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NO. 1491



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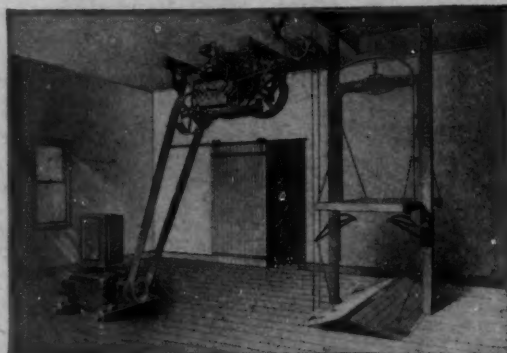
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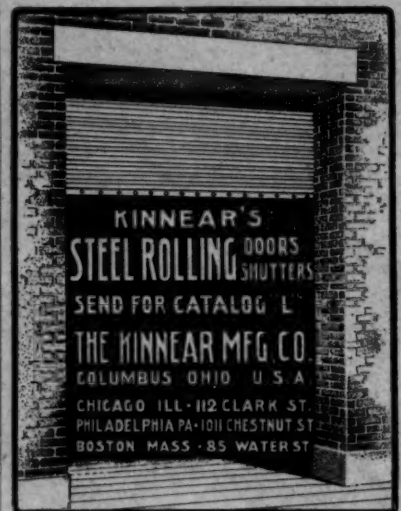
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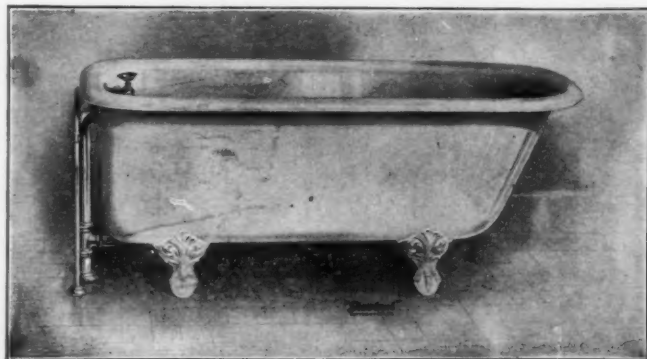
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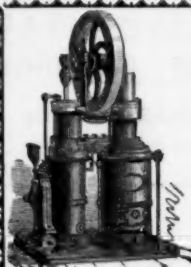
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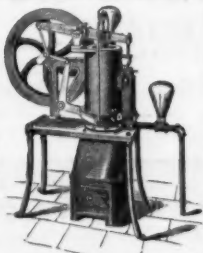
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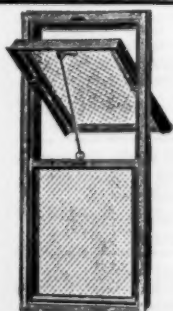
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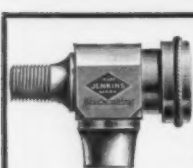
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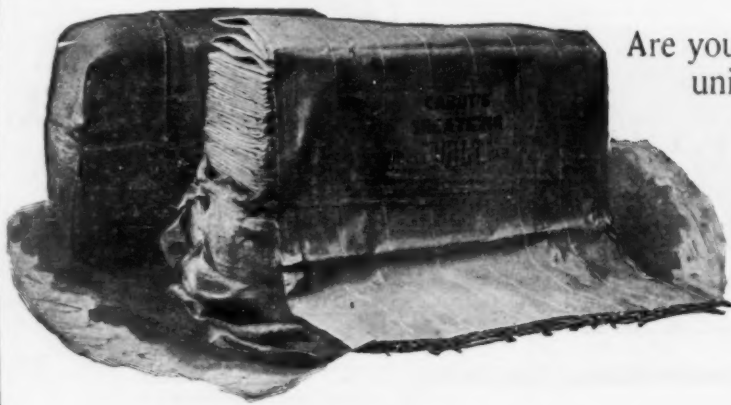
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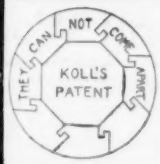
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BUILDING INTELLIGENCE.

(Reported for the American Architect and Building News.)

ADVANCE RUMORS.

ANNAPOLIS, MD.—It is stated that an engineering experimental station is to be erected on Severn River, opposite the Naval

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Academy. Congress has appropriated \$250,000 for the building and \$150,000 for equipment.

BALTIMORE, MD.—Architects Francis Joseph Norton & Co., of Jacksonville, Fla., have been commissioned to prepare plans for a six-story office building to be erected at West Pratt St., Baltimore, Md., for the Reid estate. The cost of this building will be \$150,000.

J. E. Laferty, Builders' Exchange building, is preparing plans for a six-story brick and stone building to be erected for Louis Federleicht, at Baltimore and Liberty Sts. and Hopkins Pl.

BEATRICE, NEB.—Thomas Kimball, of Omaha, Neb., is preparing plans for a depot to be erected in this city by the Burlington Railway.

BOSTON, MASS.—Press reports state that Fernilla W. Clark has purchased a large lot of land at the corner of Normandy and Seaver Sts., and will erect a number of fine houses thereon.

Plans are being prepared for a \$100,000 stable for Henry Siegel & Co., to be erected on the corner of Albany and East Dedham Sts. The site contains about 9,000 feet of land. It is the intention of the interested parties to begin at once the construction of this stable, which will be one of the finest of its kind in the country, being five stories high, of brick and stone and to contain every known improvement. There will be 125 stalls, both box and single, and a complete blacksmith's shop.

The building on West St. embracing Nos. 25 to 31 is to be torn down and a new steel-frame brick and terra-cotta mercantile structure costing about \$200,000 will be erected from plans of Winslow & Bigelow, for the lessees, T. D. Whitney & Co.

BRADDOCK, PA.—McCormell & Dowler, Pittsburg, have completed plans for a \$100,000 granite and brick bank building for the Braddock National Bank.

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

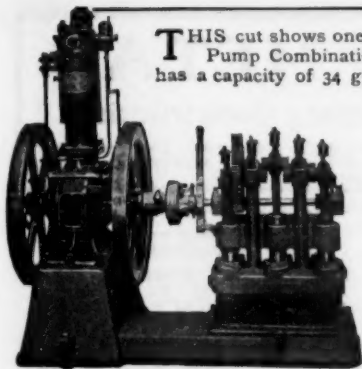
CAMBRIDGE, MASS.—Emerson Hall, Harvard's proposed lecture hall, is to be erected at once. A permit to build was granted recently. The cost of the building will be about \$150,000, the amount having been subscribed by admirers of Emerson. It is to be located on Quincy St., and will be 75x150 feet. The architect of the building is Guy Lowell, Boston.

CHICAGO, ILL.—St. Gabriel's Roman Catholic congregation will build a three-story school and parish-house at Forty-fifth and Wallace Sts. It will be three stories high, of brick and stone, and will cost \$75,000.

Plans have been drawn by Jos. Molitor, 160 Washington St., for a school to be erected at Twenty-second and Whipple Sts., for St. Casimir R. C. Church, of which Rev. Adelbert Furman is the pastor. The building is to be three stories high, 80x125 feet, and the cost is estimated at \$55,000.

D. H. Burnham & Co., Rookery Building, have been requested by the South Park Commissioners to design the recreation buildings for the small parks. The board has appropriated \$750,000 for the buildings.

H. L. Newhouse, 4630 Prairie Ave., has completed plans for a two-story synagogue, 66x90 feet, to be built at Belden Ave. and Burling St., for the Temple Emanuel congregation; cost, \$25,000.



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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

CINCINNATI, O.—McLaughlin & Gilmore have completed plans for the first of the Carnegie libraries. It is to be constructed of sandstone, 70x100 feet, arranged for 30,000 volumes. The endowment of Mr. Carnegie provides for five libraries, to be built in various parts of the city. The site for the first is at Locust St. and Kemper Lane.

DES MOINES, IA.—Hallett & Rawson, 615 Walnut St., have been selected by the Capitol Commission to prepare plans and supervise the work of restoring, repairing and improving the Capitol building. Approximate cost, \$400,000.

DETROIT, MICH.—Donaldson & Meier, Moffat building, have prepared plans for a two-story brick building to be erected for the A. E. Brush estate by the Union Trust Company, at Jefferson Ave. and Brush St.; estimated cost, \$35,000.

GREENWOOD, MISS.—A new court house for Le Flore County, costing \$75,000, is contemplated. Le Flore County Board of Supervisors have appointed a committee composed of ex-Attorney-General Monroe McClurg, Hon. S. R. Coleman and Judge R. W. Williamson to secure options on building sites for the new county court house.

HARTFORD, CONN.—Plans and specifications by J. J. Dwyer have been accepted for the new addition to the St. Francis Hospital. The addition, fronting on Collins St., will be 88 feet in length and 184 feet deep. It will be twenty feet from the present building, but will have connection with it on each floor by corridors. The new building will be much larger than the old one, and of fireproof construction. The public and private wards and the children's ward have received special attention from the architect, and the surgical department will be thoroughly up to date. The sanitary arrangements will be as nearly perfect as it is possible to make them.

HATTIESBURG, MISS.—The Board of Supervisors of Perry County have awarded a contract to McGee & Garber for \$24,258.20, to build a new court house and jail at New Augusta for the First Judicial District of the county. The board is advertising for bids for \$50,000 in bonds to be used in the construction of a court house and jail in this city for the Second District.

LITTLE ROCK, ARK.—The Building Committee of the School Board has accepted

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

the plans of Frank W. Gibb, of Little Rock, for the new \$100,000 high school building, to be erected at Seventh and Louisiana Sts.

MILWAUKEE, WIS.—Report states that the Statutory Commission has decided to ask bids for erecting the North Side High School. Appropriation, \$130,000.

A six-story brick and stone building, costing approximately \$150,000, will be erected at the southeast corner of East Water and Buffalo Sts. by the John Hoffman & Sons' Company, for a wholesale grocery warehouse.

MOBILE, ALA.—The State Railroad Commission has approved plans for a union station to be erected in this city, at a cost of \$150,000.

NEW YORK, N. Y.—The competition for the United Engineering Building has been decided in favor of Herbert D. Hale, of Boston. There were 26 plans submitted. The sum of \$1,500,000 has been given for the erection of two buildings by Mr. Carnegie. The plans of Mr. Hale call for an 11½-story building, 50x100 feet, facing on West 40th St., and will cost nearly \$1,000,000.

Plans have been filed for erecting a two-story brick fire house to cost \$40,000 at 136th St. and Cypress Ave. Robert D. Kohn, architect, 170 Fifth Ave.

OAKDALE, L. I., N. Y.—Plans have been prepared for a residence to be erected at Great River for Geo. C. Taylor, to cost about \$500,000.

PHILADELPHIA, PA.—Horace Trumbauer has completed the plans for the William L. Elkins Masonic Home for Orphan Girls. The institution, which is to occupy a plot of ground at Broad St. and Hunting Park Ave., near the proposed boulevard, was provided for by a bequest of from \$240,000 to \$250,000, made in a codicil of Mr. Elkins's will. As designed by Mr. Trumbauer, the orphanage will be a three-story and basement brick building of colonial type of architecture, with terra-cotta facings. There will be a central building, 68x125 feet, flanked on each side by a wing, both 36x107 feet.

J. Horace Cook, architect of the Board of Education, is preparing plans for a \$50,000 addition to Nichols School.

PITTSBURG, PA.—At a recent congregational meeting of the Avalon Presbyterian Church it was decided to build a church to

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

cost between \$40,000 and \$50,000. Rev. C. H. Dunlap is pastor of the church.

Muller & East, 4 Eighth St., have awarded to Constable Brothers the contract to erect the Alinda Preparatory School, at Fifth Ave. and Craig St., to cost about \$50,000.

Wm. Miller & Sons, Frick building, have been awarded the contract to erect the Carnegie Library addition, at \$2,591,993. The contract is only for the construction of the buildings and plumbing.

ROCHESTER, N. Y.—The new Roman Catholic parish of Our Lady of Perpetual Help has acquired a tract of land on Joseph Avenue, near Norton Street, 300x500 feet, and work on a series of new buildings is to be begun at once. A school, a church, a pastor's residence and a convent are to be erected in the near future.

The Kirley estate will build a \$175,000, seven-story store building, 67x160 feet, in Main Street East. George A. Carnahan is counsel for the estate.

SAN FRANCISCO, CAL.—Meyer & O'Brien, Chronicle building, have completed plans for changing the Bishop Block into the Grand Pacific Hotel. The cost of the work is estimated at about \$500,000.

SEATTLE, WASH.—Plans for the new Municipal Building have been filed. The building will be situated on the triangular lot between Fourth and Fifth Aves. and Yesler Way and Terrace St. The probable cost will be about \$225,000, unless a seventh story is added, and then \$30,000 additional will be expended. The basement is to be of stone and the body of the structure of brick.

SENECA FALLS, N. Y.—Report states that Wilson Potter, No. 1 Union Square, New York City, has been commissioned to prepare plans for a \$25,000 school building for Seneca Falls. This figure includes the building alone.

SHELBYVILLE, IND.—The Odd Fellows have secured a site, and are having plans prepared for a three-story brick and stone Lodge Hall.

SKOWHEGAN, ME.—The Village Trustees are considering the erection of a new engine house, at a cost of \$14,000.

SOUTH HADLEY, MASS.—Miss Mary E.

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lights, Fire-proof Window Frames and Sash, and
Opening Fixtures to operate ventilating sashes.

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Woolley, president of Mount Holyoke College, has informed the alumni that the \$50,000 required has been subscribed, and the offer of Mr. Andrew Carnegie of \$50,000 on conditions is ensured. The amount of \$100,000 will be used to construct a library, and preparations for this building will be commenced at once.

SPRING CITY, PA.—Governor Pennypacker has signed papers for the purchase of land near this city on which to erect a hospital for the feeble-minded and epileptics. It is proposed to erect buildings to accommodate 500 inmates, and the expenditure to be between \$500,000 and \$1,000,000.

ST. LOUIS, MO.—The St. Ann's Widows' Home and Foundling Asylum will erect, at 5351 Page Avenue, a new building, to be 3½ stories high, of fireproof construction, and to cost \$210,000.

SWISSVALE, PA.—The School Board propose erecting a twelve-room brick school at Milton and Braddock Avenues, and Charles Street, Wilkins Place, at a cost of \$30,000.

TACOMA, WASH.—The City School District, No. 10, will remodel the Tourist Hotel into a high school, at a cost of \$5100,000.

TAUNTON, MASS.—Thirty-three thousand five hundred dollars has been appropriated for the purchase of the Galligan lot and the erection of a modern six-story brick building for a new school to take the place of the North Pleasant St. school.

TEXARKANA, ARK.—The School Board has decided to erect two schools, one costing \$330,000, the other \$15,000.

VINCENNES, IND.—The Baptist Church Society is to erect a new edifice, at a cost of \$15,000. Rev. W. G. Law, pastor. Gault & Gault, architects, have prepared plans.

WALLINGFORD, PA.—Plans prepared by Delano & Aldrich, 9 East 41st Street, New York City, for a \$100,000 building, to be erected here for the Orphan Asylum of Philadelphia, have been accepted.

WATERTOWN, WIS.—The building of an additional dormitory at the Northwestern University has been decided by the Wisconsin Lutheran Synod. The building will be erected during the coming year and will cost approximately \$50,000. In addition extensive repairs will be made in the university buildings during the summer.

WHEELING, W. VA.—Giesey & Faris have completed plans for an eight-story brick and steel fireproof office building for Col. Henry Schumbach. Cost, \$450,000.

WILKINSBURG, PA.—Kerr & Fox have been awarded the contract for the new hospital which the United Presbyterian Women's Association is to build at Penn and Trenton Avenues. With its equipment it will cost \$150,000. The new hospital will be one of the most complete and up-to-date institutions in the country. It will consist of a main building and two wings, occupying three sides of an open court, which will be partially closed at the rear by a separate power building. The main building is to have 1033 feet frontage, three stories. The wings are to extend back 118 feet. Construction of brick and stone, completely fireproof.

WINCHESTER, VA.—Plans prepared by Barney & Chapman, architects, of New York, for the new Handley Library, have been adopted by the Handley Trustees, and their choice approved by the City Council.

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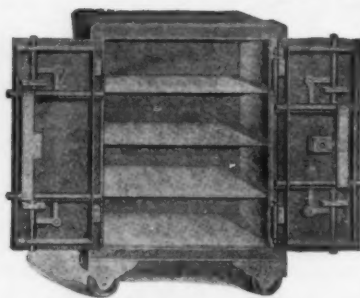
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BUILDING INTELLIGENCE.

(Apartment-Houses Continued.)

of Winchester. This is to be a magnificent building and is to cost \$100,000, exclusive of the equipments, which will be between \$25,000 and \$50,000 more. The library building will stand on the corner of North Braddock and West Piccadilly Streets. It will practically be one story in height of stone and will be surmounted by a dome 35 feet high. The dome will be situated in the rear of the entrance and radiating from it will be two wings, each 80 feet in length.

WINNETKA, ILL.—The Memorial Episcopal Church, together with library, presented to the village of Winnetka by Wm. H. Hoyt, will be designed by Wm. A. Otis, 175 Dearborn St., Chicago; cost, \$60,000.

WINTHROP, MASS.—A Boston syndicate has bought several parcels of land on Crescent Ave. and will erect a modern hotel, at a cost of \$75,000.

WOODHAVEN, L. I.—Plans have been approved for a brick stable to be built by A. D. Matthews' Sons, the Fulton Street merchants, Brooklyn, for a new brick stable at the northwest corner of Jamaica and Vanderveer Avenues, Woodhaven, to cost \$15,000.

WORCESTER, MASS.—A \$90,000 addition to the Classical High School is contemplated by the Committee on Education.

YOUNGSTOWN, O.—Owsley & Boucherle, Wick Bank building, are preparing plans for a six-story brick, stone and steel Masonic Temple, to be erected at Market and Boardman Sts., at a cost of about \$150,000.

APARTMENT-HOUSES.

NEW YORK, N. Y.—Stebbins Ave., cor. Jennings St., 6-st'y bk. flats, 44.30x91.7, flat slag roof; cost, \$45,000; The John Allan Realty Co., 102 East 128th St.; a., G. Robinson & Son, 39 Hancock Pl.

Union Ave., near 165th St., two 5-st'y bk. flats, 42.6x101 and 32.6x100; total cost,

BUILDING INTELLIGENCE.

(Apartment-houses Continued.)

\$88,000; Wm. J. Frey, 1,226 Tinton Ave.; a., John Hauser, 1,961 7th Ave.

PROPOSALS.

CHURCH.

[At Des Moines, Ia.]
Bids will be received until August 1 at the office of Crockett, Gillespie & Barnister, 206 Capital City State Bank Bldg, Des Moines, for erecting a church at E. 13th and Des Moines Sts. 1491

HIGH SCHOOL.

[At East Cleveland, O.]
Bids will be received August 6 by the Board of Education for furnishing material and erecting a high school. J. F. HERRICK, Clerk of Board; Seales & Hirsch, Architects, 308 Electric Building, Cleveland. 1492

CONSTRUCTION.

[At Gallipolis, O.]
Bids will be received until August 3 by the Board of Trustees of the Ohio Hospital for Epileptics for furnishing material and erecting an Industrial Building here. A. P. OHLMACHER, Secretary; Frank L. Packard, Architect, Columbus. 1491

HIGH SCHOOL.

[At Franklin, Ind.]
Bids will be received until July 30 by Walter E. Farmer, Trustee of Franklin Township, for erecting a high school in said township. 1491

HOSPITAL.

[At Cleveland, O.]
Bids will be received until August 4 by the Board of Trustees of the Cleveland State Hospital for furnishing material and erecting an Infirmary Bldg at said hospital. ADAM B. HOWARD, Secretary; Frank L. Packard, Architect, Columbus. 1492

CONSTRUCTION.

[At Ft. McKenzle, Wyo.]
Bids will be received until August 2 for erecting a brick gymnasium and post exchange building, including plumbing, heating, gas piping, electric wiring and gymnastic apparatus at Ft. McKenzle. 1492

HIGH SCHOOL.

[At Davenport, Ia.]
Bids will be received August 2 for erecting a high school. F. G. Clausen, 265 W. 3d St., and P. T. Burrows, Room 63 McManus Building, Davenport, are the architects. A. F. CUTLER, Chmn. Building Committee. 1491



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PROPOSALS.

ADDITIONS.

[At Columbus, O.]

Bids will be received by the Board of Trustees of the Columbus State Hospital until August 5 for furnishing material and completing the third story of the Greer Hospital Building, and for making alterations in the basement of said building. DR. GEO. STOCKTON, Secretary; F. L. Packard, Architect, Hayden Building. 1492

CONSTRUCTION.

[At Peoria, Ill.]

Bids will be received August 10 by Reeves & Baillie, Architects, Y. M. C. A. Building, for erecting (exclusive of heating apparatus and plumbing system) a building for John C. Proctor at Spring Hill Park here. 1491

CONSTRUCTION.

[At Cleveland, O.]

Bids will be received August 1 by Starr Cadwalader, School Director Board of Education, Rose Building, for furnishing material and erecting an addition to Quincy School, including ventilating, heating, etc.; price for labor and material to be submitted separately. 1491

Treasury Department, Office of the Supervising Architect, Washington, D. C., July 12, 1904. Sealed proposals will be received at this office until 3 o'clock P. M. on the 3d day of August, 1904, and then opened, for the construction of new mechanical equipment and fixtures in, and remodeling of the laboratory of the Supervising Architect in the U. S. Treasury Building, Washington, D. C., in accordance with drawings and specification, copies of which may be had at this office, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1491

Treasury Department, Office of the Supervising Architect, Washington, D. C., July 12, 1904. Sealed proposals will be received at this office until 3 o'clock P. M. on the 15th day of August, 1904, and then opened, for the installation of a conduit and electric wiring system for the U. S. Post-office, Lawrence, Mass., 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 Lawrence, Mass., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1491

Treasury Department, Office of the Supervising Architect, Washington, D. C., July 9, 1904. Sealed proposals will be received at this office until 3 o'clock P. M., on the 17th day of August, 1904, and then opened, for the construction (including heating apparatus, electric wiring and conduits) of the U. S. Post-office at Wausau, Wisconsin, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Postmaster at Wausau, Wisconsin, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1491

Treasury Department, Office of the Supervising Architect, Washington, D. C., July 14, 1904. Sealed proposals will be received at this office until 3 o'clock P. M., on the 29th day of August, 1904, and then opened, for the construction (including plumbing, heating apparatus, electric wiring and conduits) of the U. S. Post-office at Moberly, 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 Moberly, Missouri, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1492

Treasury Department, Office of the Supervising Architect, Washington, D. C., July 13, 1904. Sealed proposals will be received at this office until 3 o'clock P. M., on the 22d day of August, 1904, and then opened, for the construction (except heating apparatus) of the U. S. Post-office and Court-house, Florence, South Carolina, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Postmaster at Florence, South Carolina, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1492

Treasury Building, Office of the Supervising Architect, Washington, D. C., July 16, 1904. Sealed proposals will be received at this office until 3 o'clock P. M., on the 3d day of August, 1904, and then opened, for changes in hot water heating main and other piping in trenches in sub-basement to accommodate the piping of new ventilating system, U. S. Treasury Building, Washington, D. C., in accordance with the drawings and specifications, copies of which may be had at this office at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1492

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THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. LXXXV

SATURDAY, JULY 23, 1904

No. 1491



SUMMARY:—

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IT is very regrettable that the amiable and seemingly admirable scheme for expressing in a graceful way the sense of obligation American architects entertain towards the French Administration of Fine Arts does not work as satisfactorily as was expected. The Prix de Reconnaissance des Architectes Americaines, that was established at the École des Beaux-Arts some dozen or fifteen years ago, is not popular, and being unpopular it operates a little to the disadvantage of the Americans who frequent the school, whereas it was the expectation that it would make them amongst the most welcome of the many foreigners who enjoy the artistic hospitality of the National School of Fine Arts. The prize, a monied one, is really of considerable value, from a Frenchman's economic point of view, and it was but natural that Americans, who like money prizes, should believe that Frenchmen would like them too. But there are things that the artistic temperament of a Frenchman holds of higher value than money: art itself for one thing and glory for another; and to a pupil at the École des Beaux-Arts both these things are summed up in the single expression, the Prix de Rome, which each pupil dreams of winning some time and so prolongs the years of his pupillage up to the very age limit. Unfortunately the winning of the American prize gains for the winner none of the coveted "valeurs" which are needed to secure an advance from the second to the first class, to obtain the diploma or to secure eligibility as a competitor for the Prix de Rome itself.

IT would seem that this blemish on an otherwise admirable scheme might be removed, if a proper representation were made to the Ministry of Fine Arts by the American subscribers to the fund. It was certainly their desire and expectation that the prize should be as highly cherished as any, and, at the time

of forwarding the fund, if expression had been given to the desire that the winning of the prize might count as a "first mention," if not as a "medal," we cannot but believe that the aspiration would have been heeded. The power to make the change must still lie with the Ministry of Fine Arts, and we cannot but believe the change would readily be made on proper representation from this side of the water. It is obvious that as the students must win values they, or most of them, will not waste time on a competition which will yield them none. In 1901 the American prize was not even awarded to any one, and last year nine out of the fifteen who entered were put "*hors de concours*"—that is, they did their work too carelessly or else departed from the programme through wilful indifference. Whatever the case, the result, says *La Construction Moderne*, was an "evenement plutôt rare dans les annales d'un concours sérieux."

WHILE in many ways giving the public an agreeable surprise in the sobriety with which it is controlling the situation in New York, the present Tammany administration shows a willingness in inconspicuous matters to lower the standard of performance established by Mayor Low and his associates. The immediate result of the terrible fire and explosion of chlorate of potash in the Tarrant building during Mr. Low's term of office was an investigation into the matter of storing explosives in the city, the modification of the rules governing such storage and the establishment of the Municipal Explosives Commission, each member of which was appointed because of his obvious knowledge of the subject. These members have, one by one, been displaced since the Tammany administration came into control until, a few days ago, Dr. Charles F. McKenna, a consulting chemist by profession, finding that he was the only member of the original board still in office, handed in to the Mayor his letter of resignation, declaring that his new associates had already changed for the worse, and against his protest, so many of the rules, and by so doing had so increased the hazard to which the public was exposed, that he could not consent to share the responsibility for their errors of judgment.

THE force of his action was somewhat weakened through his not knowing that Mayor McClellan had himself vetoed one of the new ordinances which he cited as amongst the most objectionable, to wit, one which allowed the storage of black powder in amounts not exceeding one hundred pounds, and its sale to anyone by any storekeeper who could secure the needful permit. Still the fact that the new board attempted to establish such a rule is sufficient justification for Dr. McKenna's resignation. The ordinary explosion hazard to which the public is exposed by leaky gas-pipes, defective boilers, overcharged soda-water fountains, the experimentation of amateur chemists and the unpreventable housing in any dwelling or apartment of indefinite quantities of sporting ammunition, is great

enough, and officials who seek to increase the dangers by allowing the miscellaneous storage and sale of gunpowder are altogether too ignorant to be kept in office. The explosion hazard has been largely increased by the advent of the automobile, every one of which that operates by hydrocarbons is a potential source of danger, and an all-pervading one, since the machines are passing everywhere in the care of all kinds of persons. The danger from this source is so great that the Boston Manufacturers' Mutual Fire Insurance Company has sent a circular to its policy-holders warning them that the stabling of these machines in insured premises will cause the cancellation of the policy, and recommending the erection of special fireproof buildings for their storage, arranged so as to ventilate at the floor level, as the hydrocarbon gases are heavier than air.

IT is a misfortune that a new fireproofing ordinance that the New York Board of Aldermen is seeking to establish excites such justifiable hostility on the part of architects and builders. The public has a right to every safeguard of life, if not of property, that can be devised, and, generally speaking, it is proper to make the use of such safeguards obligatory on every one for the common good of all. But before the use of any safeguard is made obligatory three things ought to be satisfactorily established: first, that the safeguard is a real one; second, that it can be had in sufficient quantity, and third, that it can be had at a price within the means of everyone. The new ordinance seeks to compel the use of "fireproof wood" in every private building above the level of seventy-five feet, and in public buildings of all descriptions above the height of thirty-five feet, but gives no assurance that the wood the Building Department may allow to be used is actually fireproof or may remain so indefinitely. Nor is it possible to know whether the market can be supplied with fireproof wood as rapidly as building operations require. Finally, it is obvious that if the supply is less than the demand the price will advance artificially, to the greater profit of the owners of the patent rights, who are known to be good friends of the law-making powers. It seems to us that here is one of the cases where municipal ownership should be applied as a cure. If the public law is to compel everyone to use fireproof wood, the public authorities should enable the public to procure it in sufficient quantities at reasonable rates; that is, in the present case, the city should buy up the patent rights and enter on the manufacture of the needed supplies.

THERE seems to be something in the very nature of bridges that is curiously provocative of disputatiousness and the consequent creation of historic record in connection with them. The annals of Old-World cities and towns are full of the records of quarrels over the building of bridges, and the folk-tale and legend are still more prone to take a bridge as the stage on which the tale is wrought out. Just now, New York is making history very fast in the matter of her new bridges, which have come to be all the more important since experts declare that within a very few years Brooklyn Bridge will have to be essentially rebuilt. The original difference of opinion as to the merits of an eye-bar or a wire-rope suspension cable has been more or less superseded by a dispute as to the archi-

tectural treatment of the bridge and its approaches. Curiously enough the Municipal Art Commission is in a position to play a very important part in the matter, and, still more curiously, the members do not quite know how they ought to play it. The law which created the Commission declares that it must "approve" certain structures, amongst others bridges, before they can be built, but it does not specify whether it must approve—or withhold approval, by inference—on scientific, economic or artistic grounds. The Commission did approve the Lindenthal-Hornbostel eye-bar design, but only after its engineering value had been vouched for by competent experts, and it now wisely takes the ground that it ought not to be expected to express an opinion until a similar body of experts has vouched for the engineering integrity of the Best-Carrère & Hastings design. Because of this very proper attitude, Mr. Best has withdrawn his scheme from consideration for a few weeks, for the ostensible reason that he may have prepared sundry drawings and models that have been asked for, and it seems more than probable that before it again reaches the Art Commission it will have been submitted to a competent board of engineering experts, since the pressure of public feeling is turning very strongly in that direction.

ONE of those long-expected accidents happened in New York last week, when a derrick-boom broke and allowed a two-ton stone to fall from the height of six stories upon and through one of the wooden sidewalk tunnels that nowadays are provided for wayfarers as they pass in front of a new building. Fortunately, though several persons were injured by flying splinters of wood and stone, no one was killed. The Police Commissioner, in consequence of this mishap, declares that he is going to do something, as there are altogether too many building-accidents. Of course, theoretically there are too many, yet in view of our slack and hasty ways of doing things there are relatively wonderfully few accidents to complain about. And speaking of slackness, it is rather curious that the Police Commissioner should express such indignation in view of the fact that Eugene Allison, the man most largely responsible for the Hotel Darlington disaster, a man who has been indicted for manslaughter, is still at large and "wanted" by the police, who are under the control of this same official.

CORNELL UNIVERSITY, not disheartened by the set-back its School of Forestry received some time ago through the withholding of the State appropriation which was expected to come to it as a matter of course, has sought a new outlet for its energies and added a new course to the curriculum of its College of Agriculture. This is a two years' course in "outdoor art," which seems to be intended to give undergraduates a chance to discover whether it may not be worth their while, later, to take the four years' course in landscape architecture, a course which is not yet established, although it is to be. The present preparatory course, which plays to the proposed more complete course very much the part that some of the courses in Fine Arts at Harvard play to the Architectural Department, is to be under the charge of Mr. Bryant Fleming, of Buffalo, a practising landscape architect.

THE STORAGE OF EXPLOSIVES IN DENSELY INHABITED AREAS.¹

THE republication of the following paper is made timely by the resignation, a week or so ago, of Dr. Charles F. McKenna, the only member possessing technical training that changes made by the present Tammany administration had left in the New York Municipal Explosives Commission as organized by Mayor Low. Dr. McKenna found that the doings or rather the undoings of his new associates—a plumber, a salesman and a furniture-dealer—were more likely to create than to extinguish dangerous conditions, and felt that in case of accident the blame would be placed on him as the only member who really knew anything about explosives. Amongst the displaced officials were a manufacturer of fireworks and a general in the United States Army.

At first sight it would appear to be better in the interest of public safety to prohibit altogether the keeping of explosives in populous places; but in every civilized community it is necessary to balance the requirements of personal safety against those of important trades. For this reason limited amounts of explosive are allowed to be kept even in the midst of cities in this country, and in most other countries of the world.

For purpose of sale there are two methods in which explosives may be legally kept in populous areas. These are technically known as modes A and B. A trader may keep in either or both of these modes, provided that he takes certain precautions, and that he registers his premises, or, in other words, that he informs the local authority of his intention to keep explosives. The officer of the local authority then has power to enter the premises and see that the legal precautions are taken and that the trader does not keep more than the law allows. Under mode A the explosive is to be kept in a building or fireproof safe detached from a dwelling-house and at a safe distance from any public place or thoroughfare. In most cases, persons who wish to keep under this mode erect a small brick building in a back yard or garden. It is obvious that explosive kept in a detached building is safer than when kept in a shop or dwelling-house, and for this reason the law allows a larger quantity in the former case. However, there is not always a back yard or garden available, and where this is the case the trader has to fall back on mode B, which consists in a substantial receptacle inside his house or shop. He can then only keep one-quarter of the amount allowed for mode A. The actual quantities which may be kept are, in the case of gunpowder, smokeless powder for small arms or fireworks, 200 pounds under mode A and 50 pounds under mode B. In the case of dynamite or other blasting explosive, or where gunpowder and fireworks are kept on the same premises, the quantities are 60 pounds under mode A and 15 pounds under mode B. Fortunately the requirements of trade seldom render it necessary to keep blasting explosives in populous places.

It will be seen that the quantities which are allowed to be kept are sufficient to do a large amount of damage in the event of explosion, and therefore the importance of taking the most stringent precautions to prevent the explosive from being ignited cannot be over-estimated. I regret to say that I have had several opportunities of witnessing the amount of damage and personal injury which may be caused by neglect of precautions in keeping explosive on registered premises. I might instance a case where from neglect of one of the most important regulations about 30 pounds of black and smokeless powder exploded in a gunmaker's shop, with the result that the stone front of the building was thrown into the street, killing and injuring several persons.

I will now deal with the precautions enjoined by law, and with others which appear to me desirable. In the first place, the receptacle in which the explosive is kept must be exclusively appropriated to such keeping, and must be kept locked so as to prevent mischievous or inexperienced persons from access to the explosive. The interior of the receptacle must be free from grit or exposed iron, and must be kept clean and free from spilt explosive. As to the best form of receptacle, there may be some difference of opinion. The ordinary japanned tin trunk is frequently used for keeping explosive under mode B, and, in my opinion, this is a very good form of receptacle, especially for fireworks. Sometimes a strong wooden box is used, while some traders prefer to fit up a cupboard or drawer for the purpose. This latter method has the disadvantage that it is not so easy to remove the

explosive in case of a fire. Gunpowder or smokeless powder may be kept in a fireproof safe, but the law no longer gives any advantage in respect of quantity to the trader who uses this form of receptacle, with the exception of those who register their premises for the keeping of gunpowder only, and who may still keep 100 pounds in a fireproof safe under mode B. This privilege has been taken away by an alteration of the law in regard to premises registered for explosives other than gunpowder, the reason being that the advantage of a fireproof safe for the keeping of explosives is regarded as more doubtful than it was when the Explosive Act was passed. At that time experiments were made by subjecting safes containing small quantities of gunpowder to the heat of an actual conflagration. The results were satisfactory in the highest degree, and there is no doubt that a well-constructed fireproof safe, under normal conditions, does offer good protection to its contents against destruction by fire. Nevertheless, on two occasions well-made fireproof safes have failed to prevent an explosion. The first of these accidents occurred during a fire at a gunmaker's shop, and there is little doubt that the failure of the safe was due to its having fallen from the top of the building and being broken by the fall. The cause of the second accident was, however, much more doubtful. In this instance a fireproof safe by one of the best makers, which was locked and bolted, and which contained nothing but gunpowder, exploded, killing the only man in the vicinity. There was evidence that the rule as to cleanliness of the interior had been neglected, and that gunpowder had been spilt, not only in the safe, but also on the stone floor outside. The only theory which I could form as to the cause of this accident was that the powder spilt on the floor had been ignited, probably by the fall of a steel implement, and that the flash had been communicated to the interior of the safe by means of powder grains crushed in the flange of the door. When an explosion does occur in a safe its effects are liable to be more disastrous than if the explosive is contained in a less substantial receptacle. Another disadvantage of the use of a safe for explosive is that, owing to its great weight, it cannot readily be removed in case of fire. This brings me to the consideration of the best position within a building for the keeping of explosive. The only regulation on the subject is to the effect that the explosive may not be kept in dangerous proximity to articles liable to cause fire or of a highly inflammable nature. Among traders there is considerable difference of opinion as to the safest position in which to keep their explosive. Some prefer to place it at the extreme top of the house, and there is a good deal to be said for this practice. At the top of a building an explosion would generally be less disastrous to life and property than one on the ground floor. Again, when placed in a top room the explosive will be less accessible to unauthorized persons, and will be freer from certain dangers of ignition to which it might be exposed in a part of the building which is much frequented. On the other hand, explosive at the top of a building is more difficult to remove and more likely to be involved in the case of a fire in the building. Again, the keeping of the explosive in an attic often involves the use of a naked light if the receptacle has to be opened after dark, and this may involve a danger which would be absent if the receptacle is kept in a well-lighted shop. On the whole, I consider that the balance of safety is in favor of a light receptacle placed on the ground floor within easy reach of a door, through which it can be removed from the building. It will be seen from what I have said that I regard it of high importance to be able to remove explosive altogether from a building in case of fire, and for this reason I consider it desirable that the chief officer of the Fire Brigade in every town should keep himself informed, not only as to the premises which are registered for explosive, but also as to the position of the receptacle in each case.

Coming now to the causes which lead to the ignition of explosive, I need hardly say that the most frequent cause, and the one against which the most careful precautions must be taken, is the direct application of a spark or flame. The striking of a match in order to examine the contents of the receptacle can only be characterized as an act of reckless folly; but this has been the cause of more than one accident quite recently. A gas flame near the receptacle is not necessarily a source of danger; but if proper care is not taken to keep the receptacle shut and to avoid the spilling of explosive, an ignition may be caused by the careless throwing down of a smouldering match at the time when the gas is being lighted. An ignition from a spark caused by the impact of iron surfaces, or of iron and stone, is of more rare occurrence, but this also must be guarded against. It is advisable

¹ A paper, by Captain Thompson, H. M. Chief Inspector of Explosives, London, read at the International Fire Prevention Congress of 1903.

to cover the floor immediately round the receptacle with linoleum or other soft material, which will not only facilitate the sweeping up of any spilt explosive, but will also prevent the possible striking of a spark between a nail in the floor and one in the boot of a person approaching the receptacle.

The spontaneous ignition of an explosive has seldom been the cause of an accident in recent years in this country. It is true that nearly all nitro-compounds, of which smokeless powders are mainly composed, if improperly manufactured, are liable to decomposition, which may lead to spontaneous ignition; but this fact is now so fully recognized by manufacturers that it is rarely that we meet with explosives showing any tendency to such decomposition. Nevertheless, it is not advisable to keep old samples of such explosives, or samples the origin of which is at all doubtful. The tendency to spontaneous ignition is greater in the case of some fireworks containing colored fires, especially when these have been exposed to moisture. At one time there was considerable difficulty on this score, and several fires occurred which were attributable to the spontaneous ignition of colored fireworks. An order was therefore made prohibiting the manufacture of fireworks containing the admixture of chlorate of potash and sulphur, this mixture having been found to be particularly unstable. Since then there has been almost complete immunity from accidents of this description.

The law of this country prohibits the keeping in one receptacle of explosives which may be dangerous to one another. Thus ammunition which carries its own means of ignition, such as sporting cartridges, is not allowed to be kept with gunpowder; and fireworks, owing to their miscellaneous character, are always to be kept in a receptacle by themselves. There is no danger, however, in keeping any of the varieties of smokeless powders and blasting explosives authorized in this country in the same receptacle, and this is allowed by law.

Some of the worst accidents with explosives which have occurred in towns have originated in the filling of sporting cartridges in gunmakers' shops, but in every case some gross breach of the regulations has led to the disaster. Almost every operation of manufacture carried on with explosives is attended with some degree of danger, and though the operation of filling cartridges is not regarded as one of the most dangerous, it is nevertheless one in which ignitions sometimes occur. Consequently strict precautions should always be taken in the room where the operation is carried out. The most important of these is the limitation in the quantity of explosive present. The law fixes the limit at five pounds of gunpowder or smokeless powder. It also requires that no other work shall be carried on at the same time, and that no fire or artificial light of an unsafe kind shall be in the room. In addition to the requirements of the law, it is advisable to limit the number of persons present to two, and also to be careful as to the sweeping up of spilt powder. To facilitate this it is well to have both the filling bench and the floor covered with linoleum.

A further precaution enjoined by law is that no package containing more than one pound of black or smokeless powder may be opened on registered premises. The object of this regulation is to prevent any large amount of powder from being exposed in a shop, and also to minimize the chance of the explosive being spilt. The rule is relaxed as regards the room where cartridges are filled, where, as a matter of convenience, packages containing five pounds of powder may be opened.

In addition to the regulations as to the keeping of explosive, the law of this country restricts the manner of sale; and some of the rules under this heading have a more or less direct bearing on fire prevention. For instance, explosive may not be hawked or sold in a public thoroughfare. Not long ago a rather serious conflagration ensued from a breach of this regulation coupled with criminal recklessness. An enterprising traveler called at a shop with a box of fireworks for sale. In order to show their quality he let one off in the shop. The whole contents of the box became ignited, with the result that the shop was set on fire. Again, explosive may not be sold to children under the age of thirteen, a precaution that needs no comment.

I have dealt only with the keeping of comparatively small quantities of explosives, because where it is desired to keep larger quantities it is necessary to find a place where certain specified distances can be maintained from inhabited houses. Such a place can hardly be described as being in a densely inhabited area, and therefore the consideration of the distances which should be maintained does not lie within the scope of this paper.

PETROLEUM.

We now come to the consideration of the storage of petroleum, and here we have to deal with a somewhat different class of danger, which must be met by different precautions. From the point of view of fire prevention, I regard petroleum as more dangerous in some respects than explosives. In the first place, it is in more general use and more extensively stored in populous places. If an explosion of gunpowder occurs much local damage may be caused, but usually the whole of the powder will have been consumed, and the resulting fire may not be difficult to deal with. It is otherwise with petroleum. If an explosion of petroleum vapor takes place the damage done may be quite as great as that due to the gunpowder explosion, while the after consequences may be much more serious. The vapor explosion will almost certainly be followed by a fierce conflagration of the petroleum itself, and if any considerable quantity is present the conflagration may be such as to defy the efforts of the most skillful fire brigade. Water is of little use in extinguishing a petroleum fire, as the liquid will float and continue to burn on its surface. Moreover, the burning petroleum will sometimes flow from its original position, spreading the fire as it goes. Cases have occurred where the burning liquid has flowed on to the surface of the water in a harbor and caused serious damage to the shipping. I have no wish to exaggerate the dangers in storing petroleum, but only to indicate the very serious consequences which may ensue from the neglect of ordinary precautions, which, unfortunately, sometimes prevails amongst those who trade in this commodity.

Before dealing with these precautions it may be well to say a few words about the properties of petroleum, in order to dispel certain misconceptions which appear to be rather widely entertained. Strange as it may seem, it is by no means uncommon to meet with well-educated persons who believe that petroleum is in itself an explosive, while others believe it to be capable of spontaneous ignition. These persons generally hold the belief that when the liquid is raised in temperature to a degree known as its "flash point" it explodes, bursts into flame, or else undergoes some marked physical change. These beliefs are, of course, absolutely unfounded.

It would be out of place here to undertake an elaborate discussion of the chemistry of petroleum; suffice it to say that the main constituents are carbon and hydrogen, and that these are bound together in molecular groups according to certain definite chemical laws. These groups contain different numbers of atoms according to the particular variety of petroleum. In general it may be said that the simpler the group and the fewer the number of atoms of which it is composed, the lighter and more volatile will be the petroleum. The simplest groups are gaseous at ordinary temperatures, whilst the most complex are generally solid. Thus what is known as the paraffin series commences with marsh gas, and, passing through the various grades of spirit, illuminating, and lubricating oils, ends in the solid known as paraffin wax. In practice it is seldom that a truly homogeneous variety is met with. All the descriptions of petroleum in commercial use are composed of more than one molecular group. Consequently their degree of volatility is not perfectly definite, and a purely arbitrary test has had to be devised to determine this quality. It is upon the volatility that the danger in the storage and use of petroleum greatly depends.

I have said that the liquid is inexplusive in itself, but the vapor when mixed with air in certain proportions is capable of exploding with great violence when ignited. Fortunately the proportions necessary to form an explosive mixture are very limited. The mixture begins to be inflammable when there is about 1.8 per cent of vapor. An increase to 2 per cent renders the mixture explosive, while when the proportion exceeds 4 per cent the liability to explosion begins to disappear, but the mixture continues to be highly inflammable.

I have said that an arbitrary test has been devised to determine the degree of volatility of any particular variety of petroleum. The test adopted in this country as giving reliable and uniform results is known as the Abel flash test. This test determines the temperature at which the sample produces a definite amount of vapor under the special conditions of the apparatus. It must not be supposed, however, that below this temperature the oil gives off no vapor at all, or that under other conditions it gives off dangerous amounts of vapor immediately above the temperature of its flash-point.

The flash test was devised primarily with a view to affording a means of distinguishing between petroleum oil and petroleum

spirit (gasolene) for legislative purposes; or in other words, in order to be able to draw a line between the varieties of petroleum which are in common use for illuminating purposes, and those which are so volatile as to require special restrictions in storage. For reasons which it is not necessary to enter into, the line has been drawn in this country at a flash point of 73 degrees Fahr. by the Abel test. Oil above this flash point is not subject to any legislative restriction, while petroleum spirit, which is below, may not be kept, except in very small quantities, without a license. An exception has recently been made in the case of spirit kept for use in motor cars, for the keeping of which general regulations have been made.

Petroleum should be kept in metal vessels wherever possible. I regard this as imperative in the case of spirit, having recently had experience of the danger of leakage of vapor through wooden barrels. Such barrels are still strongly advocated by some persons, both for the conveyance and storage of petroleum, but in the case of spirit I find their arguments entirely unconvincing. One of the principal virtues of a wooden barrel when used for an aqueous liquid is that the liquid swells the wood, and by increasing the pressure between the staves diminishes the chance of leakage. This quality is entirely lost with petroleum, which, though it permeates the wood, has no effect in swelling the staves. Consequently to keep the petroleum from all leaking out, it is necessary to coat the interior of the barrel with glue. When this coating is fresh, the barrel may be fairly free from leakage; but when owing to dry weather the staves have shrunk, or when the barrel has been knocked about, the glue coating becomes defective, and more or less leakage inevitably occurs.

Metal vessels are invariably employed for the petroleum spirit used in motor cars. This is partly due to the fact that the above-mentioned regulations require that this spirit should only be kept in such vessels of a capacity not exceeding two gallons, and partly to the refusal of the railway companies to carry it otherwise than in metal vessels. The licenses of most local authorities contain a similar provision. It is possible that at some future date the use of wooden barrels for petroleum spirit may be prohibited altogether.

As to the place where the petroleum should be stored, it is very desirable that this should be outside the fire-risk of a dwelling-house, that is to say, in some building wholly detached or separated by a fireproof wall. Probably the safest method is in an underground tank separated from all buildings. Where, however, it is necessary to store petroleum inside a shop or dwelling-house, the best position is a well-ventilated cellar, from which the oil may be drawn by means of a pump in the case of retail dealers. The worst place of all is under the main staircase.

The metal tank in which the oil is stored should be hermetically closed, with the exception of an air hole, which should be covered with very fine copper wire gauze. In the case of fire the oil in such a tank may all burn away without seriously adding to the conflagration, or may even escape ignition altogether. Of course, water must not be played into the tank, as this would have the effect of floating out the petroleum. In every place where petroleum is stored, there should be a supply of sand and a shovel. This is useful, not only for absorbing any spilt petroleum, but also for extinguishing fire in its initial stage.

The quantity of oil which may be kept in any place is unlimited, but in the case of spirit (gasolene) it is governed by the conditions of the license, and varies according to circumstances. Users of motor-cars are allowed to keep 60 gallons, which must be contained in two-gallon metal vessels.

The most important precaution is the exclusion of naked lights from the neighborhood of the petroleum. If only oil is present, it is sufficient to guard against a light being taken into the immediate vicinity of the vessel in which the petroleum is kept, but in the case of spirit, an ignition may take place at some distance from the actual vessel if there has been any leakage, as the vapor is heavier than air and has a tendency to flow or drift with light currents of air to a considerable distance before it is so far diluted as to become unflammable. For this reason a naked light should not be taken into any store or room where spirit is kept or used, and care should be taken that there is no fire or light in the vicinity of such store or room. In general, the store should only be entered during daylight, but if it is necessary to enter at night a safety-lamp such as is used in coal mines should be employed. Some persons think that a lantern is sufficient protection to a light, but this is not the case unless every communication between the flame and the outside air is closed by very fine metal gauze as in the safety-lamp.

An electric spark is quite as dangerous in producing vapor

ignition as an open flame. Several fires have been caused by the ignition of petroleum vapor by means of the tiny spark given off by a textile fabric which has become electrified. If electric light is installed in any building in which petroleum spirit is stored or used, this should only be done under the advice of an expert thoroughly acquainted with the special risks to be guarded against. Time will not permit of my doing more than touching on the general principle which should underlie such installation. The lamps themselves should be enclosed in strong glass outer globes fitted on with an airtight joint. The wires should be well insulated and should preferably be contained in metal pipes connected to earth. All switches and fuses should be outside the building beyond the reach of vapor unless they are of such special construction or are so enclosed in metal cases that the vapor cannot possibly reach the interior. In general no current-bearing part, that is, no metal part in connection with the source of supply, should be exposed.

As in the case of explosives, no highly inflammable material should be kept near the petroleum. In this connection it may be well to mention the danger which may arise from empty petroleum barrels. It is commonly supposed that the fire risk is at an end as soon as the barrel is empty, and such barrels are deposited anywhere regardless of possible ignition. The wood being saturated with petroleum these barrels are often highly inflammable, and when they have contained spirit are generally full of vapor. Several accidents have occurred through mischievous boys putting lighted matches to the bung-holes of empty spirit barrels.

A necessary precaution is to guard against petroleum, especially spirit, finding access to the sewers. Not long ago I was called upon to investigate a curious explosion, fortunately not followed by a fire, which occurred in a dwelling-house in the North. The cause was traced to the washing out of partially emptied spirit cans into the sewers at a distance of about 200 yards farther up the street. The vapor from the sewer had found its way into the house through defective drains. Special care should be taken where any large quantity of petroleum is kept, that there shall be no outflow of the liquid in case of fire. Where the tank is not underground, it should be surrounded by a trench or dwarf wall, or should be placed over a cavity capable of containing the whole of the liquid should the tank be damaged by fire.

CARBIDE OF CALCIUM.

We now come to the consideration of the precautions to be taken with a chemical product, the importance of which is growing very rapidly, namely, carbide of calcium. This material is manufactured in the electric furnace by the action of coke or other form of carbon on lime at a very high temperature. Its principle use is in the production of acetylene, which is a gas having a very high illuminating power. Owing to the very simple method by which this gas is produced, and to the great brilliance and whiteness of the light which it gives, it is specially adapted to certain kinds of illumination. The demand for carbide is therefore already considerable, and as the popularity of the light increases, the storage of this chemical will become more and more important. In this country the material has been subjected to restriction by bringing it within the scope of the Petroleum Acts, so that it is made illegal to store quantities greater than five pounds without a license.

Carbide of calcium is of itself absolutely inexplorable and unflammable, and its sole danger lies in the readiness with which it gives off a highly inflammable gas from the mere contact of water or moist air. As long as the carbide is stored in hermetically closed vessels therefore, it is quite harmless. Even if these vessels are exposed to fire in a burning building, no danger arises provided that the water is not played on the contents.

Acetylene, like all the other inflammable gases, tends to form an explosive mixture with air, but it differs from other gases in the very wide range of proportions in which it is capable of forming such a mixture. Thus, when the proportion of acetylene in the air reaches three per cent, the mixture commences to be explosive, and continues to be so under certain conditions until the proportion is over 80 per cent. The maximum explosive force is reached when the proportion of gas to air is half and half. The reason for this wide range is to be found in the fact that the gas possesses explosive properties in itself without any admixture of air. When raised to a pressure of two atmospheres or even less, acetylene alone will explode with very great violence on the application of a flame or spark. For this reason the compression of this gas is not allowed in this country except under very special conditions.

From what I have said of the properties of carbide of calcium,

it would appear that only one precaution is necessary for its safe keeping, namely, that it should be contained in a hermetically sealed metal vessel. This is indeed the principal precaution necessary, but inasmuch as it is difficult to ensure that vessels shall be at all times absolutely impervious to moisture, and as these vessels have generally to be opened at times for the removal of their contents, it is desirable also to add certain other precautions. The vessels in which the carbide is contained should be kept in some dry, well-ventilated place and should be protected from the weather. No large amount of the material should be stored in any shop or dwelling-house, or in any highly inflammable building; and when a fire does break out in or near a carbide store, no attempt should be made to extinguish it with water if there is any likelihood of the carbide being wetted.

Excepting in the case of storage inside houses or shops, the quantity to be allowed in any one place is of little importance, because when more than a very limited quantity is kept, the danger is measured more by the amount of water which can find access to the material than by the amount of carbide present. In order to generate the full amount of gas from any quantity of carbide, it is necessary to add at least an equal weight of water. The precaution in regard to naked lights, which is all-important in the case of stores for petroleum spirit, is not so necessary in places where carbide is kept, because if the precautions which I have just mentioned are observed there will not be much chance of the formation of gas, and what little is formed will be readily carried away in a well-ventilated building. Unlike petroleum vapor, acetylene is of approximately the same specific gravity as air, and mixes easily with the atmosphere. A naked light should not, however, be taken near one of the carbide vessels when it is opened, as gas is sure to have accumulated inside, and it is wise to exclude them from the building altogether. In the case of the building in which an acetylene generator is installed, the precaution as to naked lights should certainly be observed, and on no account should the generator be examined with a lamp capable of igniting a gaseous atmosphere. Several serious accidents have occurred from the neglect of this very obvious precaution. In places where acetylene is used, more danger may arise in connection with the generation of the gas than in the storage of the carbide. It would be beyond the scope of this paper to deal with the conditions of safety in the design and construction of acetylene generators, and I will therefore refer those interested in this matter to the report on the subject by a committee of eminent experts, which was published as an official document last year. One precaution in connection with the generation of acetylene I may mention, and that is to avoid discharging the sludge or spent carbide from the generator direct into a sewer. Unless this sludge has been immersed for some time in a large volume of water it may continue to give off gas in sufficient quantity to give rise to danger in a sewer or other confined space.

OTHER CHEMICALS.

It would be impossible within the limits of this paper to deal with all the numerous chemicals which under certain conditions are capable, directly or indirectly, of causing fire or explosion. Strong acids when they come in contact with certain other substances may develop sufficient heat to cause a fire, and it is conceivable that caustic alkalis may do the same. Quicklime, owing to the heat evolved in combining with moisture, has, I believe, often been the cause of fires, and the metals sodium and potassium give rise to still greater danger on the same account. It is well known that these metals burst into flame and even cause explosion on coming in contact with water or any substance containing moisture; but it was at one time doubtful whether exposure to moist air was sufficient to cause ignition. This doubt was set at rest by Dr. Dupre, Chemical Adviser to the Home Office, who carried out experiments at my instigation. He found that although the rate of oxidization of sodium in moist air was too slow to raise the metal to the temperature of ignition, yet the soda formed is so hygroscopic that drops of moisture accumulate on the surface; and if one of these drops runs down on to a portion of the metal less oxidized, an ignition takes place. I believe this to have been the cause of a serious explosion which occurred in a small building in the exhibition grounds at Earl's Court a few years ago, where both sodium and gunpowder were stored.

Another substance which gives rise to considerable fire risk on account of its affinity for water, is sodium peroxide. This chemical is used as a producer of oxygen, which it readily gives off when acted upon by water. When pure, its behavior is somewhat remarkable. Dr. Dupre has shown that a piece of sodium peroxide if rubbed against the surface of a piece of wood will

set it on fire, and if the peroxide in a powdered condition is sprinkled on wood shavings, a drop or two of water is sufficient to make the whole burst into flames.

The dangers with those chemicals which I have described suggest their own remedies. Strong acids and alkalis should be kept out of reach of other chemicals, and care must be taken to confine them in their own containing vessels. Chemicals having a strong affinity for water should be stored in hermetically sealed receptacles, preferably of metal. Sodium peroxide must be kept away from wood or other carbonaceous material. The metals, sodium and potassium, if required for immediate use, may be kept in heavy mineral oil, but care should be taken that they are entirely covered by the liquid.

We now come to the class of chemicals, which, like petroleum, give off inflammable vapor. Foremost among these is bisulphide of carbon, which is used to some extent in the arts as a solvent. Not only is this extremely volatile, but it presents the additional danger that its vapor ignites at a comparatively low temperature. According to one authority, the igniting point of carbon bisulphide vapor is as low as 149 degrees C., so that it might be ignited by a high-pressure steam-pipe. This liquid has a high specific gravity, which enables it to be kept under water, in which it is insoluble. Several other liquids used as solvents give off inflammable vapor freely, as for instance, ethers, alcohols, acetone, amyl acetate, turpentine, etc. For all these the precautions in storage should be much the same as for petroleum spirit.

The fire risk of phosphorous in the crystalline form is well known. This substance should invariably be kept under water. Phosphide of calcium, on coming in contact with water, gives off a gas—phosphoretted hydrogen—which ignites spontaneously in air. This property is taken advantage of in certain marine lights, which are arranged to take fire by the mere act of throwing them into the water. This chemical must, of course, be stored in hermetically sealed vessels, but, owing to its very dangerous nature, it should not be kept at all in any shop or dwelling-house.

Some of the coal-tar products used in the dyeing trade possess explosive properties, but these are mostly of a feeble order, and the materials themselves are not, as a rule, highly inflammable. Picric acid, however, is capable, under certain conditions, of exploding with great violence, and is now practically treated as an explosive in this country, where it is subjected to many of the restrictions which apply to other explosives. This acid is now little used as a dye, but there has been a considerable demand for it as a military explosive. It was long doubted whether picric acid alone was capable of explosion, in the absence of a detonator or of some metallic picrate. Experience has, however, convinced me that when any considerable quantity is involved in fire, a violent explosion may result, even when no metallic substance capable of forming a picrate is present. Some of the metallic picrates are violently explosive, especially picrate of lead. In contact with iron, picric acid forms a picrate which is very sensitive to friction, and has been the cause of more than one ignition of picric acid in manufacture.

The next chemical to be considered is chlorate of potash, which owes its uses to the fact that it is an efficient oxygen producer. It does not give up its oxygen except under the influence of heat or chemical reaction, and is therefore stable at normal temperature, and free from liability to spontaneous ignition. Its danger lies in the readiness with which it forms explosive mixtures with carbonaceous material, especially under the action of fire. Thus if, during a conflagration, melted chlorate became mixed with some powdered or melted organic matter, a serious explosion might ensue. In very large quantities it is capable of exploding by itself in the course of a conflagration, as was shown by a serious explosion at St. Helen's a few years ago. It also has the property of rendering any woodwork or fabric with which it has come in contact very highly inflammable, and where it is involved in a fire it will intensify the conflagration by supplying oxygen to the flames. Chlorate of potash and other chlorates should, therefore, be kept away from strong acids, and from any carbonaceous material with which it could possibly mix, and should not be stored in inflammable buildings. Saltpetre and other nitrates are also oxygen bearers, but are not possessed of explosive properties, nor do they readily form explosive mixtures. They are, however, capable of intensifying a conflagration, and of rendering woodwork more inflammable from a spark, though in a less degree than chlorate of potash. It is better, therefore, that nitrates should be stored in an inflammable building.

I have dealt with the above chemicals somewhat briefly, partly in order to keep this paper within reasonable limits, and partly

because few of them are likely to be extensively stored in densely inhabited areas. It must be remembered, however, that in the case of those which are liable to cause ignition, a disastrous fire might be initiated by even a very small quantity of the chemical.

ARLINGTON CEMETERY.

IN respect to number of burials, Arlington is pretty nearly the largest of the eighty-three national cemeteries, but its romantic history makes it by far the most interesting of them all. It was formerly the property of Gen. Robert E. Lee, and he was living there when Fort Sumter was fired upon. He was married in 1831 in the drawing-room of the old mansion, where visitors nowadays are requested to register their names, and in the room across the hall he wrote (April 20, 1861) his resignation as an officer of the United States army. Two days later he himself carried the resignation across the river to Washington, and handed it to Gen. Winfield Scott. He left Arlington on the same afternoon, never to return, and the next day accepted the command of the Confederate forces.

About 17,000 men have been buried at Arlington since it was opened as a national cemetery, in 1864. Soon after the battle of Bull Run the Government took possession of the mansion for a hospital, and used it for this purpose through the Civil War. The first person buried there was a Confederate soldier named Reinhardt, of the Twenty-third North Carolina Infantry, who died in the hospital May 13, 1864. During the next two months 2,619 Federals were interred there, and nearly every battle-field between the Potomac and the Rappahannock contributed its quota to the Arlington necropolis.

The appearance of the old buildings, especially the Lee mansion, has been preserved as far as possible. Six stone columns which beautify two of the gateways on the east front were part of the north portico of the old War Department, and were removed on the demolition of the latter structure in 1869. The stone pillars and entablature of the Temple of Fame—a noteworthy feature of the cemetery—are from the corridors of the Patent Office in Washington, taken away after its partial destruction by fire in 1817.

Within the inclosure of the grounds is Fort McPherson, one of a chain of forts built during the Civil War for the defense of the capital. It has been restored as far as practicable.

One of the most striking features of the cemetery is the "tomb of the unknown dead," a massive block of granite, on which are inscribed the words: "Beneath this stone repose the bones of 2,111 unknown soldiers, gathered after the war from the fields of Bull Run, and the route to the Rappahannock. Their remains could not be identified, but their names and deaths are recorded in the archives of their country, and its grateful citizens honor them as of their noble army of martyrs. May they rest in peace."

The Arlington Cemetery is part of an original grant of one thousand acres made by William Bulkley, Governor of Virginia, to Robert Howsen, in October, 1664, in payment for the transportation of settlers from England to the colony. Howsen, in the same year, sold the property to a person named Alexander for six hogsheads of tobacco, and more than a century later a descendant of this purchaser transferred it to John Parke Custis, the equivalent being £1,100 in Virginia currency. Custis was the son of Martha Washington by her first marriage. He was aide-de-camp to Washington, and died of "camp fever" (typhoid) at Yorktown, his two youngest children, G. W. Parke Custis and Nellie Custis, being subsequently adopted by Washington.

G. W. Parke Custis inherited the estate, built the still existing mansion in 1814, and died in it three years later, leaving the property to his only child, a girl, who married Gen. Robert E. Lee. By an executive order, dated January 6, 1864, Arlington was ordered sold for taxes, and was afterwards bid in by the Government for \$26,800. Mrs. Lee, who died in 1873, never claimed it, but her son, G. W. Custis Lee, brought suit in the courts to have the sale set aside. The case went up to the Supreme Court, which decided that the heir had equity on his side, and Congress paid him \$150,000 for the property.

Thus it appears that the estate was not confiscated by the Government, as is commonly supposed. In the southwest corner of the cemetery, where several hundred Confederate soldiers lie buried, two simple tablets mark the graves of George Washington Parke Custis and Mary Lee Custis, his wife. They were erected by Mrs. Robert E. Lee, and bear the inscription: "Blessed are the merciful, for they shall obtain mercy."

The Temple of Fame above referred to is a structure of dignified simplicity and no great size, its dome-like roof upheld by pillars on which are inscribed the names of Washington, Lincoln,

Grant, Meade, Thomas, Farragut, Reynolds, Garfield, and Humphreys. Another notable feature of the Arlington Cemetery is the amphitheatre—a beautiful enclosure surrounded by green walls of foliage, with a pillared platform on one side for the delivery of orations on Memorial Day and on other ceremonial occasions.

Most of the national cemeteries were located, appropriately enough, on battle-fields, those of Chattanooga, Stone River, and Gettysburg being first selected. In Virginia, where so much hard fighting was done during the Civil War, there are no fewer than seventeen such burying-grounds for soldiers. There are in all about 340,000 men interred in the eighty-three Government reservations of the kind, and in each case Uncle Sam furnishes a headstone and foot-stone of granite or white marble, unless surviving relatives are disposed to put up something more elaborate in the way of a monument.

Ours is said to be the only country that bestows such honors of dignified and permanent interment, in the midst of beautiful surroundings, upon its common soldiers. In lieu of an inscription, each headstone bears a number, which refers to a name in a book. Of course, in numerous instances the remains are registered as "unknown," but the system adopted by the Federal authorities during the Rebellion was so perfect, and interments were so conscientiously made on the fields where the Union arms won, that over 90 per cent of the dead were afterwards identified.—*Washington Correspondence Boston Herald.*

ILLUSTRATIONS

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

HOUSE OF ALBERT STONE, ESQ., BAY STATE ROAD AND SHERBORN STREET, BOSTON, MASS. MESSRS. FEHMER & PAGE, ARCHITECTS, BOSTON, MASS.

HOUSE ON THE AVENUE DE LA GRANDE-ARMÉE, PARIS, FRANCE. THIS plate is copied from *La Construction Moderne*.

PLANS OF THE SAME.

NEW RAILROAD BRIDGE OVER THE RHINE NEAR MAYENCE.

THIS and the following plate are copied from *Deutsche Bauzeitung*.

NEW STREET BRIDGE OVER THE DANUBE, BUDA-PESTH, HUNGARY.

Additional Illustrations in the International Edition.

DOOR TO HOUSE OF ALBERT STONE, ESQ., 152 BAY STATE ROAD, BOSTON, MASS. MESSRS. FEHMER & PAGE, ARCHITECTS, BOSTON, MASS.

A MODERNIZED PORCH ON ESSEX STREET, SALEM, MASS.

THE SALLE DE MARIAGE: HOTEL DE VILLE, BRUSSELS, BELGIUM.

THE REREDOS IN THE CATHEDRAL, TRURO, ENGLAND.

COMMUNICATIONS

[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

A CASE OF MERE PLAGIARISM.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs,—Possibly you may have information conveniently at hand that would be valuable to us in regard to a legal question. The situation is as follows:

Recently a neighboring city invited several architects to enter a competition for an important high school building. Subsequently, drawings were submitted at a specified time, and our presentation consisted of a set of specially prepared preliminary studies, also the plans of a building we had under construction and about completed, which we might designate as exhibit "B,"

and were favorably commented upon by the School Commissioners. The award was made to one of the competing architects, a gentleman who was in our employment for quite a number of years, and was in our office at the time of the preparation of exhibit "B," which was submitted as above stated in connection with those specially prepared for the competition. Now we find that the plans (not including elevations) prepared and being executed by the successful architect, with the exception of the rooms being reduced two or three feet in size and a few of the minor and less important partitions changed, are a *fac simile* with our exhibit "B." The similarity of the plans is quite evident when describing the general lay-out of the building. Besides a certain number of important rooms occupying the first floor, entrances are at each end of the building, two stairways to the second floor, located on the rear, with a room between, and very wide corridor on the first floor and very large assembly-room on the second floor, lapped over and occupying a certain portion of the space occupied and used as corridor on the first floor. We simply repeat this comparison so that in saying one plan is a *fac simile* of the other, from the result that exhibit "B" is somewhat out of the ordinary run of school buildings, so that by comparison of the two plans similarity is apparent. The elevations are entirely different.

The knowledge we desire, which possibly you may have some information bearing upon, is, if through the courts, if not otherwise, would there be any recourse for this appropriation of ideas conceived in this office? Trusting we may hear from you at your earliest convenience, we remain, yours truly,

X. & Y.

[If we understand the situation which this communication details, our correspondents certainly have not material enough out of which to make a case. The situation possibly has its awkward faces and our correspondents feel they have been wronged, though they do not clearly know how, and neither do we. Everyone but the most anxiously self-sacrificing theorist would probably hold that the successful competitor in drawing on his memory had a right to use whatever he found stored there—in this case the recollection that a certain arrangement of rooms had once seemed to him so good that it would be worth while to adopt the arrangement in some future similar case. The information was his to use, since the design was not copyrighted, quite as much as any other piece of technical training he may have picked up in his career as a draughtsman. A bookkeeper who takes with him to a new employer an improved method of bookkeeping devised by a former employer does no wrong, nor does the mechanic who uses in a new position the skill and information he acquired in his earlier places. These seeming acts of injustice are but part and parcel of the everlasting chain of progress, links which save us all from having to begin again at the very bottom of the well we wish to emerge from. If the successful competitor had actually carried off blue-print or tracing of the plan in question, perhaps a charge of petty larceny could be maintained; but what he carried in his memory, most men would hold was his to use.—EDS. AMERICAN ARCHITECT.]



FEEDING A DYING TREE.—I once saw a very old tree rejuvenated in a remarkable manner. It was a very ancient walnut that had for years shown signs of decay. But the keeper in front of whose house the tree stood took to slinging the carcass of each deer he killed on one of its boughs for dressing. During the process all the blood dripped on the ground and was absorbed. The following spring this tree put forth an astonishing crop of leaves, and in less than three seasons it was making new wood and showing all the vigor which had characterized it thirty years before.—*Country Gentleman.*

A NEW HOSPITAL FOR VIENNA.—The Austrian Emperor, Francis Joseph, has just laid in Vienna the foundation stone of a new hospital, which is likely to be one of the most perfect institutions of its kind in the world. It will replace the famous Allgemeine Krankenhaus in the Alserstrasse, and will be the largest hospital in Europe. It will consist of forty pavilions, as they are to be called—of which, however, the eighteen clinical institutes will be so many separate large hospitals, with the best possible arrangements for teaching purposes, demonstrations, etc. There will be room in each operating amphitheatre for 250 students. In the clinical institutes for infectious diseases the patient will be separated from both professor and students by a glass screen. Every clinical institute will have a large ambulatorium; and in each there will be flat roofs, where patients may lie in the open air whenever weather and temperature allow it. The whole area of the new hospital is nearly sixty acres, this being more than

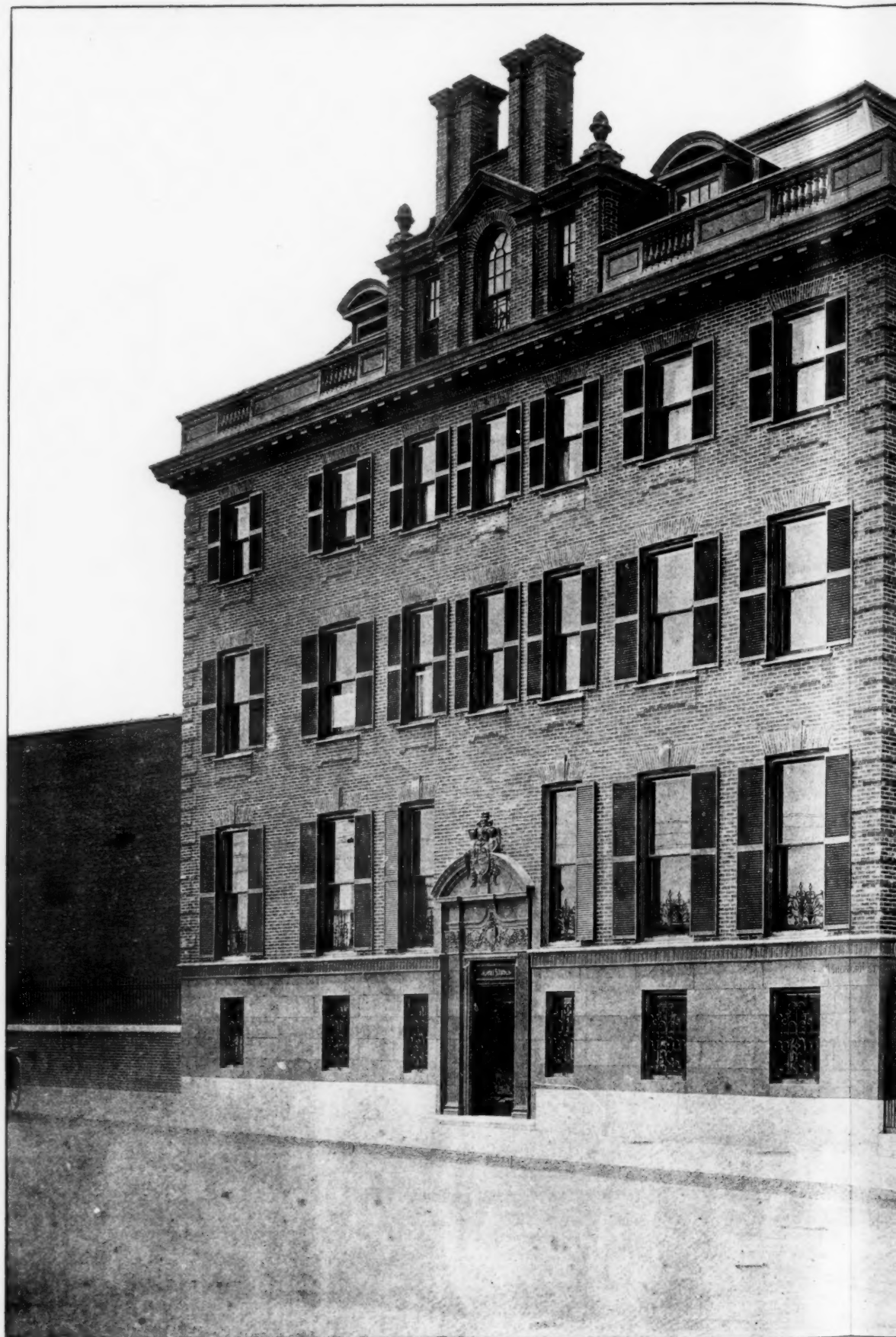
twice the area of the present Krankenhaus; but there will be fewer beds. Forty-eight acres, or about four-fifths of the total area, will be turned into gardens. The estimated cost of the institution, which it will take ten years to finish, is forty million kronen; but the authorities will be satisfied if the work can be done for forty-eight million kronen, about \$10,000,000.—*N. Y. Evening Post.*

SPANISH CATHEDRALS.—According to the usual arrangements of Spanish cathedrals external effect and symmetry seem never to have been studied. There is generally a parish church, called the *sagrario*, opening into the cathedral, and often a *capilla real*, having separate priests and services. At Santiago the nave is very long and the transepts considerable, all uniform and remarkable for having a triforium but no clerestory; the vault is very plain and the aisles are continued along the transepts. Like most Spanish churches the interior is very dark; the west doorways are most elaborate, within a modern porch. All Spanish cathedrals are arranged in the same manner, the *coro* with its stalls occupying a considerable portion of the nave, west of the transept and enclosed on three sides, thus greatly injuring the internal effect and blocking up the altar. The *capilla mayor*, or *sacrarium*, usually occupies only one bay eastward of the transept, and is enclosed with iron railing. The open space formed by the transept and centre of the cross between the *coro* and the altar is occupied by the congregation, and called "entre los dos *coros*." There is always an immense *reredos* or *retablo* behind the high altar, often gaudy and ugly, but sometimes, as at Seville and Toledo, of rich and beautiful wood-carving. There are two organs placed on opposite sides of the *coro*. This arrangement utterly precludes any general view of the high altar, and the large iron grating, often reaching to a great height, is usually closed. The wood-carving of the stalls is often very fine, though of Renaissance character.—*The Architect.*

SPONTANEOUS COMBUSTION IN PILE OF POSTERS.—Inspector Stearns, of the New Hampshire board, informs the *Boston Standard* of a somewhat novel hazard which he encountered recently. A quantity of posters, about thirty by forty inches in size, printed in red ink on cheap white paper, were stored in the basement of a Manchester (N. H.) store preparatory to using. When one of the clerks visited the basement to get some of them for use in the store windows on a recent Saturday evening, he found to his astonishment that the pile was so hot that he could not bear his hand upon it. The poster had been printed about fifty hours and had not been exposed to the sun's rays. Had this stock been left over Sunday, Manchester would doubtless have had another fire of "rats and matches," "electric wires," or "cause unknown" stamp. It would be interesting to know something in detail regarding the chemical action in a combination of red printer's ink, cheap white paper and moisture under moderate pressure.

THE CELLULOID HAZARD.—In commenting on the subject of the hazard of celluloid stocks, the *Financial Chronicle* says: "A recent disastrous fire at St. Petersburg further emphasizes the serious danger caused by the presence of celluloid goods in stocks, even when restricted to quite moderate quantities. One evening shortly before Easter a fire broke out in a basket of celluloid goods on the ground floor of a large fancy-goods establishment, while business was in full swing, and spread with incredible rapidity throughout the building, resulting in loss and injury to life, as well as the total destruction of buildings and stock of the value of over \$500,000. It has been clearly established that this fire occurred through the carelessness of a customer, who placed a lighted cigar on the edge of the counter, whence it fell into the basket of celluloid goods. The building was very massive, of so-called fireproof construction, the floors being of concrete and iron. As a result, however, (1) of the combustible contents, (2) of openings for stairs, etc., and (3) of unprotected ironwork, the whole building became rapidly involved, and partly collapsed, leaving nothing above the level of the ground but dangerous walls, which prevented any timely recovery of salvage from the flooded cellars. This disaster follows closely upon the fatal fire in the Boulevard de Sebastopol, Paris. Although in the latter case the fire apparently originated through a gas explosion in the floor under the celluloid comb workshop, the cause of the dangerous rapidity and intensity of the fire was clearly due to the inflammable character of the celluloid goods, which rendered it impossible for the workpeople on this floor and the occupants of the residential flats on the fifth and sixth stories to escape. The same lightning-like rapidity in the spread of a fire where celluloid goods are involved was also demonstrated in the fatal fire in Queen Victoria Street, of London, in June, 1902."

ANOTHER SUGGESTION FOR A CHANNEL BRIDGE.—Mr. Charles Leuthric, in the *Revue des deux Mondes*, suggests that an aerial platform on tall supports, resting on a viaduct of concrete fifty feet below low-water level, could be constructed between the English and French coasts at a cost of about £9,000,000.



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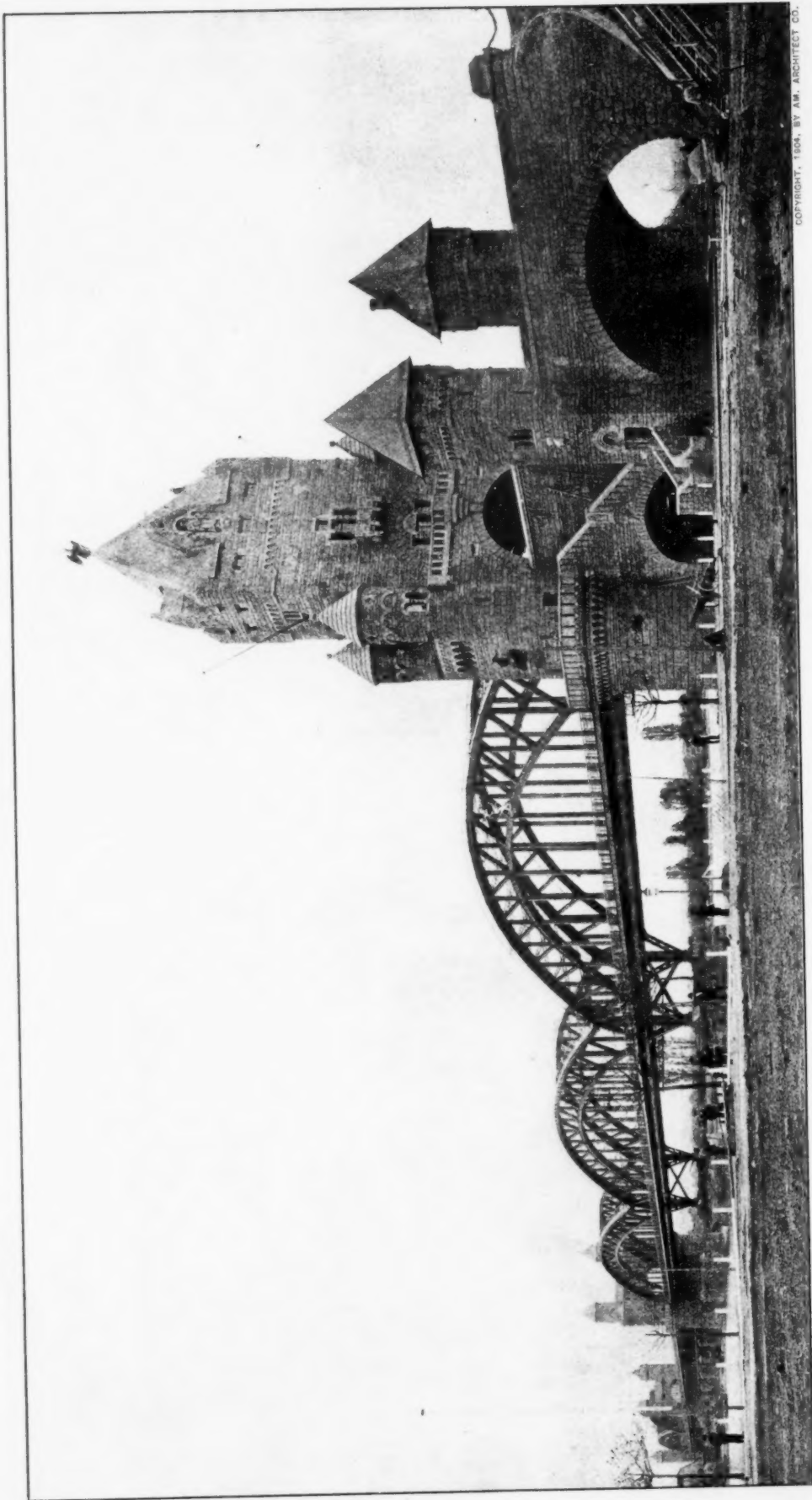
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STATE ROAD AND SHERBORN ST., BOSTON, MASS.
& PAGE, ARCHITECTS.

The American Architect
July 23, 1904.
No. 1491.



THE NEW RAILWAY BRIDGE OVER THE RHINE, AT MAINZ.

FRANZ SCHWECHELTEN, ARCHITECT, BERLIN.

The American Architect
July 23, 1904.
No. 1491.

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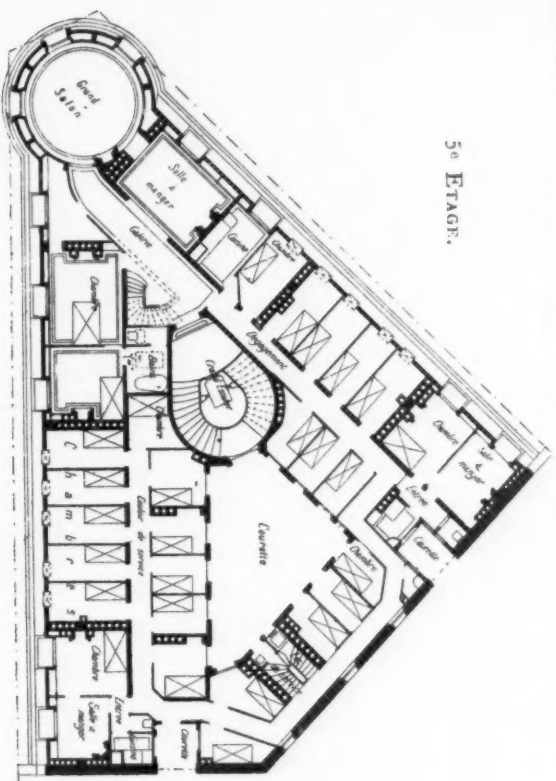


HOUSE ON THE AVENUE DE LA GRANDE-ARMÉE, PARIS.
M. RIVES, ARCHITECT.

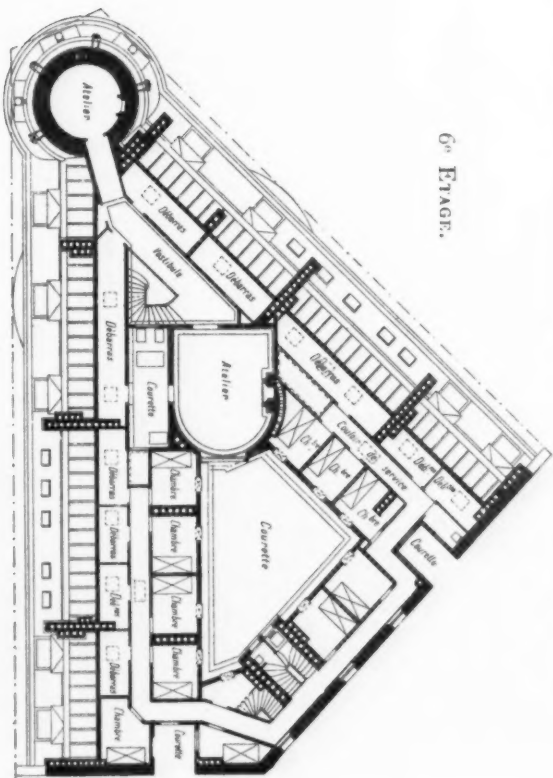
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PLANS OF HOUSE ON THE AVENUE DE LA GRANDE-ARMÉE, PARIS.
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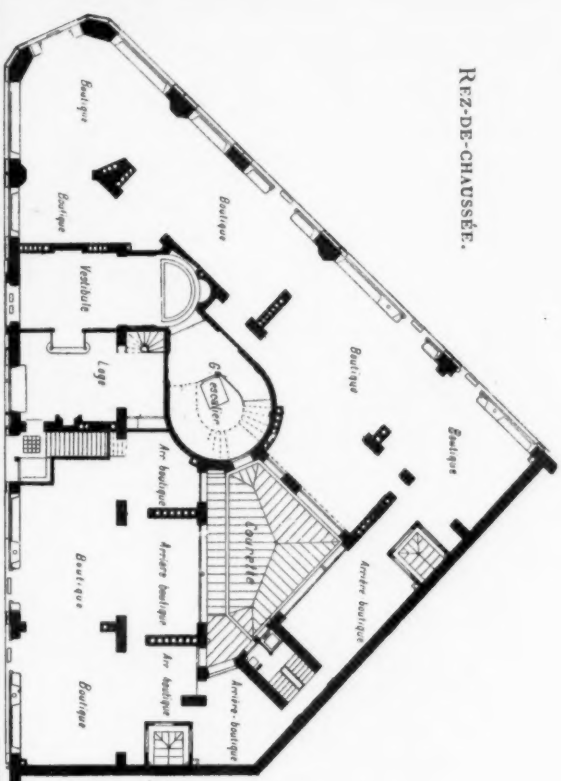
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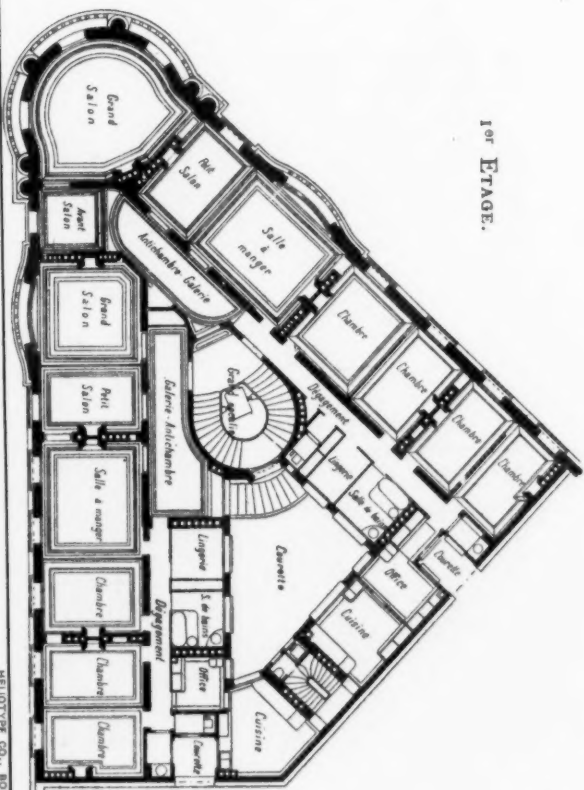
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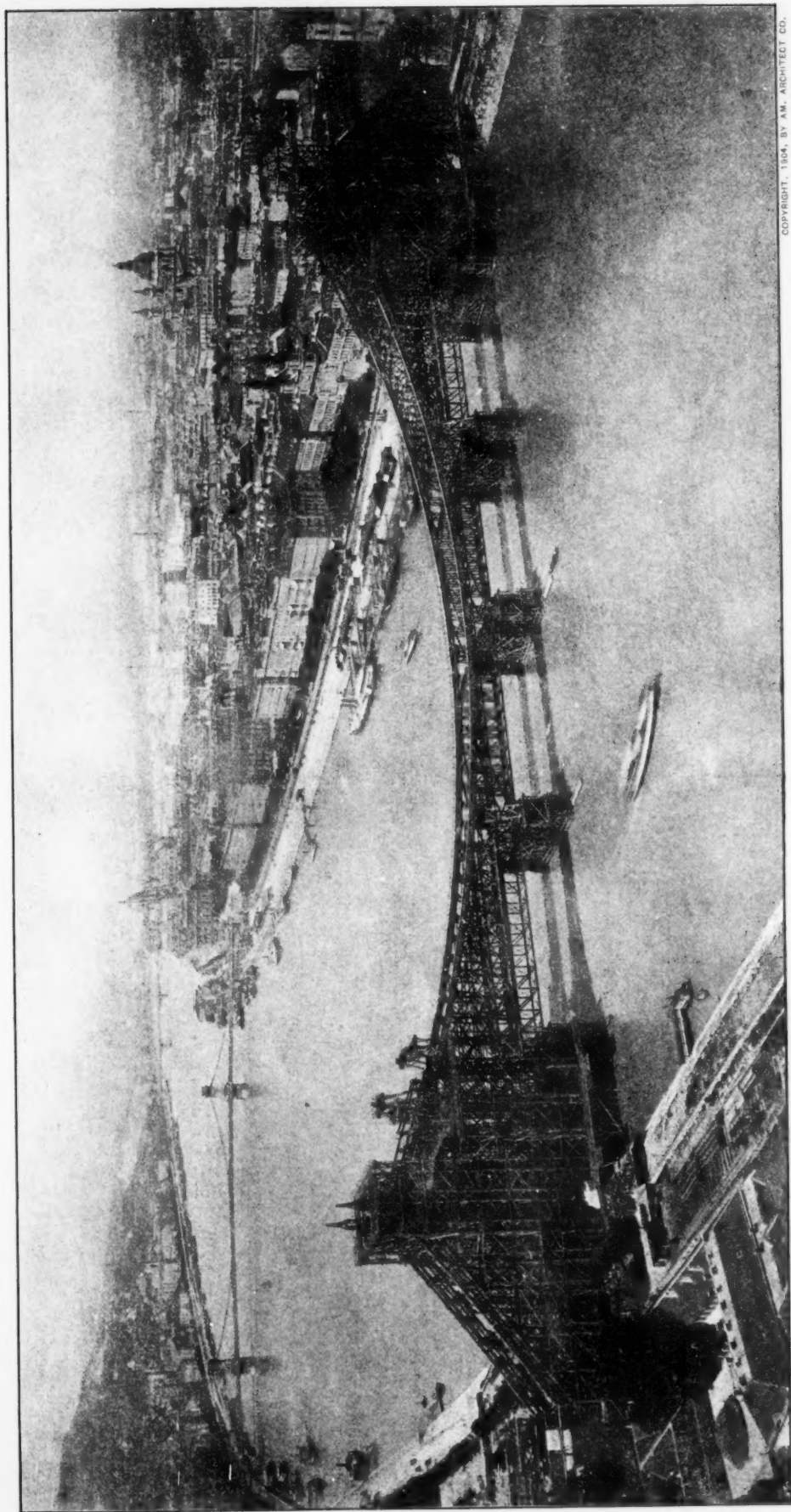
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PLANS OF HOUSE ON THE AVENUE DE LA GRANDE-ARMÉE, PARIS.

M. RIVES, ARCHITECT.

HELIOTYPE CO., BOSTON.

The American Architect
July 23, 1904.



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"ELIZABETH BRIDGE" ACROSS THE DANUBE AT BUDAPEST; IN COURSE OF CONSTRUCTION.

The American Architect
July 23, 1904.
No. 1491.