 pounds per square foot. This agrees very closely with the investigations of Messrs. Blackall and Everett, who found the average maximum live load on any one office floor to be 40.2 pounds per square foot, and the average total maximum for any one building to be 17 pounds per square foot.

(To be continued.)

BRIEF HINTS ON MASONRY.

IN masonry, as the class of work becomes higher and of a more expensive character, the more regular should the stones be.

This not only adds to the good appearance of the edifice, but also to the facility of building.

Under no circumstances should two vertical joints be continuous; the joints must always be broken. This does not merely apply to the external face of the wall—as many architects seem to suppose, judging from structures already in existence—but to the interior portion as well. A nicely-bound book is very good to look upon, but for its utility we must look between the covers. So with walls; their outward appearance may be all that is desirable, but the interior may be the opposite.

Masons are capable of some very sharp tricks; as, for example, building up the sides of the wall separately, and filling in with small stuff, and even dry packing. The thorough bonds are in such a case the only uniting parts of the two thin walls or slabs. This is to be most vigorously guarded against, and the workmen most carefully watched. The stones should be built so as to cross from opposite sides, and the more they overlap the better. This overlapping lessens the burden on the thorough bonds, which, if they bear the whole weight, may frequently break in two.

Thorough bonds may be always employed in cottages. Three-quarter headers are not only inferior with regard to stability, but give the mason a better opportunity of using his skill in deceiving his employer. Thorough bonds can always be traced in the work, while headers cannot, and the mason, knowing this, often pleases himself whether he puts them in or not. Thorough bonds are, however, more expensive, as there is a great deal of cutting in getting them to the right size—namely, the thickness of the wall.

There is one disadvantage about thorough bonds, and that is,

that the existence of a joint throughout the thickness of the wall makes it more probable that dampness will creep through.

Thorough bonds should not be placed directly over one another, but rather distributed evenly over the whole surface, those in the course above being over the voids between those below.

There is a custom among some masons of leaving the ends of thorough bonds projecting beyond the wall, and knocking them off afterwards. This shakes and injures the masonry, and must not be allowed.

In connection with the use of iron in stonework, we cannot do better than quote the words of Mr. George Wightwick in his "*Hints to Young Architects*."

"In putting wrought stonework together, iron is to be avoided as the certain cause of its subsequent destruction.

"Galvanized iron may be used, but not in great mass or long lengths. Space at ends should be allowed for free expansion.

"The stone cornices, architraves and dressings of many a noble mansion have been brought into premature ruin by the contraction and expansion of iron under the effects of cold and heat. But there are careless contractors who will allow their Corinthian capitals and fluted shafts to be ruined, even before the entablature surmounts them; and the young architect will not, therefore, omit to insert a clause in his specification (and to be peremptory in its enforcement) that all cut stonework be securely preserved, during the progress of the building, with good casings. It is surprising how grossly indifferent each class of artificers is to the work of the others. It is still more surprising to observe how frequently they seem indifferent to the preservation of their own.

"In placing stone dressing in a brick building due allowance should be made for the settling. The bricks containing more joints will diminish more in time than the stone. This matter being neglected, disastrous results may be anticipated."

The above caution may be applied in a greater degree when brickwork is faced with stone.

It is useless to state in the specification that all "stone must be free from vents, shakes, etc.," if it is not executed. A strict eye must be kept on the contractor, or many things will take place which may be the ruin of a design, which, being justly carried out, might be a credit to its author.

In masonry it is seldom that the stones employed in the construction of a wall are of the same size and shape as bricks are in brickwork. Uniformity of size enables one to make certain rules and regulations by which the placing of the materials is rendered easy and the same under all similar circumstances; but when the dimensions of the materials are various, no such fixed rules can be formed, and the goodness of the building in this latter is dependent to a great extent on the skill of the artisan. Thus it is that masonry requires far more skill to build than brickwork.

Certain principles, however, exist which guide, or rather ought to guide, the mason in his work. The more these are kept in mind and acted upon, the better will be the construction. These principles will now be touched upon.

A. The masonry should be built to as great an extent as practicable in such a manner that the principal force acting on the wall will be perpendicular to each course.

In cottages the principal force is the pressure of the floors, roofs, etc., so that the principal is important.

B. Continuous joints in masonry should be avoided. The reasons for this with regard to brickwork are obvious, and the same hold good for masonry.

C. All stones composed of layers, strata, or beds should be placed in such a way that the pressure which they have to sustain shall act at right angles, or as nearly at right angles as possible, to the directions of such layers, strata, or beds.

The reason for this is that if they were placed in any other position they would not be used to the best advantage with regard to strength; and the more they depart from the principle just given the weaker is the construction, and the greater the waste of good material and strength. By way of an experiment, let a stratified stone of small dimensions be taken, and endeavors made to break it, and it will be found that the weakest points are between the layers, and that if the stone is struck on its edge it will break much easier than when the force is applied on its face. When a stratified stone is placed vertically, having the layers of which it is made up parallel to the face of the wall, the action of the weather splits these layers off in succession.

There are a few exceptions to this principle, C. For example, in cornices with overhanging or undercut mouldings the layers should be vertical and at right angles to the face of the wall, as

the overhanging portions would otherwise have a tendency to drop off.

When a stone is laid on the face of the layers it is said to be on its "natural bed" from the fact that it is in that position in the quarry.

It will be obvious to the reader that in walls, in order to have the pressure perpendicular to the direction of the layers, the stone must be laid on its natural bed. Unstratified stone, of course, may be laid indifferently, and, in fact, must be, seeing they have not the layers for guidance.

D. The surface of dry and porous stones must be moistened before the stones are bedded or laid in any work.

If this be not done the water will evaporate too fast, and reduce the mortar to powder. The evaporation in this case would be hastened on by the stone absorbing the moisture; whereas the damping of the stone before usage would prevent this from taking place. It must be remembered that mortar hardens by the slow evaporation of the water, and by the absorption of carbonic acid from the atmosphere. If evaporation do not take place the mortar will always remain soft. Thus, although care should be taken to prevent too fast a drying up, caution is necessary not to allow this to be a total dismissal of evaporation, which, if it be very slow, is most favorable to the ultimate hardness of the mortar.

E. The stones should have their beds even, and not contain hollows.

F. All spaces between the stones should be as small as possible, and filled with mortar.

The larger the spaces the weaker is the wall, and the greater the chances of it being damp. Mortar is necessary to bind the stones to each other, and thus add to the stability of the structure.

G. As many headers or thorough bonds as practicable should be employed.

Headers in masonry are binders across the thickness of the wall, extending about two-thirds of the way through. Thorough bonds are headers which extend from one face to the other. In walls built up in courses the bond-stones are usually from 4 feet to 5 feet apart in each course.

The width of bond-stones are frequently one and a half times their height, and the area of their ends should be to the area of the wall in the proportion of three to sixteen, or thereabouts. It is better to have more bond-stones than the limits here named than less; but after a certain point "too many" is as bad as "too few."

These seven principles are very important, and can never be too deeply considered in designing dwellings to be built of stone. —*Illustrated Carpenter and Builder*.



THE MONTANA ASSOCIATION OF ARCHITECTS.

I TAKE pleasure in notifying you that an architectural society has been formed (Dec. 15, 1903,) by the architects of this State. The constitution and by-laws have been written and adopted, based upon the constitution and by-laws of the American Institute of Architects, and it is our aim to eventually become a member of the Institute.

J. F. EVERETT, Secretary.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

SIMMONS COLLEGE, BACK BAY FENS, BOSTON, MASS. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

CENTRAL PAVILION: SIMMONS COLLEGE, BOSTON, MASS.

POMEROY HALL: WELLESLEY COLLEGE, WELLESLEY, MASS. MR. J. A. SCHWEINFURTH, ARCHITECT, BOSTON, MASS.

THE NEPTUNE FOUNTAIN, NUREMBERG, BAVARIA. THE BROTHERS SCHWEIGGER, SCULPTORS.

THIS plate is copied from *Deutsche Bauzeitung*.

THE NEW HEATH SCHOOL, BROOKLINE, MASS. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

THE "ALT BAYERN" BUSINESS PREMISES, BERLIN, PRUSSIA. HERR W. WALTHER, ARCHITECT.

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Additional Illustrations in the International Edition.

THE PALACE OF MANUFACTURES: LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, MO. MESSRS. CARRERE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

SOCIOLOGICAL INSTITUTE, LEOPOLD PARK, BRUSSELS, BELGIUM. MM. BOSMANS & VAN DE VELD, ARCHITECTS.

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VIEW DOWN THE LAGOON: LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, MO.

OFFICES OF THE AGRICULTURAL CREDIT ASSOCIATION, DRESDEN, SAXONY. HERR KURT DIESTEL, ARCHITECT.

This plate is copied from *Blätter für Architektur*.



SUBMARINE PHOTOGRAPHY.—With the aid of a strong electric light Louis Bonton of Paris has succeeded in taking photographs 140 feet below the surface of the ocean. With improved apparatus he expects to be able to take pictures 300 feet below the surface, or 100 feet deeper than divers go.—*Exchange*.

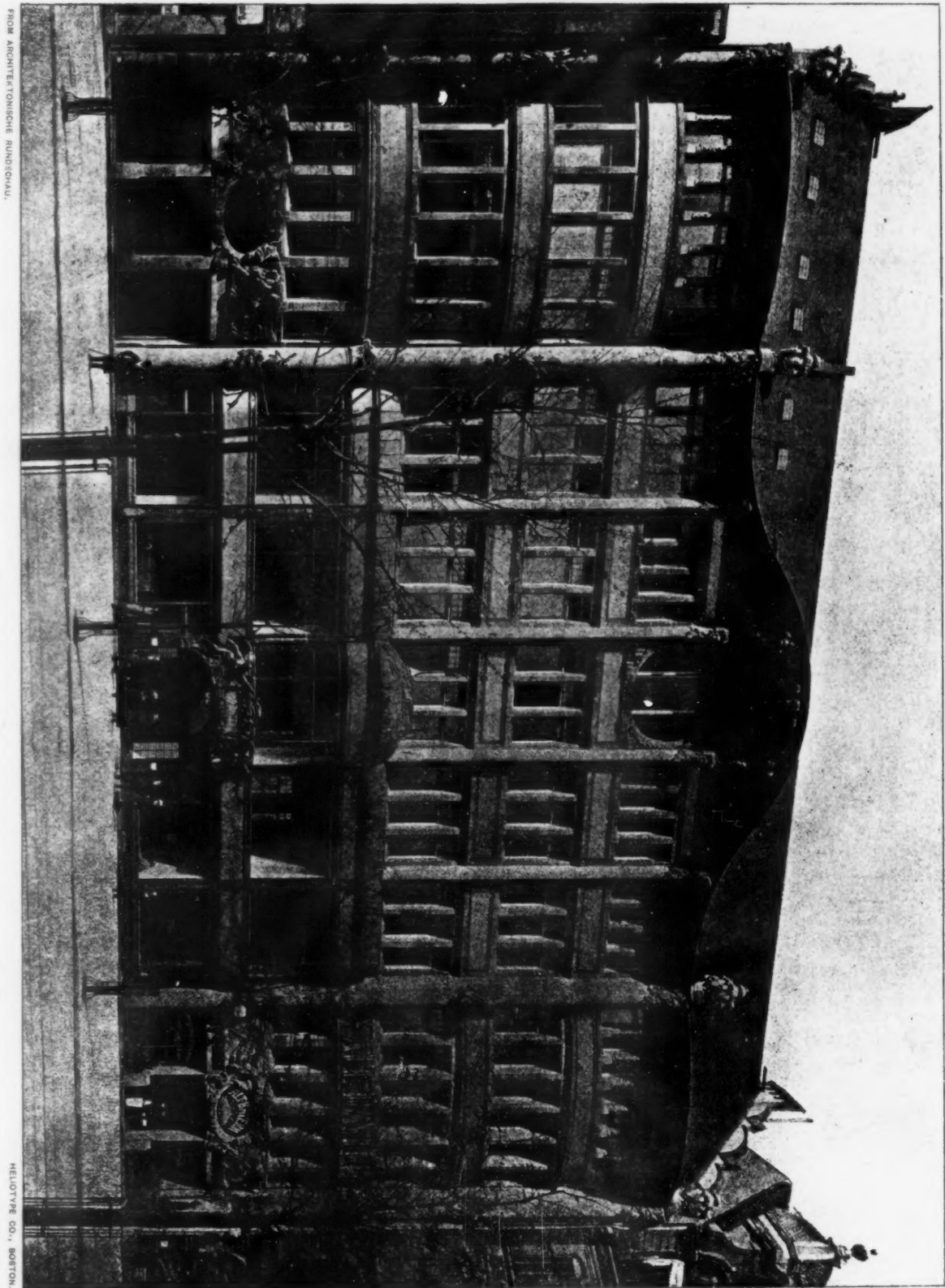
EQUESTRIAN STATUES OF KOSCIUSKO AND FITZ-JOHN PORTER.—An equestrian statue of Kosciusko, by Alexander Chodzinski of Warsaw, now stands in Humboldt Park, Chicago, as the gift of Polish immigrants. Kosciusko raises high his sword as if waving troops forward to battle. The monument cost \$30,000, and the unveiling was the occasion of great pomp and oratory on the part of the Polish residents of Chicago. An equestrian monument of Gen. Fitz-John Porter, by James E. Kelly, has been placed in Haven Park, Portsmouth, N. H., but there was no unveiling, there were no speeches, and there was no procession. One morning the statue was found uncovered, and that was all. The monument was erected with funds left by the late Mr. Eddy of Boston, but it appears that the citizens of Portsmouth take little interest in a memorial to a man who during the Civil War was accused of neglect of duty as a soldier. Fitz-John Porter was exonerated later on, but the charge that he did not move his troops at the right moment owing to jealousy of his superior officer always clung to him.—*Exchange*.

LOCATION OF GAS WELLS BY SCIENTIFIC METHODS.—In a recent *Bulletin of the United States Geological Survey*, Myron L. Fuller has written a paper on the Hyner gas pool of Clinton County, Pa., which is interesting, owing to the scientific methods of location. This pool, which is one of the newest and most eastern of Pennsylvania's gas pools, is located on the west branch of Susquehanna River between Hyner and Ritchie stations on the Pennsylvania Railroad. These stations are about three miles apart, and the gas wells are half-way between them, at the point where the crest of a notable anticline crosses the river. It has been the aim of the operators to develop the pool according to the "anticlinal theory." An old well, drilled in 1877, about a mile north of the crest of the anticline, encountered gas at several horizons, and also traces of oil. These shows of gas and oil finally led to the drilling of a second well in 1903 by the Interstate Development Company. This well, which is almost exactly at the crest of the Hyner anticline, was drilled to a depth of about 2,000 feet, when the tools were lost. Gas was encountered at 576, 950 and 1,225 feet. It is reported that the gas showed a rock pressure of 480 pounds, and the pressure is said to be increasing instead of diminishing. The success of this venture led the operators to sink another well, close to the river, about 1,800 feet from the first, and on ground 30 feet lower. Like the earlier well, it is supposed to be situated on the crest of the anticline. Gas was found at 430, 480, 604, 815, 1,068, 1,133 and 1,225 feet.—*N. Y. Evening Post*.

MARVELS OF LANDSCAPE GARDENING.—If there is one branch of horticulture in which vast improvements have been made of late years, it is landscape gardening. It is now possible to make luxurious scenery out of a barren waste, and transform a piece of ground which even a farmer would despise into a veritable garden of Eden. However flat and stony the ground may be, the landscape maker will soon change the aspect of affairs. His first

course is to obtain a plan of the ground, in which he marks the position every tree and shrub is to occupy. If he wishes to make the area at his disposal appear much larger than it really is, he will use only diminutive trees, but it is quite possible for him to transplant giant oaks and elms which have been growing for centuries from the forest direct to the ground he is cultivating. Directly a tree has been selected for transportation a square is marked around it, and the workmen dig to a depth of ten feet or twenty feet, according to the girth of the tree. This being done, a channel is made on each side of the tree and two tunnels bored through its roots, in which powerful beams are inserted. Round these beams chains are placed at each end, and the tree is lifted as it stands onto a wagon which is waiting in readiness, and thence transported to its destination. Forest oaks cost from £1 to £20 apiece, so that an avenue of these monsters can easily prove expensive. An avenue of cedars, however, is the ambition of most garden lovers, and their cost is enormous. Quite recently a well-known financier purchased thirty such trees at a cost of £250 apiece, and had them conveyed bodily a distance of over three hundred miles. Rivers and lakes teeming with goldfish or trout are comparatively easy to make. If there is a stream in the neighborhood, its course can be diverted, and, by damming, a lake of any size can be formed within a few days. The cost of an artificial lake, guaranteed not to dry up in summer, averages £50. But the beauty of the artificial garden is its ruins. However well the ground may be laid out, with lakes and fountains meeting the eye at every turn, it lacks an ancient appearance unless tumble-down ruins may be seen amid the trees. Artificial abbeys and churches can be so built that even an expert may be deceived, the blackened stones and ivy-hung wall resembling those of Norman origin. The landscape gardener will supply you with ancient abbeys in any number from £150 to £400 apiece. Here and there, too, the garden can be given a venerable appearance with the aid of an ancient grotto or two. These grottos are just built of limestone, and then deliberately sprayed with dirt and grime. Quite a nice little grotto, apparently a couple of centuries old, can be supplied for a £10 note. The cost of such gardening is naturally very heavy, but the result well repays the outlay. For instance, a well-known baronet last year created for himself in Surrey an ancestral estate at a cost of £70,000, exclusive of the house. The bill for trees alone amounted to £18,000, and another £4,000 was spent in bringing soil from America. In making a "time-honored" abbey £2,500 was expended, while £6,000 was laid out in a lake for jack and three trout streams.—*London Tit-Bits*.

GYPSUM IN THE UNITED STATES.—The production of gypsum in the United States in 1903 is given by the United States Geological Survey as 1,041,704 short tons, valued at \$3,792,943, as against 816,478 short tons, valued at \$2,089,341, in 1902. The production of gypsum is reported as crude gypsum, land plaster, plaster-of-paris, and wall plaster, according to the condition in which the gypsum first reaches the market. The figure given as that of the total production is, therefore, an estimate arrived at by computing the whole output as crude gypsum. The total value given is that of the product in its different forms as it reaches the market. The advance in the use of gypsum has resulted mainly from the increased use of gypsum wall plasters in modern buildings. Much of the gypsum sold as plaster-of-paris is subsequently manufactured into wall plaster by local firms. About 3,000 tons are annually utilized in bedding plate glass during the process of grinding and polishing. The production of land plaster is confined to certain of the Eastern States, where it is used as a fertilizer, and to a few localities in the West, where it is employed in neutralizing "black alkali." The gypsum which is sold crude is in large part ground locally and utilized as land plaster. Some of it enters, as a small percentage, into the composition of certain Portland cements. It is interesting to note that the proportion of crude gypsum calcined to the total crude production rose from 80 per cent in 1901 to about 83 per cent in 1902, and to about 86 per cent in 1903, but the total calcined production in 1903 was more than the total crude production of 1901 by about 108,000 tons. It is also worthy of note that the value per ton of the calcined gypsum rose from \$3.31 in 1901 to \$4.77 in 1903. The gypsum industry is carried on commercially in twenty-two States and Territories, which, named in the order of their importance as producers, are Michigan, New York, Iowa, Texas, Ohio, Oklahoma, Kansas, Wyoming, Colorado, Utah, Virginia, California, South Dakota, Nevada, Montana, Oregon and New Mexico. The five other States concerned in the industry do not produce gypsum, but contain large plants to which the raw material is shipped, and at which it is converted into wall plaster and plaster-of-paris. Gypsum to the value of \$467,597 was imported into the United States during 1903. It came chiefly from Nova Scotia, and entered the ports of the New England and Northern Atlantic States. A considerable amount has been received at San Francisco from Mexico in previous years, but none was imported from there in 1902 and 1903. The United States is the second country in the world in the production of gypsum, yielding precedence only to France. Canada is third, Great Britain fourth and Germany fifth.—*Exchange*.



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HELIOTYPER CO., BOSTON.

THE "ALT BAYERN;" BUSINESS PREMISES ON POTSDAMMERSTRASSE, BERLIN, PRUSSIA.
W. WALTHER, ARCHITECT.

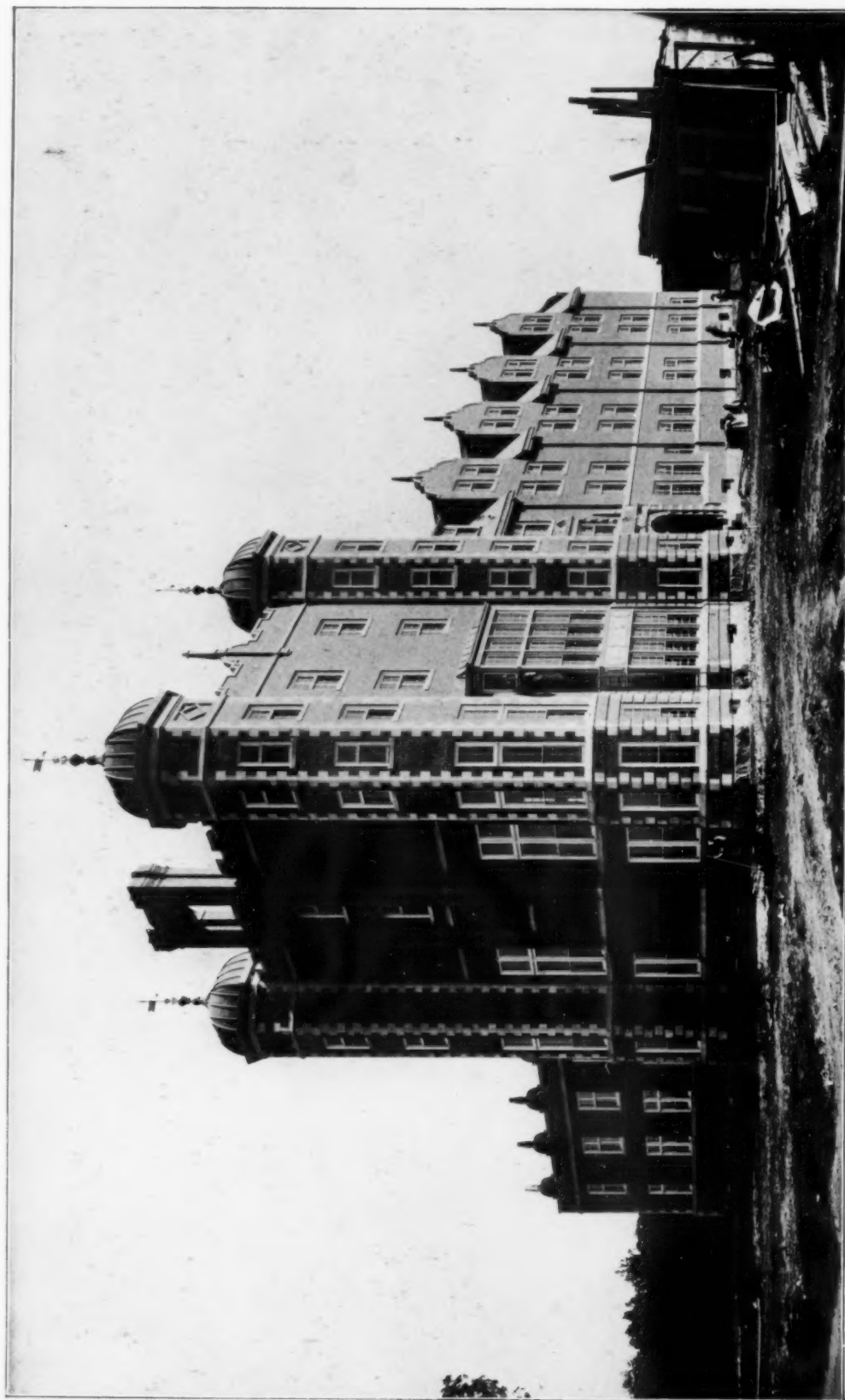
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Oct. 15, 1904.
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*Simmons College, Back Bay Fens, Boston, Mass.
Peabody & Stearns, Architects, Boston.*

*The American Architect,
October 15, 1904
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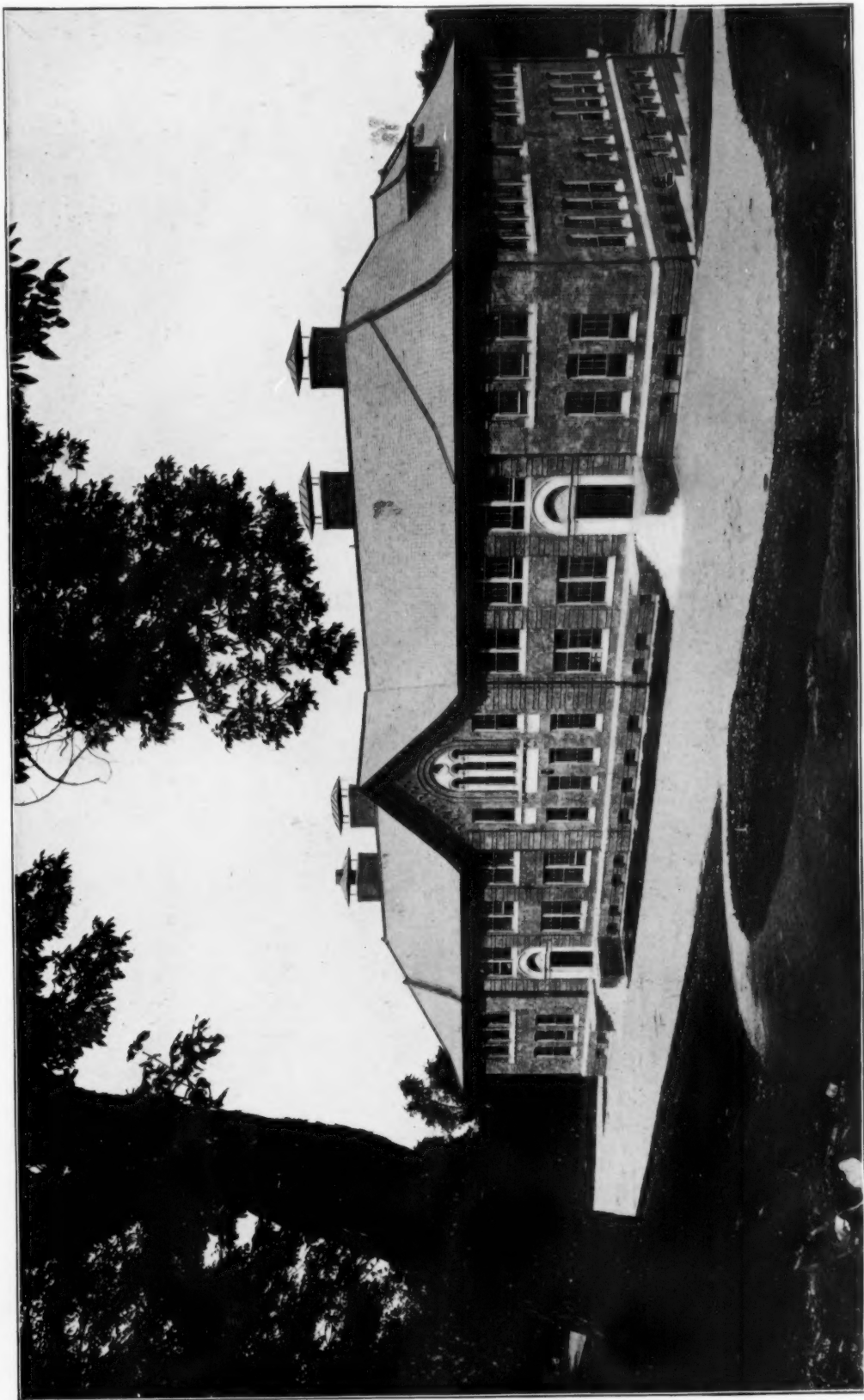
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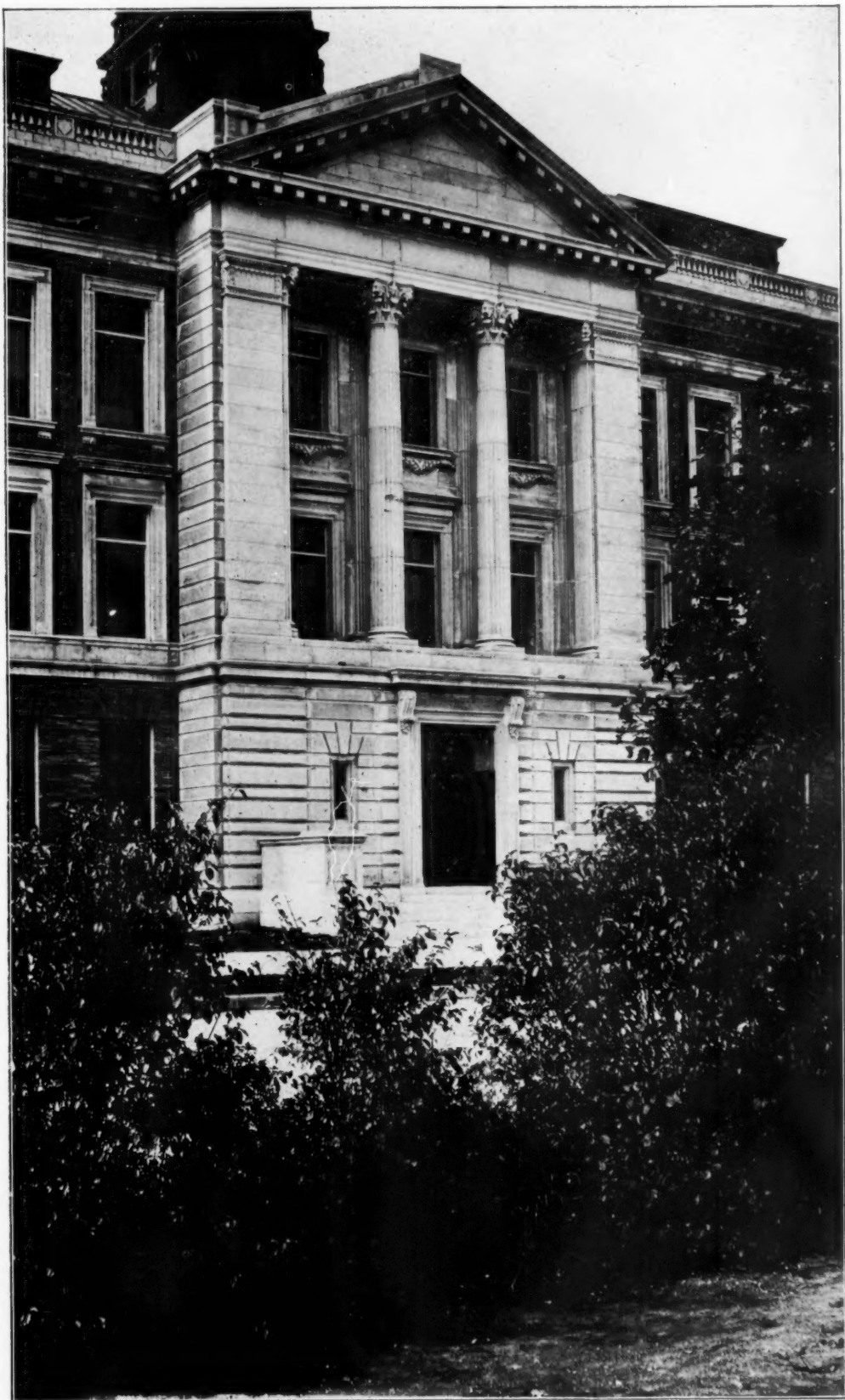
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THE BROTHERS SCHWEIGGER, SCULPTORS.

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