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Alphabetical List of Advertisers.

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Topographical Index of Advertisers.

(For pagination, see Alphabetical Index on Cover 2.)

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WANTED.

DRAUGHTSMAN.—For 1905, competent and experienced draughtsman, character and ability required; state salary expected. Address GEO. C. THOMPSON, Dublin, Ga. 1513

POSITION. — Wanted, position as head draughtsman, by competent man, with reliable firm; 12 years' experience in New York City, London and Paris. Address "PARIS," this office. 1510

POSITION.—College graduate, architecture, eleven years' experience, mostly detailing, designing steel and trussed concrete work for buildings, reliable draughtsman, capable of taking charge of drawings, wants position. Address DESIGNER, care American Architect. 1511

ATELIER BLAIR-VAN PELT.

The Perkins Atelier of Architecture announce that, owing to pressure of business, Mr. Frank E. Perkins has felt it necessary to retire to the position of Ex-officio Patron, and has secured Mr. John V. Van Pelt and Mr. Walter D. Blair, former Professors of Architecture at Cornell University and graduates of the Ecole des Beaux Arts, to continue the criticisms under the name of "Atelier Blair-Van Pelt," on Mondays and Thursdays at 8 P. M., at 122 East 23d Street, New York City. E. DONALD ROBB, Massier. 1514

NATIONAL MILITARY HOME, OHIO.—Bids will be received until Jan. 10, by J. W. Byron, Com. of Sub. & Supt. Post Fund, Central Branch, N. H. D. V. S., for the erection of three Greenhouses and Office Building, as advertised in THE AMERICAN ARCHITECT.

BUILDING INTELLIGENCE.

(Reported for the American Architect and Building News.)

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

ADVANCE RUMORS.

CHICAGO, ILL.—Permit has been issued for erection of a 3-story and basement brick school building on Schubert Ave., between Monticello and Lawrence Aves. Cost, $150,000.

A permit has been issued for erection of a 7-story brick warehouse by F. Beckenburg at 524-26 63d St.

CHICAGO, ILL.—Holabird & Roche, architects, Monadnock Bldg., are reported to be receiving bids for store and office building, to be erected at 138-144 State St., for Stumer, Eckstein & Rosenthal. Building will be 14 stories, 100 by 120 ft., built of steel, fireproof construction, composition roof, and will cost $1,000,000.

Jenney & Mundie, architects, 171 La Salle St., will soon receive bids for a 2-story fireproof addition, 88 by 203 ft., to the National Life building, at 159 La Salle St. Cost, $150,000.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

CLEVELAND, O.—The property at the corner of Euclid and Genesee Aves. has been transferred from George W. Smith to the Euclid-Genesee Realty Co. This company has increased its capitalization to $125,000 for the purpose of erecting a magnificent seven-story brick and steel apartment building on the site. Work on the foundation will begin at once. The rest of the building will not be erected until spring. The new apartment house will be of fireproof construction and thoroughly equipped with all modern conveniences.

CHICAGO, ILL.—The corner stone of the new Swedish Lutheran Bethel Church was laid Nov. 27, at 63d and Peoria Sts. Cost, $35,000.

CHICAGO, ILL.—Vacant land on Astor St., owned by the Catholic bishop, has been sold at an average price of $350 a foot. Improvements are to be made by the purchasers, who will erect houses. It is understood that Mr. Lawson will ultimately build a residence costing $200,000.

CHESTER, PA.—A press report states that the directors of the Young Men's Christian Association and the finance committee have determined to make a strenuous effort to secure sufficient funds to proceed with the proposed handsome new building, ground for which has already been secured. It is proposed to secure sufficient money to pay for the building before it is commenced.

DE KALB, ILL.—Bids will be received by the Supervising Architect, Washington, D. C., until Jan. 4, 1905, for the construction of U. S. Post-office at De Kalb, as advertised in THE AMERICAN ARCHITECT.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

DETROIT, MICH.—Mrs. Brace Whitney Hoff, of Detroit, has given the Y. W. C. A. the sum of $35,000, making in all $80,000, for a new home for the association.

HELENA, OKLA.—A $40,000 High School is to be erected here.

FT. WAYNE, IND.—Two schools will be erected; $125,000 bonds issued.

LEACHVILLE, COLO.—Bids will be received by the Supervising Architect, Washington, D. C., until Dec. 27, for installing a conduit and electric wiring system in the U. S. Post-office at Leadville. Also, separate bids, until Dec. 30, for furnishing the heating apparatus in same building, as advertised in THE AMERICAN ARCHITECT.

MINNEAPOLIS, MINN.—G. Somers & Co., wholesale notion dealers, have let a contract for the erection of a 7-story wholesale building at Wacouta and East 6th Sts., work to commence on the new structure Dec. 1. The building will have a frontage of 150 feet on Wacouta and 150 feet on 6th, will be of mill construction and will cost $250,000.

MOBILE, ALA.—It is stated that bonds to the amount of $200,000 will be issued for the erection of a jail, improving property at Royal and Church Sts., for public offices, and improving and enlarging the poor asylum. No plans have been made. Address W. H. Holcombe, Pres. Bd. of Revenue and Road Commissioners.

NEW YORK, N. Y.—It is stated that a million dollars is needed to carry through the next, or second, step in the process of construction of the Cathedral of St. John the Divine. Of this sum $100,000 has already been given by an anonymous donor. In addition to this an offer of $200,000 has been made, conditional on four or more other gifts amounting to $800,000 being secured.

NORFOLK, VA.—The Robert Portner Brewing Co. has begun the erection of a handsome new building in Madison St., which will cost $30,000. The plans of the building were drawn by Architect Ernest Voght, of Washington, D. C., and the contract was awarded to Mr. E. Tatterson, of this city. The building will be two stories in height, with all modern improvements, including offices, bottling and washing department, stables and storage room.

NEW YORK, N. Y.—The Roman Catholic Church of St. Veronica, at 153 Christopher St., will build a three-story and basement fireproof school on the corner of Washington and Barrow Sts. This plot was recently purchased for $60,000. The school will be

BUILDING INTELLIGENCE.

(Advance Rumors, Continued.)

planned to accommodate 1,200 pupils and will provide classrooms, assembly hall and other rooms. The exterior will be of brick. The following architects are drawing preliminary sketches: Horgan & Slattery, 1 Madison Ave.; T. R. Cutler, 160 Fifth Ave., and Reilly & Stimback, 481 Fifth Ave. A selection of plans will be made by Dec. 15. Estimated cost, between $65,000 and $70,000.

NEW YORK, N. Y.—Bernstein & Bernstein, 72 Trinity Pl., have plans for four flat buildings for Samuel Levine & Son, 90 Canal St. Brick and concrete, structural steel and iron, fireproofing, tin roofs, metal skylights, dumb waiters, electric and gas fixtures and steam heat. $200,000.

Plans have been drawn by Bernstein & Bernstein for a flat building, with stores, for Nathan Silverson, 23 E. 107th St. Brick, terra cotta and concrete, structural steel and iron, fireproofing, tin roof, dumb waiters, electric and gas fixtures and steam heat. $100,000.

NEW YORK, N. Y.—Klein & Jackson, 49 Wall St., will erect a Casino at Broadway and 96th St. Rouse & Sloan, 396 Broadway, architects.

NEW YORK, N. Y.—Plans have been filed for a new 10-story fireproof apartment house to be built for Paul B. Pugh on the southeast corner of Riverside Drive and 100th St. The cost is estimated at $600,000.

NEW YORK, N. Y.—Archts. Moore & Landsiedel, 148th St. and 3d Ave., have drawn plans for five flat buildings for Elias Gussaroff, 1770 Madison Ave. Brick, stone, terra-cotta and concrete, structural steel and iron, fireproofing, tin roofs, dumb waiters, electric and gas fixtures and steam heat. $270,000.

Bernstein & Bernstein, 72 Trinity Pl., have plans for six flat buildings for Wm. and J. Bachrach, 35 Nassau St. Brick, terra cotta and concrete, structural steel and iron, fireproofing, tin roofs, dumb waiters, gas and electric fixtures and steam heat. $240,000.

NEW YORK, N. Y.—Plans have been drawn by Neville & Bagge, 217 West 125th St., for a six-story apartment house, 100x108 ft., to be erected at the northwest corner of St. Nicholas Ave. and 124th St., at an estimated cost of $130,000. A. C. & H. M. Hall Realty Co., 360 West 125th St., owners.

Plans have been prepared by Harry T. Howell, Third Ave. and 149th St., for a six-story brick tenement, 50x87, to be built on the south side of 163d St., near Melrose Ave., Bronx, for the Moorhead Realty Ass. Co. (Robert T. Moorhead, Pres., 1987 Lexington Ave.), at an estimated cost of $50,000.

NEW YORK, N. Y.—It is stated that Bernard Rolf, 39 Cortlandt St., has received the steel contract for the theater to be erected on the southeast corner of Westchester and Bergen Aves., for the William T. Keogh Amusement Co., of Lexington Ave. and 170th St. It will be of brick and steel, three stories, 188x54, to cost $175,000. Neville & Bagge, 217 West 125th St., architects.

Thomas Bennett, 5123 Third Ave., Brooklyn, has prepared plans for a five-story apartment house, 29x87, to be built on the north side of 168th St., 200 ft. east of

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Third Ave., for Max Kurzrok, 832 Broadway. Estimated cost, $100,000.

Bernstein & Bernstein, 72 Trinity Pl., are drawing plans for two six-story flats, 39x87.11, for B. Hamburger, of 190 Bowery, to be situated on the south side of 100th St., 100 ft. east of Fifth Ave., at a total cost of $90,000.

NEW YORK, N. Y.—Estimates will be received in a few weeks for the six-story office building for the estate of John Downey (care Baker & Peabody, 2 Wall St.), to be erected at 398 Fifth Ave. The structure will have marble and limestone front, stone and copper cornices, galvanized iron and wire-glass skylights, steam heat, elevator, electric light, etc. Estimated cost, $40,000.

It is reported that Milliken Bros., 11 Broadway, have received the contract for structural steel for an eleven-story store and office building, 49.5x125 ft., to be built for Horace A. Hutchins, of Madison, N. J., on the southeast corner of Fifth Ave. and 39th St. and 2 East 39th St., from plans by C. P. H. Gilbert, of 1123 Broadway. No other contracts have been let. Work will begin May 1, 1905.

NEW YORK, N. Y.—Thomas Graham, 45 West 21st St., has drawn plans for a five-story tenement, to be erected on the west side of Jackson Ave., 175 ft. north of 156th St., Bronx, for the Eastern Union Realty Co. Cost, $40,000.

C. F. Bond, Inc., 136 Liberty St., has received the general contract to build the six-story store and loft, 25x120, for Dodge & Olcott, of 88 William St., which will be erected at 87 Fulton St., at a cost of $60,000. The building will have tile roof, limestone, brick and stone exterior, steel frame, terra-cotta work, copper and wire-glass skylights, elevators, steam heat, etc. Ernest Greene, 5 Beekman St., architect.

Horenburger & Straub, 122 Bowery, are designing two six-story apartments, 50x87,

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

for A. Rothstein, 38 Broome St., and J. Wolf, 35 West 114th St., to be erected on the south side of 91st St., 300 ft. east of Second Ave., at a total cost of $100,000.

New Orleans, La.—F. J. Noulet submitted the only bid received by the Finance Committee for erecting the city hall annex. Bid was $167,820 for a building with terra-cotta front as a substitute for granite and marble; $209,000 for a building with armored concrete construction, and $209,000 for a building with cast-iron columns, steel framing and concrete fireproofing. Appropriation is $160,000. New bids will be advertised.

Ogden, Utah.—Bids will be received by the Supervising Architect, Washington, D. C., until Jan. 5, 1905, for construction of U. S. Post-office and Court-house at Ogden, as advertised in The American Architect.

Ottawa, Can.—Sandon & Sutherland, of Kingston, have been awarded the contract for erecting the Canadian mint in Ottawa. The price is $262,000.

Philadelphia, Pa.—Henderson & Co. have broken ground for the free library building at the northwest corner of 6th St. and Lehigh Ave. This is the first of the thirty buildings to be erected out of the fund of $1,500,000 donated by Andrew Carnegie. It will be known as the Lehigh Ave. branch, and will be two stories high, of brick and stone. The cost will be about $90,000.

Proposals upon revised plans were submitted to Architects Caldwell & Simon on Dec. 6, by Charles Gilpin Roydhouse, Arey & Co., Philip Halbach, John R. Wiggins & Co., Thomas M. Seeds, Jr., John N. Gill & Co., Jacob Myers & Sons, George F. Payne & Co., Doyle & Doak and Thomas Little & Son, for the new $100,000 club house to be erected at the southeast corner of Juniper and Arch Sts., for Philadelphia Lodge, No. 2, B. P. O. E. The structure will be three stories high, with a roof garden, to measure 42x134 ft. The walls will be of brick and terra cotta.

Philadelphia, Pa.—Albert R. Ross, the architect, and Charles A. Lopez, the sculptor, to whom the commission was awarded for the McKinley memorial in Fairmount Park, have prepared a new sketch model, which has received the approval of the professional jury, with the suggestion of some modifications of detail, and will probably form the basis of the complete work. The structural portions will be in marble or granite and the figures in bronze. The monument is to stand near Memorial Hall.

Pittsburg, Pa.—A press report states that the Connecticut State building at the World's Fair at St. Louis has been purchased by Robert C. Hall, a Pittsburg capitalist, and will be removed to Mr. Hall's farm above Aspinwall and used as a summer residence.

Pittsburg, Pa.—It is reported that the Scottish Rite Masons will erect an $800,000 building in Oakland. At a recent meeting $200,000 was appropriated.

The Atlas Land Co. will erect two 42-room apartment houses on Baum St., East End. Cost $52,000.

Spalding, Ala.—Ground for the first building of the Freedmen's Aid and Southern Educational Association of Cincinnati will be broken at Spalding, three miles from Birmingham, at once. The college will be a magnificent one. The first building will cost $25,000, and the others will be erected as soon as possible.

Shamokin, Pa.—W. U. Jury, architect, has been selected to draw plans for two new 15-room school buildings to be erected here at once.

Trenton, N. J.—The coming session of the New Jersey Legislature will be asked to appropriate $250,000 for a new State Normal School, the building of a separate structure for the State's criminal insane, a new wing to the State prison, improvements at the Sea Girt camp grounds, and for the State Tuberculosis Sanitarium.

Washington, Pa.—Bids will be received by the Supervising Architect, Washington, D. C., until Jan. 25, for the construction of the U. S. Post-office at Washington, as advertised in The American Architect.

Woodstock, Ont.—A new armory is to be erected on the old William Grey property, on Graham St.

PROPOSALS.

Treasury Department, Office of the Supervising Architect, Washington, D. C., November 23d, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 28th day of December, 1904, and then opened, for the construction, complete, of the U. S. Post Office at Selma, Alabama, in accordance with the drawings and specifications, copies of which may be had at this office or the office of the Postmaster at Selma, Alabama, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.
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Treasury Department, Office of the Supervising Architect, Washington, D. C., November 26, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M., on the 19th day of December, 1904, and then opened, for a mail conveying system in the U. S. Post Office, Court House, etc., building at Chicago, Illinois, in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent of the Building at Chicago, Illinois. Proposals will only be entertained from manufacturers of Conveying Machinery. JAMES KNOX TAYLOR, Supervising Architect.
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Treasury Department, Office of the Supervising Architect, Washington, D. C., November 21, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 3d day of January, 1905, and then opened, for the construction of the U. S. Post Office, Court House and Custom House building, Wheeling, West Virginia, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Postmaster at Wheeling, West Virginia, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.
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Treasury Department, Office of the Supervising Architect, Washington, D. C., November 29th, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 9th day of January, 1905, and then opened, for the complete construction of the U. S. Post Office at Henderson, Kentucky, in accordance with the drawings and specifications, copies of which may be had at this office or at the office of the Postmaster at Henderson, Kentucky, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.
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Treasury Department, Office of the Supervising Architect, Washington, D. C., November 29th, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 19th day of January, 1905, and then opened, for the construction (except heating apparatus, elevator, electric conduits, and wiring) of the U. S. Post Office and Court House at Fresno, California, in accordance with drawings and specifications, copies of which may be had at this office, or at the office of the Postmaster at Fresno, California, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.
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Treasury Department, Office of the Supervising Architect, Washington, D. C., November 29th, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 10th day of January, 1905, and then opened, for the construction, complete, of the U. S. Post Office at New Castle, Pennsylvania, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Postmaster at New Castle, Pennsylvania, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.
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Treasury Department, Office of the Supervising Architect, Washington, D. C., November 29th, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 3d day of January, 1905, and then opened, for the painting, etc., of the U. S. Post Office at Kan-

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PROPOSALS.

sas City, Kansas, in accordance with the drawings and specification, copies of which may be had at this office or the office of the Custodian at Kansas City, Kansas, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1511

Treasury Department, Office of the Supervising Architect, Washington, D. C., November 30, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 25th day of January, 1905, and then opened, for the construction of the U. S. Postoffice at Washington, Pennsylvania, in accordance with drawings and specifications, copies of which may be had at this office, or at the office of the Postmaster at Washington, Pennsylvania, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1512

Treasury Department, Office of the Supervising Architect, Washington, D. C., November 30, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 31st day of January, 1905, and then opened, for the construction complete of the U. S. Post Office at Albert Lea, Minnesota, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Postmaster at Albert Lea, Minnesota, at the discretion of the Supervising Architect. JAMES KNOX TALYOR, Supervising Architect. 1512

Treasury Department, Office of the Supervising Architect, Washington, D. C., November 28, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 5th day of January, 1905, and then opened, for the construction (except elevator, heating apparatus and conduit and wiring), of the U. S. Post Office and Court House at Ogden, Utah, in accordance with drawings and specifications, copies of which may be had at this office, or at the office of the Postmaster at Ogden, Utah, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1512

Treasury Department, Office of the Supervising Architect, Washington, D. C., November 28, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 4th day of January, 1905, and then opened, for the construction complete of the U. S. Post Office at De Kalb, Illinois, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Postmaster at De Kalb, Illinois, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1512

Treasury Department, Office of the Supervising Architect, Washington, D. C., December 3, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 27th day of December, 1904, and then opened, for the installation of a conduit and electric wiring system for the U. S. Post Office at Leadville, Colorado, 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 Leadville, Colo., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1512

Treasury Department, Office of the Supervising Architect, Washington, D. C., December 3, 1904.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 30th day of December, 1904, and then opened, for furnishing the heating apparatus complete in place, for the U. S. Post Office at Leadville, Colorado, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Superintendent at Leadville, Colorado, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1512

GREENHOUSES AND OFFICE BUILDING (At National Military Home, Ohio)

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

[See Alphabetical Index on Cover 2 for Pagination.]

CLASSIFIED ADVERTISEMENTS

[Advertisers can be indexed only under a single head free of charge.]

The American Architect and Building News

VOL. LXXXVI SATURDAY, DECEMBER 10, 1904 No. 1511

CONTENTS

THROUGH some unaccountable mischance we have not received the usual notice of the annual convention of the American Institute of Architects, and have only accidentally been reminded that the meetings take place at Washington, December 15-17.

THE Brooklyn Chapter of the American Institute of Architects has always made itself rather conspicuous by its protests against proposed action, whether public or private, which seemed likely to affect the business interests of its members, and it would be an interesting thing to examine the records and so be able to determine whether these protests have been consistent one with another, or whether, as is very often the case with society actions, with premises practically identical, the Chapter did not at one time strenuously favor the very line of action which in some previous instance it had as arduously opposed. The Chapter's latest grievance is that, instead of holding an open competition, as it was understood was to be the case, the Prison Ship Martyrs' Monument Association proposes to hold a very limited competition for the monument that is to be erected at Fort Greene Park, Brooklyn. The Chapter asserts that the three firms actually invited to compete were selected by a species of Star Chamber proceeding, carried through without the knowledge and approval of the Association at large. This particular phase of the matter is not very important, since most matters of the kind are ordinarily conducted by special or executive committees. But on this occasion, we feel that the Chapter's demand that an open competition should be held is sound, since it is based on the fact that only twenty-five thousand dollars, or one-eighth of the funds at the command of the Association have been secured by private subscription, the balance having been appropriated by the National, State and Municipal Governments. The argument is fairly good that so considerable public funds for a public monument should only be expended after the public had had fullest opportunity to secure the best design. The hackneyed objection that the "best men" will not go into a public competition could be removed by adopting the form of competition invented for the McKinley Monument—the most sensible form of competition yet devised.

ISN'T it about time that something should be done toward establishing a fund that can be at once put into the hands of trustees, to foster and care for, and to which annual or occasional additions can be made until the whole has grown to so considerable an amount that something really worth while can be done with it in the way of providing annuities or a home and sustenance in their declining years for these too many members of the profession whose last years seem to offer but two alternatives—beggary or suicide? Besides there are many, many widows and minor children left unprovided for by husbands and fathers who, having to "keep up appearances" or go out of business, have had to live up to or beyond their means. The Royal Institute of British Architects, has, since 1850, had its Architects' Benevolent Society, which is maintained by annual subscriptions and does, we believe, a very material amount of good. Recently, too, it has been announced that the fund established by French artists for the sake of providing a home for aged and indigent painters now amounts to some two hundred thousand dollars and steps are to be taken at once to either build or buy a building suitable for the purpose. Once established, the home is to be maintained by diverting to its treasury a certain percentage of the prices paid for all works of art that may be sold at any public exhibition in France. There are surely five thousand architects in this country who would be willing and able to pay at least five dollars a year for ten years, and at the end of that time efficient trustees ought to be able to show at least three hundred thousand dollars in the treasury—enough to build a very good sized home. Maintenance charges could easily be provided either by annual subscription, as in England, or by a percentage of individual income as in France.

THE public must have been impressed by the proceedings at the recent meetings of the Citizens' Industrial Alliance, they were so free from rant, and positions and arguments so quietly but forcefully put. Mr. Parry, the president of the body, stated a position which the public cannot but endorse when he said: "The more the unions go on strike merely to force the discharge of non-union men, the more the employers must co-operate

in the defense of the rights of independent labor and their own right to employ whom they please." That is simply sound logic. The unions, in their folly, have forced the great general public to understand that the "open shop" is the *desideratum* that it must insist on having for its own selfish advantage, and the power to have it is in its hands and it will henceforward exercise it. Strikes for better pay, when it can be afforded, for shorter hours, against unfair shop rules, the public will always support, even at its own inconvenience. Strikes for the use of the label, the public will laugh at, and endure, if not too prolonged; but strikes intended only to deprive some of their fellow-beings of a chance to earn their daily bread, the public will not endure, and its demand for the open shop is going to be heeded. As to the real value of the open shop to the public—the consumers that is—several significant stories were told during the meetings, one of the most convincing being this: A certain foundryman who had allowed his shop to be "organized" found that his men could in a day turn out only thirty-five mouldings of a certain article. The time came when he had a rush order to be delivered by a certain day, and knowing his own force could not produce the needed number in time, he quietly sent duplicate patterns to foundries in two not distant towns, both of which establishments chanced to be non-union. The work was of such a nature that only the same number of men could be employed on it in each shop, so that when each of these non-union foundries began to deliver castings at the rate of seventy to seventy-five a day, the owner of the organized plant awoke to the situation and the danger to his pocket that lay in it, and put up an "open shop" notice without delay.

THE unions by themselves, even in so thoroughly unionized a place as New York, probably could not uphold the closed shop in the face of public protest; but with the aid of an employers' organization, tied to the unions by a mutuality of interest—the employers agreeing to hire only union labor and the unions agreeing to work for none but members of the employers' syndicate—the fight between the close and the open shops is likely to be prolonged and the cause of much suffering. But we have faith in the essential humanity and fair-mindedness of the great public, and, once its warm heart is really moved, it will find means of crippling one or both parties to any such nefarious compact.

DOUBTLESS there are at this moment some amongst the trustees and friends of the Boston Museum of Fine Arts who ardently wish that the proposed society for authenticating works of art had already come into existence and had placed its *imprimatur* on the new but uncatalogued portrait of Philip IV., by Velasquez, which the Museum has just acquired at the cost of fifty-one thousand dollars. It is probable that Don Francisco of Bourbon, from whom Mr. Denman Ross purchased the canvas for the Museum, was able to produce a sufficiently authenticated pedigree for it, and that, hence, the unpleasant suggestion that the portrait is not a genuine Velazquez is a purely gratuitous assumption on the part of sundry New York newspapers, which, at times, seem to manifest an absurd jealousy of any bit of good fortune that befalls some other city. The canard—we will call it so, at least—has it that a certain New York picture-dealer, of acknowledged high standing in his calling, not long ago declined to buy this same painting from Don Francisco, feeling sure that it was not genuine. This may be so, of course, but it may also happen that the picture-dealer may really know less of Velasquez than he thinks he does.

FOR the lack of fuller information, we cannot bring record of the progress of the sculptor Biondi's suit against the Metropolitan Museum of Art for not exhibiting his group the "Saturnalia" satisfactorily down to date. But a short time ago the directors filed their answer which seemingly admits the sculptor's main contention, and, so, seems to make it difficult to escape paying the penalty for the breach of contract as charged. In their reply, the directors recite—apparently with a view to showing that they acted under competent advice, and some pressure—that on Nov. 17, 1902, they resolved that the director "be and hereby is directed to have the bronze group of statuary called 'Saturnalia,' on the ground floor of the new building, removed from public exhibition before the proposed opening on Dec. 22, in consequence of the hostile criticisms that have been made as to the subject of the group."

THE Engineers' Club of Philadelphia is the latest body to join in the movement to establish "a comprehensive park system for Philadelphia," and its aid should not be less efficient than any other of the sixteen organizations which have joined in the movement. So far as natural advantages and variety of surface go, the city is well adapted for landscape treatment, but the unfortunate checker-board street-plan stands in the way of arranging a suitable series of connecting parks and parkways, except seemingly at a rather costly expropriation and takings of property by the right of eminent domain. Chicago was wise in time and, many years ago, had Mr. Olmsted lay out a series of small parks and connecting parkways along what used to be the outskirts of the city, but which now are, as it were, well "within the walls," and yielding pleasure and affording health to the smoke-beclouded citizens. Boston, too, thanks to its small nucleus and its many and wide spreading suburbs, has been able to create a park system of vast size and exceptional beauty, and has been able to distribute the great cost among the taxpayers of the entire metropolitan district in such a way as not to be very burdensome anywhere. At this moment, too, San Francisco is waiting to learn what kind of a parking system will be reported by Mr. D. H. Burnham, who has for some time been studying the situation. But the Philadelphia situation seems to us to be an unusually difficult problem, for the first necessity of a good park system is that it must be immediately accessible to people of every class; it must be brought home to them—to their very doors. Fairmount Park is delightful and admirable, after you get there; but it compels more miles of walking than the legs of small children can endure of a Sunday, or more car-fares than the father's scanty purse can afford.

Passenger Elevators—IV.

TABLE No 1, prepared from the formulas, gives the comparative efficiencies of each hydraulic type, and the steam rate per car-mile with the three different types of pumping engines.

It will be noticed that the difference between the high-pressure and low-pressure machines is not very marked with the short pipe connections assumed in the table, where the influence of hydraulic losses is not great. This difference would be more marked in the case of long distribution from a central pumping plant, say, through several hundred feet of pipe.

The steam rate of the double-power system is dependent entirely upon the nature of the service, *i. e.*, the proportion of heavy to light loads, and, therefore, lies somewhere between the rate for all full loads, and the rate for all light loads. Tests at the Bowling Green Building showed that 26% of the water used was at high pressure and 74% was at low pressure.

TABLE No. 1.—Comparative Value of Hydraulic Elevators for a Standard 18-Story Office Building, Under the Usual Specifications.

(From Formulas 1 to 9.)

	Vertical, high-pressure.	Vertical, low-pressure.	Horizontal, low-pressure.	Plunger, low-pressure.
Maximum load	2,500 lb.	2,500 lb.	2,500 lb.	2,500 lb.
Speed, in ft., per minute, with maximum load	250 ft.	250 ft.	250 ft.	250 ft.
Speed in ft. per minute, with 1,500-lb. load	600 "	600 "	600 "	600 "
V = speed, in ft., per sec., with 1,500-lb. load	10 "	10 "	10 "	10 "
Rise of car = R	200 "	200 "	200 "	200 "
Length of gravity stop = s	8 "	8 "	8 "	8 "
Weight of car (approximately) = W	3,400 lb.	3,400 lb.	3,400 lb.	3,000 lb.
Gear = G	6	6	12	1
Values of K, P. & B	K = 2,140	K = 2,140	B = 4,000; K = 3,096	P = 5,760
Unbalanced weight = U	1,148 lb.	1,148 lb.	1,613 lb.	2,848 lb.
$\frac{L}{L+U}$	0.685	0.685	0.608	0.427
Mechanical efficiency	0.832	0.846	0.809	0.866
Load efficiency	0.570	0.580	0.492	0.370
Hydraulic efficiency (with full load)	0.96	0.90	0.90	0.90
Final net efficiency	0.547	0.522	0.443	0.333
Diameter of plunger or piston	7¾ in.	16 in.	24 in.	6½ in.
Effective water pressure	580 lb.	145 lb.	150 lb.	226 lb.
Water, horse-power-hours, per car-mile	6.10	6.39	7.52	10.00
Pounds of Steam Used per Car-Mile.				
Compound, duplex pumping engine	427 lb.	447 lb.	526 lb.	700 lb.
Triple-expansion, duplex pumping engine	244 "	256 "	301 "	400 "
Compound, fly-wheel, pumping engine	183 "	192 "	226 "	300 "
Double pressure (ratio 1:3)	153 "	160 "	188 "	250 "

Tests at the Standard Oil Building showed a consumption of 128 lb. of steam per car-mile, but the service at the time was light, using mainly the lower of the two pressures.

In a number of cases, hydraulic elevator plants are operated by electrically driven pumps. These are usually of the Quimby screw type, or the three-throw plunger type. With the former, the motors are direct-connected; with the latter, the motors are usually connected by belts. Tests, made by the writer, of Quimby pumps installed for temporary service at the Prudential Buildings, Newark, N. J., and operating with 500 volts against a water pressure of 105 lb., showed an efficiency from wire to water of 63%. It is stated that the three-throw belted pumps at the Schlessinger and Meyer Building, in Chicago, operating against 735 lb. pressure, showed when tested an efficiency from wire to water of about 82%, and the current consumed by the elevators averaged 6.7 kw-hr. per car-mile.

The usual consumption of a direct electric elevator is from 3.5 to 4 kw-hr. per car-mile. Hence, in general, it may be said that an hydraulic elevator plant, driven by electric pumping engines, consumes more power than direct, electrically driven elevators of the same capacity.

Centrifugal pumps driven by direct-connected electric motors have been used in a few instances. Heretofore, the inefficiency of such pumps has precluded their use; but, with the improvements now being made, it is probable that they will come into extensive use in the future, as efficiencies of more than 70% have already been attained, and there seems to be no reason why such pumps cannot be made to give still better results.

TABLE No. 2.—Some Hydraulic Elevator Performances.

Building and location.	No. of elevators.	Average rise of elevators, in feet.	Specification: Maximum load, in pounds.	Specification: Max. speed in ft. per min.	Specification: Speed load in lbs.	System.	Diameter of cylinder or ram, in inches.	Gear.	Effective water pressure, in lbs. per sq. in.	Water horse-power-hours per car-mile.	Type of pumping engine.	Steam used per I. H. P., in lbs.	Steam used per water horse-power, in lbs.	Steam used per car-mile, in lbs.
Couple's Block, St. Louis	4	9	4,000	...	...	V. high pressure	4¼	2	745	7.2	Compound, fly-wheel	25	32	229[1]
Ellicott Square, Buffalo	16	109	2,250	400	1,500	V. low "	12½	4	125	5.19	Cross-comp., fly-wheel	..	26.2	136[2]
Standard Oil, New York	10	220	2,600	600	1,300	V. double "	14½	6	175 110	6.4 4.0	Compound, fly-wheel	26	..	128[3]
R. H. Macy & Co., New York	10	154	3,000	300	3,000	V. low "	15	4	137	7.94	Compound, fly-wheel	24.72	29.1	231[4]
Bowling Green, New York	9	6.220 2.260 1.235	2,000	700	1,500	V. double "	12½	6	210 120	5.7 3.3	Triple expnsn "Booster" Compound duplex	..	40	173[5]
Schlessinger & Meyer, Chicago	8	132	2,800	300	2,800	V. high "	6	4	735	6.9	Electric-driven	..	..	...[6]
Montgomery Ward, Chicago	10	7.100 2.153 1.138	3,000	300	3,000	V. high "	6¼ 4¼	4 2	595	5.9	Compound, fly-wheel	25	30	177
St. Paul, New York	6	2.114 2.185 2.286	2,500	500	1,500	V. double "	13.5 16 20	6 8 12	200 120	7.0 4.2	Triple expnsn "Booster", Compound duplex[7]	..	40	234[7]
First National Bank, Chicago	7	229	2,700	500	1,500	V. high "	7⅛	6	610	5.4	Compound, fly-wheel	25	30	162
Bank of Commerce, St. Louis	4	134	2,000	600	1,000	V. high "	5⅝	4	630	5.4	Electric-driven	..	..	...[6]
Metropolitan Life, New York	42	210	2,800	500	1,200	V. and H. high pressure.	11.75 7.75	12 6	725	7.7	Compound, fly-wheel	25	30	231
Land Title, Philadelphia	9	293	2,500	600	900	V. high pressure	7⅝	6	650	6.8	Compound, fly-wheel	..	30	204
42 Broadway, New York	12	6.240 6.150	2,500	600	1,200	V. low "	16 13.5	6 4	150	6.9	Compound, duplex	..	70	483
Prudential Ins. Co., Newark	43	143	2,500	500	1,500	V. high "	7¼	6	667	6.1	Compound, fly-wheel	25	30	183
Empire, New York	10	270	2,700	600	1,200	V. low "	17	6	150	7.5	Compound, duplex	..	70	525
Broad Exchange, New York	18	9.145 9.255	2,750	600	1,500	V. low "	13.5 17	4 6	170	8.3	Triple expansion	..	40	332
Atlantic Mutual, New York	6	227	2,500	600	1,200	V. low "	16	6	155	6.9	Compound duplex	..	70	483
Hanover Bank, New York	11	5.165 6.304	2,500	650	1,000	V. low "	13.5 19	4 8	153	7.4	Compound duplex	..	70	518
Ansonia Hotel, New York	13	202	2,200	400	800	Plunger	6½	1	140	6.2	Compound duplex	..	70	434
Saks & Co., New York	9	118	2,500	350	1,500	Plunger	6½	1	135	6.0	Compound, fly-wheel	25	30	180
Washington Life, New York	6	243	2,500	600	1,200	Horizontal	27	14	150	8.2	Compound duplex	..	70	574

V = Vertical machines. [1]Test by Geo. H. Reynolds. [2]Test by H. A. Foster. [3]Test by Forrest Towl. [4]Test by R. P. Bolton. [5]Ratio 24% : 76%. [6]6.7-kw.-hr. per car-mile, from actual test. [7]Ratio assumed = 1:3. [8]5.1-kw.-hr. per car-mile, from actual test.

It has already been proposed to use centrifugal pumps direct-connected to steam turbines for elevator service, and there is no doubt that this form of pumping apparatus will come into use for such service in the near future.

ELECTRIC ELEVATORS.

The first direct-connected electric elevator actually installed

[*]A paper by Mr. Thomas E. Brown, M. Am. Soc. C. E., read before the International Engineering Congress at St. Louis, October, 1904, and published in the "Proceedings of the Society."

and used in a building was the one, before mentioned, designed by Mr. William Baxter, Jr., and erected in a building in Baltimore in 1887.

The machine consisted of a drum revolved by a worm gear, and similar in its mechanical features to the later types. The motor was series-wound, and was operated by a 10-ampere constant current from a "Brush" arc-light machine. A centrifugal governor was used to control the speed; and, when lowering a heavy load, the governor reversed the field current, the motor becoming a generator and acting as a brake. The motor was controlled by switches on the landing doors, and the elevator was stopped and started by opening and closing the doors. A switch in the car was used only at the top and bottom of the run to reverse the

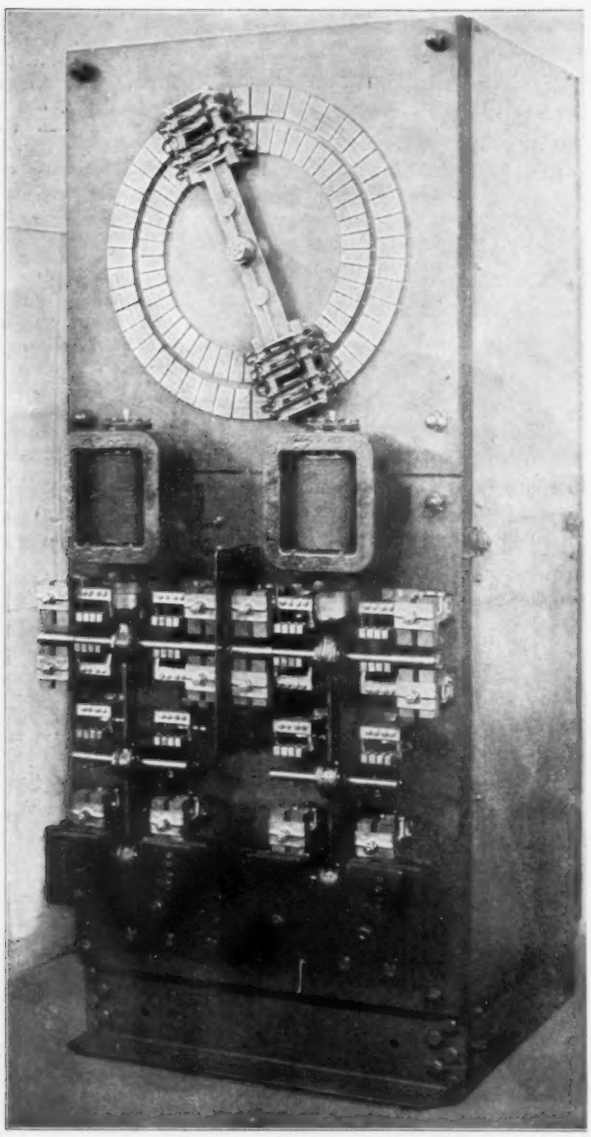


PLATE VIII.

direction of the movement. With this system of operation, the speed was necessarily slow.

The next installation was that of the two elevators at the corner of Thirty-third street and Fifth avenue, New York City, designed by Mr. N. P. Otis, assisted by Mr. R. C. Smith, with motors and electrical devices designed by Mr. Rudolph Eickemeyer. The motors were of the now well-known Eickemeyer type.

In these machines the motor was connected directly to a worm shaft, and they differed from the modern drum elevator only in minor details and the electrical control.

The motor was compound-wound, with a fixed shunt field. A starting resistance in the armature circuit was controlled by a series solenoid, which only allowed the resistance to be varied inversely as the starting current taken. The series field was used in starting, and was cut out as soon as the full speed was attained, when the motor operated on the shunt winding at a single fixed speed. A brush was moved over the resistance contacts by means of a weight, which was counteracted by the main current passing through the solenoid coils. The controlling switches were moved by a hand-rope passing through the car, which, when centered, moved the resistance brush and weight mechanically to the upper position, cutting in all the resistance, and holding it in until the motor was fairly started. The brake was operated mechanically by the hand-rope.

All electric elevators were of the drum type until 1894, when

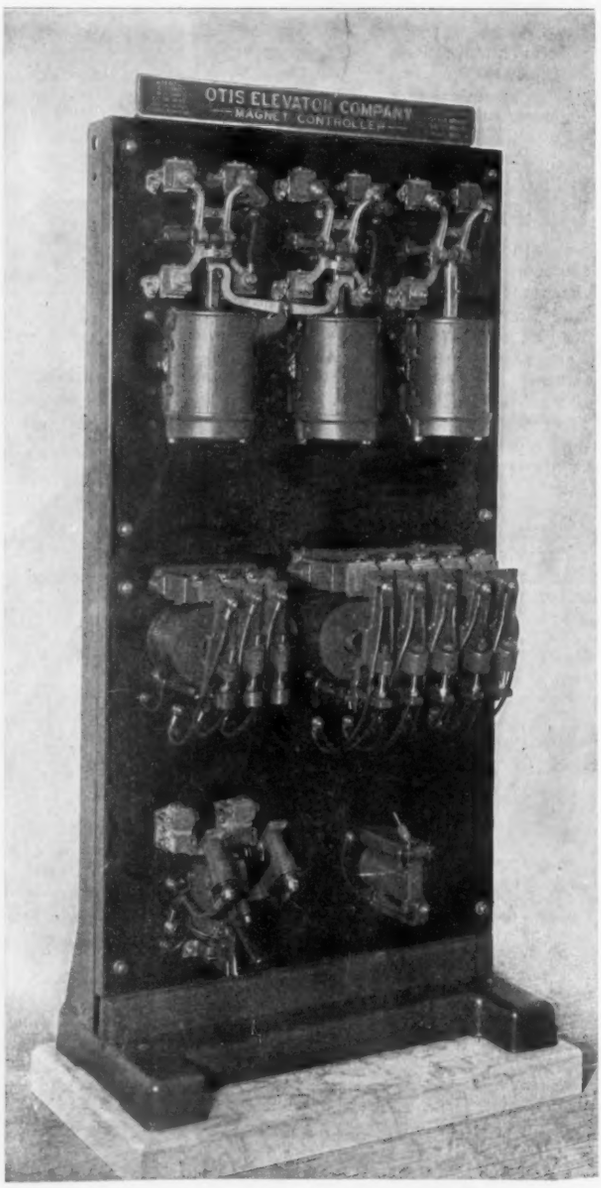


PLATE IX.

Frank J. Sprague, M. Am. Soc. C. E., brought out the long-screw, electric elevator, with his well-known pilot-motor control. The electric parts of the machine were designed by Mr. Sprague, and the mechanical details by Mr. C. F. Pratt.

The machine was very popular for a time, but proved structurally weak and expensive in maintenance. The balls of the ball nut wore rapidly and cut the screws, and the machine required excessive lubrication. The design was such that the frame was weak when the strain of the cables was distributed unequally, and it did not prove as economical in current consumption as the drum type of elevator. Its manufacture has been abandoned. This machine is shown on Plate VII.

The failure of these machines has been ascribed by their de-

signer, Mr. Pratt, to screws of too small diameter, and the original screws in some existing plants have been replaced by screws of larger diameter, and, thus far, have shown excellent results.

In 1899 the Sprague Elevator Company installed what was then the largest electric elevator plant yet attempted, in the shafts of the London Street Railway. These elevators were very large, carrying loads of about 14,000 lbs., equivalent to ninety people.

The machines were of the drum type, but duplex, *i. e.*, each drum was driven by two motors and two sets of double worm gearing. The worms were of the Hindley type, and each pair of worm gears was balanced by meshing spur gearing, keyed to the worm shafts. The vibrating sheaves leading the cables to the drum were positively traversed by being geared to the drum shafts by special gearing operating traversing screws, upon which the bushings of the vibrating sheaves were supported.

The motors were of the railroad type, shunt-wound, with four poles.

The control was of the pilot-motor type, substantially as used with the long-screw machine.

A photograph of the controller is shown on Plate VIII. and a wiring diagram in Fig. 6.

These machines were very successful, and were a credit to their designers.

The drum electric elevator of 1893 was a one-speed machine. Efforts to accomplish variable speed resulted in the application of the Ward Leonard system of control, consisting essentially in maintaining a constant shunt-field at the elevator motor, and controlling the motor by varying the armature current. To effect this, the armature current is supplied from an independent generator, the shunt-field of which, as well as that of the motor, being supplied from another source. The current delivered by the independent generator is controlled by a field rheostat in the elevator car. Thus the operator in the car does not control the elevator motor directly, but controls the motor armature current by varying the resistance in the generator field. This type of elevator is capable of a considerable range of speeds, and handles well, accelerating and slowing down gradually when leaving or approaching a landing.

Drum elevators with this control were installed in the Fahys, Sampson and Singer Buildings, New York City, and are very successful in operation. The armature current for each elevator is supplied by an independent engine and dynamo.

At the Gillender Building, New York City, a similar plant is in use, but, instead of the separate engine and dynamo, a motor generator suppiles the armature current for the elevator motor The current for the operation of the motor of the motor generator, as well as for the field currents, is taken from the street mains.

A similar plant at the building of the New York Athletic Club differs from those described only in that all the generators supplying armature current to the verious elevators are set upon one shaft with friction clutches, and thus all can be operated by a single steam engine.

These elevators are expensive in installation, on account of the number of separate engines or generators required, and hence have only been used in a few cases, where good service, rather than first cost, was the important consideration.

Fig. 7 shows a typical wiring diagram.

In 1897 John D. Ihlder designed what is known as the "Magnet Control System," the essential principle of which is causing the increase of counter-electromotive force, as the armature acquires speed, to cut out gradually the resistance and finally the series field by a series of magnets.

In a similar manner, retarding magnets are used for slowing down, so that the brake need not be used until the apparatus has come nearly or quite to a stop. The brake is held off by a magnet operated by the line current.

This form of control is now used, not only for passenger elevators, but also for very powerful furnace and mine hoists and inclined railways up to 300-h.-p.

Variable speeds are obtained by the introduction of extra field coils, which increase the field magnetization and produce slower speeds. In stopping, the extra fields are energized, thus slowing down, and the armature circuited through these fields, producing a powerful yet gentle brake action, and bringing the apparatus to rest; current is then cut off the magnet brake, preventing further motion.

Alternating current, single-, two- or three-phase, is often used to operate elevators of the lighter powers. The switches are usually controlled by mechanical connections from the car, but when controlled electrically, rectified current is used to operate the control and brake magnets. The rectified current is produced either by aluminum cells or by a small motor generator. In starting, the current may be admitted in steps by resistance in the main line, and two speeds may be used by changing the field winding connections so as to create double the number of poles.

Single-phase motors are restricted to single speed and very light duties.

For heavy elevator work, with alternating current, motor generators or rotary converters and elevator motors of the direct-current type are generally used.

The wiring diagram for a double motor machine is shown in Fig. 8.

The larger sizes of this machine have tandem, interlocking worm gears, and the power is limited by the pressures to which such gears can be subjected. Where greater duties are required, than can be performed with a single pair of worm gears, the machines are built double; that is to say, two sets of double worm gears are used, each worm gear being operated by a separate motor, as was done with the heavy lifts for the Central London Railway, mentioned previously.

A plant of 170 elevators is now being built by the Otis-Elevator Company for installation in extensions of the London Underground system, differing from the Central London plant mainly in the use of compound-wound motors with magnet control instead of plain-shunt motors and pilot-motor control.

With some of the older types of shunt-wound motors it was usual to maintain the saturation of the fields by allowing the shunt-field current to run continuously. This was necessary in order to obtain rapid acceleration and quick starting, but involved a continuous waste of current when the elevator car was not in motion.

The compound winding avoids this, the series field giving the starting torque necessary for rapid acceleration, thus enabling the shunt field to be cut off when the car is not in motion.

It is customary to over-counterbalance the car by weights suspended on cables attached to the back of the drum, these cables unwinding as the car cables wind, and *vice versa*. By adjusting the excess of counterbalance over the actual car weight to the average load carried in the car, great economy is reached, as, when the load just equals the excess counterbalance, the power required is only that necessary to overcome the mechanical friction, which, under these conditions, there being but little pressure on the worms, is a minimum.

Experience shows that under the conditions of elevator service the allowable pressure at the pitch line of a worm and wheel should not exceed 2,500 lb. with the worm running in oil. It is true that for a short period of time a higher pressure may be used, but, in elevator service, any great excess of pressure above that named results in undue heating and wear, and the likelihood of cutting the worm and gears. Hence, the load which can be lifted by a single worm wheel is limited by this condition. A double worm, with right- and left-hand threads, driving two interlocking worm wheels, thereby balancing the pressure on each, can carry double the load of the single worm, and a duplex machine, such as described, as used at the stations of the London Underground Railways, having four worms, can carry four times the load of the single gear.

The drum machine is rarely used for speeds exceeding 350 ft.; and, in very high buildings, has the disadvantage of requiring large drums in order to wind the necessary cable. In extremely tall buildings, the width of the drum face and the horizontal travel of the rope when winding may be too great for the space obtainable in the elevator shafts, making the installation difficult; hence, efforts have been made to devise machines free from drum winding, and therefore not limited in height of travel.

The first practicable arrangement of this kind was the double-motor, continuous-running, rope-drive elevator invented by Mr. E. M. Fraser, and installed in San Francisco about five years ago, and later in Chicago and Providence, and at No. 72 Broadway, New York City.

This machine consists of two motors, superimposed, each carrying a grooved pulley on its armature shaft, driving a set of endless cables.

This car is suspended by wire cables attached to a weighted sliding frame carrying a sheave, over which the endless driving cables pass. A counterweight is suspended by wire cables to a second traveling frame similar to that for the car, over the sheave of which the other bight of the endless cables passes.

In a modified form, both bights of the endless cables run on sheaves in the same frame, tension on the endless cables being maintained by a tension sheave and weight.

It will be evident by an inspection of the diagram, Fig. 9, that if both motors are moving at the same speed, and in opposite directions, the driving cables will run without moving the car or counter-balance; thus when both motors are moving at the same speed, the car and the counterweights stand still. In order to overcome any very slight variation of the speed of the motors, tending to cause the car to crawl, a magnet brake is applied to the overhead sheave. If one motor is slowed down, and the other motor speeded up, the driving rope will run faster over the pulley of the fast motor and more slowly over the pulley of the

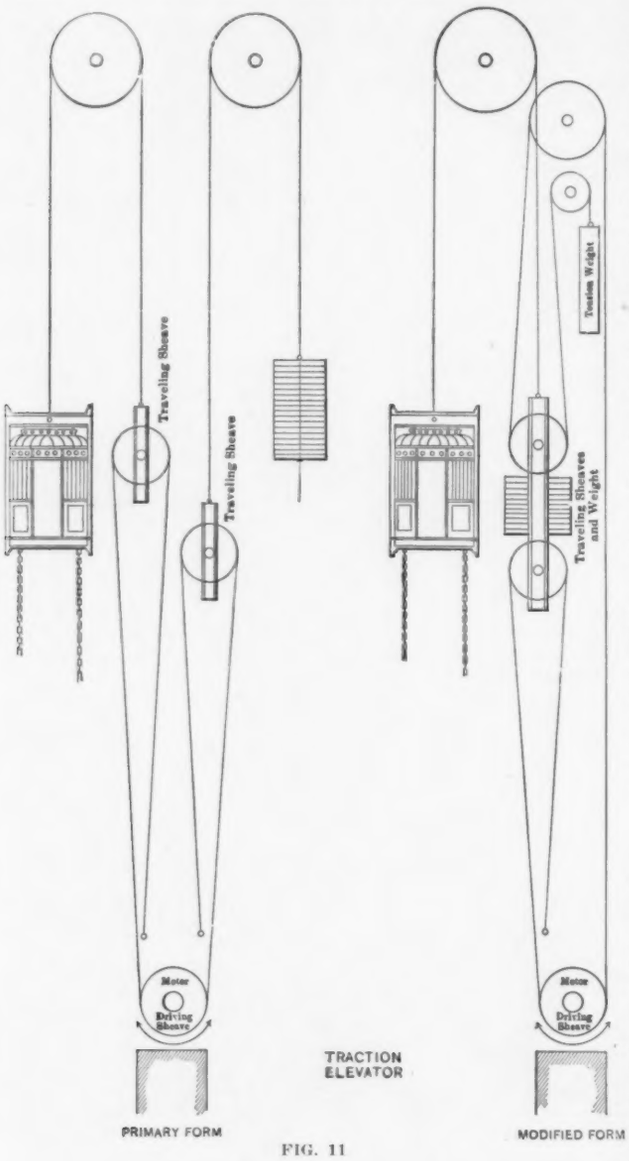


FIG. 11

slow motor, and the difference is made up by motion of the sliding frames, which in turn impart their motion to the car and counterweight. The speed of the car, therefore, will be half the difference of the circumferential speeds of the driving pulleys.

The motors run normally at 400 rev., and can be speeded and slowed down to 520 to 280 rev., respectively, thus giving a range of speed of the car from zero to 600 ft. per min., with driving pulleys 19 in. in diameter.

The motors are shunt-wound, and are controlled by varying the shunt fields. The operator governs the field by moving a rheostat in the car, which reduces the resistance in the field of one motor and increases it in the field of the other. Fig. 10 shows the wiring diagram.

In the handling, this type of elevator excels any other yet produced. It can be reversed from full speed in one direction to full speed in the other, retarding, stopping and accelerating in the opposite direction without shock or jar; and on account of its rapid acceleration and positive stop, can maintain a very high average speed between landings.

It was claimed for the Fraser type of elevator that, as the motors were continuous-running, a great saving of operating current would result, as a large proportion of the current consumed by the drum machine is used in stopping and starting. Tests of these machines in actual operation do not substantiate these claims, as the actual current consumption is greater than that of a drum machine carrying the same load. It is claimed, however, that this is more than compensated for by the superior service. On account of the small diameter of the driving sheaves, ordinary wire cables wear rapidly and compound cables are used. These consist of a steel-wire core surrounded by manila or hemp, thus combining tensile strength with flexibility.

The first cost of the Fraser machine is high, and notwithstanding its beauty of operation and other advantages, it has not been introduced extensively.

In the endeavor to retain the advantages of the rope drive, mainly the direct drive from the motor without the intervention of gearing, and avoid the use of two motors, the "Traction" type of elevator was evolved. This consists of a slow-speed motor carrying a driving sheave on its armature shaft, one end of the set of driving ropes passing around a sheave in a traveling frame, its end being made fast. This traveling sheave frame is attached to the car by wire cables. In a similar manner, the other end of the set of driving cables is connected with a traveling frame supporting a counter-balance weight. This device is shown in Fig. 11.

With this machine, unlike Fraser's, the motor must stop and start with the car, and the car and counterweight operate at half the circumferential speed of the driving pulley. The motor is controlled in the same manner as an ordinary drum machine.

The two traveling frames can be combined in one, and a tension weight added, as is sometimes done with the Fraser machine; also, a number of combinations of driving rope and traveling frames may be used, all producing the same effect.

It will be evident that while the diagram shows a gear of ½ : 1, the driving cables, after passing over the sheaves of the traveling frame, can be passed under standing sheaves, and have their ends fastened to the traveling frames instead of to a fixed point, thus making the gear ⅓ : 1, and that this can be repeated, and any desired ratio of car travel to motor speed obtained.

A machine of this type has been in operation for several months in the German-American Building, New York City, and three have been installed lately in the Beaver Building, New York City.

(*To be continued.*)

THE DOMESTIC ARCHITECTURE OF THE TURKS

THE residence on an Ottoman Turk (or Osmanli, as he would prefer to be called) of wealth and position in a large town, is of irregular construction, and somewhat rambling in character; the men's apartments and those of the women (the latter the larger of the two) often being in separate buildings connected by a corridor. In such a case the building devoted to the men contains the business office of the householder and rooms used for formal receptions and for purposes of hospitality. The key to this portion of the establishment is kept by the householder, who alone has lawful use of it, and all the service therein is performed by men. In the wall of the corridor is placed a revolving cupboard which provides the means of verbal communication between the two establishments, and also for the service of dishes when the kitchen of the women's apartment is to provide a meal for the apartments of the men.

The women's apartment has its garden and its separate entrance through a courtyard. In truly Oriental style its front door opens directly from the street into a large hall, giving access to rooms on each side and having several windows at the end opposite the entrance. One of the side rooms contains the "coffee hearth," where, over a charcoal fire, coffee, the almost incessant beverage of the Orientals, may be boiled at a moment's notice. The other side rooms are store-rooms and sleeping apartments for the inferior servants. The spacious kitchen, which is also one of the ground-floor rooms, is usually in an outbuilding, and is provided with a great arched cooking-stove, with numerous little grates and pans of brightly burnished copper or earthenware.

From the entrance-hall a wide staircase leads to the upper floor

and lands the visitor, usually, in a spacious ante-room upon which the other rooms open. The most important of these is the reception-room of the lady of the house. Sometimes (and more particularly in the older houses) this room contains an alcove on one side with its floor raised about a foot above the level of the rest of the apartment. A low divan runs along the other three sides, and in the most comfortable corner, supplied with a pile of flat, rectangular cushions, is the lady's habitual seat. Her hand mirror and jewel-box, within easy reach, a few European chairs, standing stiffly against the wall in any available place, and two or three walnut-wood tray-stools or coffee tables complete the furniture of the room.

In rooms without an alcove, a continuous sofa or couch runs across one end and half way up each side. The other end is supplied with a marble-topped console table, surmounted by mirror and candelabra, and flanked on either side by shelves in niches, containing rose-water sprinklers, sherbet goblets and other useful and ornamental objects.

Rooms used for sleeping apartments contain each a large cupboard built into the wall, for the accommodation of bedding during the day. In old walnut-wood chests, often of richest workmanship, in a treasure-room, are stored the wordrobe, personal adornments of the lady of the house, and ornaments which might add beauty to the reception-room, were it not for habits of hoarding in chests, inherited from more or less remote nomadic ancestors.

The lady's every-day ablutions are performed in a small room with a hole in the floor to allow the water (which is poured over her hands from a basin by her waiting-maid) to escape. For special ablutions she goes to her private bath attached to the house, and consisting of three apartments, one within the other, the type of what western people call a Turkish bath; or she may go to the public baths, with which every Turkish town of consequence is abundantly supplied and which are frequented by all classes of society.

In provincial towns every residence has its courtyard, and, perhaps, its garden with overshadowing trees. Those of the middle classes are spacious, abutting upon the street, over which the second story projects about two feet. The walls are often colored a deep red, the woodwork being left unpainted. The three sides are surrounded by garden and courtyard, in which shade-trees, flowering plants and vegetables grow without any systematic arrangement. The internal arrangement of the house differs little from that above described.

Turkish houses are built for summer occupancy and with little regard for cold days, which are, nevetheless, experienced in that country. For warming, a brazier, like the Venetian *scaldino*, is resorted to; and in former times the Osmanli ladies made use of a curious warming apparatus, consisting of a four-legged table having a metal shelf near the floor upon which a carefully guarded pan of charcoal was placed. A heavy quilt was thrown over the table, and this the ladies drew over their knees.

Though an Osmanli is legally entitled to marry four wives and to be the owner of as many female slaves as he can afford to keep, even among the wealthiest classes more than one wife is a rare exception, and the house here described as a typical Osmanli residence is designed for a monogamous family. A polygamous household would necessitate a separate women's apartment for each wife. That the term "haremlik" (as distinct from "selamlik," the name given to the men's apartments) as applied to the women's apartments, does not, as is popularly supposed, imply a number of women maintained in a wifely relation to one man. The term "harem" means, primarily, a sacred enclosure. It is applied to the female members of an Osmanli family, whether or not the family organization is perfectly legitimate according to our Western ideas. The term "haremlik" is applied to the women's apartments in recognition of the right of seclusion enjoyed there. The haremlik is not a "detestable prison," but a most commodious and cheerful division of an Osmanli's residence, safe from all intrusion, into which even the master of the house may not enter if there is any indication that his wife has guests; and to which permissible male visitors are limited to the father, the sons and brothers; and in which woman is the supreme ruler.

The projectng second story gives character and expression to an Osmanli's house, and it is not otherwise without its element of picturesqueness. An appreciation of splendid sites, leafy shade, cool fountains and wide horizons, has been a predominant characteristic of the Osmanlis, and it is exhibited in the location of their towns. Their plastered walls are rich in colors, which contrast well with the unpainted but time-stained woodwork. The many and spacious windows are guarded by lattices furnished with circular openings, through which the occupants of the house, themselves unseen, may gaze out upon the ever-changing scenes in the street or in the nearby waterways. Some of the older houses of the metropolis are of wood and have façades adorned with marble columns, probably taken from the ruins of more ancient edifices.

The tendency now observed to modify the distinctive features of these buildings and their furnishings, before the advance of modern European (particularly French) ideas, is not to be viewed without regret. Oriental taste is seldom at fault when left to itself. But the Oriental mind becomes confused when it attempts to combine its own notions of magnificence and luxury with those of other peoples.

L. Viajero.

THE DIFFICULTIES OF MINING METALLIC COPPER.

The fallacy that there exists in the mines of the Lake Superior region bodies of metallic copper so large that it has been found impracticable to extract them is dissipated by T. A. Rickard in an article in the *Engineering and Mining Journal*. He says that the first white men who crossed the lake and penetrated the forests of the peninsula found evidence of the earlier attempts to extract the copper; the Indians worked the metal that outcropped in many localities, testimony to their effort being shown by the battered fragments of copper dug out of old, abandoned workings. One that was taken out on Isle Royale weighed three tons and exhibited the marks of stone hammers or hatchets. There is also good reason to believe that the Indians built fires around the masses of copper that were too large to be removed, and thus removed small fragments of the metal. "The large bodies of metallic copper found in the lodes of Lake Superior are known as 'mass,'" says Mr. Rickard. "The mines which first established the fame of this region, such as the Cliff, Phœnix, Central, Minnesota, and National, were all characterized by the occurrence of 'mass.' These chunks of copper were found near the surface, and for years they continued to be encountered underground in great quantity. Such mines required but little capital; they needed chiefly the labor of cutting the metal and hoisting it to daylight. 'Mass mining,' therefore, characterized the early days. Had the Calumet and Hecla, which has always yielded a strictly stamp-mill product, been discovered in the first decade of development, it would probably have been a failure. The discovery of the Calumet conglomerate came when the rudiments of mining had been learned and when the 'mass' mines were approaching exhaustion.

"Two-thirds of the output of the Cliff mines was in the form of masses; some of them yielded from 100 to 150 tons, and as late as 1875 one of 40 tons was taken out. These irregular bodies of metal require special mining methods, for it is impossible to drill into them or use picks in the ordinary way. The Minnesota mine, in the Ontonagon district, was celebrated for large masses. The largest was found in 1857; its greatest length was 46 feet, its greatest breadth 18.5 feet, and its greatest thickness 8.5 feet. The main width was 12.5 feet, and the main thickness 4 feet. Twenty men worked 15 months to remove it from the rock; some of the cuts had a face of 16 square feet, and the cutting up yielded 27 tons of copper chips. The weight was estimated at 500 tons, but I shall have more to say about this directly.

"The circumstances of this work are told in the '*Mineral Statistics of Michigan for* 1880,' as follows: 'They uncovered a series of masses with an eastward inclination for the length of 70 or 80 feet, and going out of sight both above and below. It was at once apparent that they had something very valuable, but they had no conception of the immense thing which a few days' work disclosed. At one convenient point they broke away behind the copper so as to get in a sand blast of five or six kegs of powder. They stripped the mass further, and again fired without result. Again they fired nine kegs of powder, and the mass remained unmoved. Breaking the rock around for a considerable distance, 18 kegs of powder were shot off without effect, and again 22 kegs, and the copper entirely undisturbed at any point. After further clearing, 25 kegs were shot off under the copper, and it was thought with some effect. But a final blast of 30 kegs, or 750 pounds, was securely tamped beneath the mass and fired. As soon as the smoke cleared away a mass of copper 45 feet long and 3 to 5 feet in thickness, apparently very pure, and which will probably weigh 300 tons, had been shot out and was ready for cutting up. The blast had torn the immense body from its bed without exhibiting a sign of breaking or bending in any place, so great was its thickness and strength. It was torn off from other masses, which still remain in the solid rock.'

"These bodies of copper are extremely irregular in thickness; they are ragged in form and straggle through the lode until they nearly connect with other monstrous nuggets. Such was the character of the series of masses encountered in the Bay State mine, now the Phœnix, forty years ago. These aggregated some 600 tons, but they were bodies, none of which singly exceeded 200 tons, connected by strings of metal. The practice then, and now, has been to cut the mass with cape chisels having a three-fourths-inch bit, the successive chips being about one-eighth-inch thick. The narrow strips obtained from this operation, when made by skilful operators, and in the absence of any flaw or included rock along the course of the chisel, were taken in one cut through the entire 'mass.' The earlier method was to carry the chip about one-eighth-thick, as stated, and of equal thickness on both sides, but later this was changed to a more rapid way, the chips thinning to an edge and alternating, as is usual with a cutting made by a chisel of this kind, the process being similar to the driving of a key-way. The narrow strips obtained from this operation are only about half the length of the groove which yielded them, because the metal becomes pressed together and thickened by the blows of the cutters. Certain men made a specialty of this work and became expert, so as to cut a square foot of surface per shift; this meant that one man held the chisel and guided it along the line of cut, while two others struck the chisel alternately with sledge-hammers. The cost averaged $12 to $14 per square foot; at present, with the pneumatic hammer, the cost is $3.15 per square foot, exclusive of the power."

THE ILLUSTRATIONS

Passenger Elevator Diagrams: Two Plates.
For description, see article elsewhere in this issue.

The Rogers Memorial Parish House, Fairhaven, Mass.
Mr. Charles Brigham, Architect, Boston, Mass.

Cloister Connecting Rogers' Memorial Church and Parish House, Fairhaven, Mass.

Interior View of the Same.

Part of Cartwright Memorial Hall, Bradford, England.
Messrs. J. W. Sampson & F. W. Allen, Architects.
This plate is copied from *The Builder*.

Additional Illustrations in the International Edition.

Side Porch: Rogers Memorial Church, Fairhaven, Mass.
Mr. Charles Brigham, Architect, Boston, Mass.

Chancel Detail of Same Church.

Rear View: Rogers Memorial Parish House, Fairhaven, Mass.

Entrance to Apartment House, No. 267 Madison Ave., New York, N. Y.

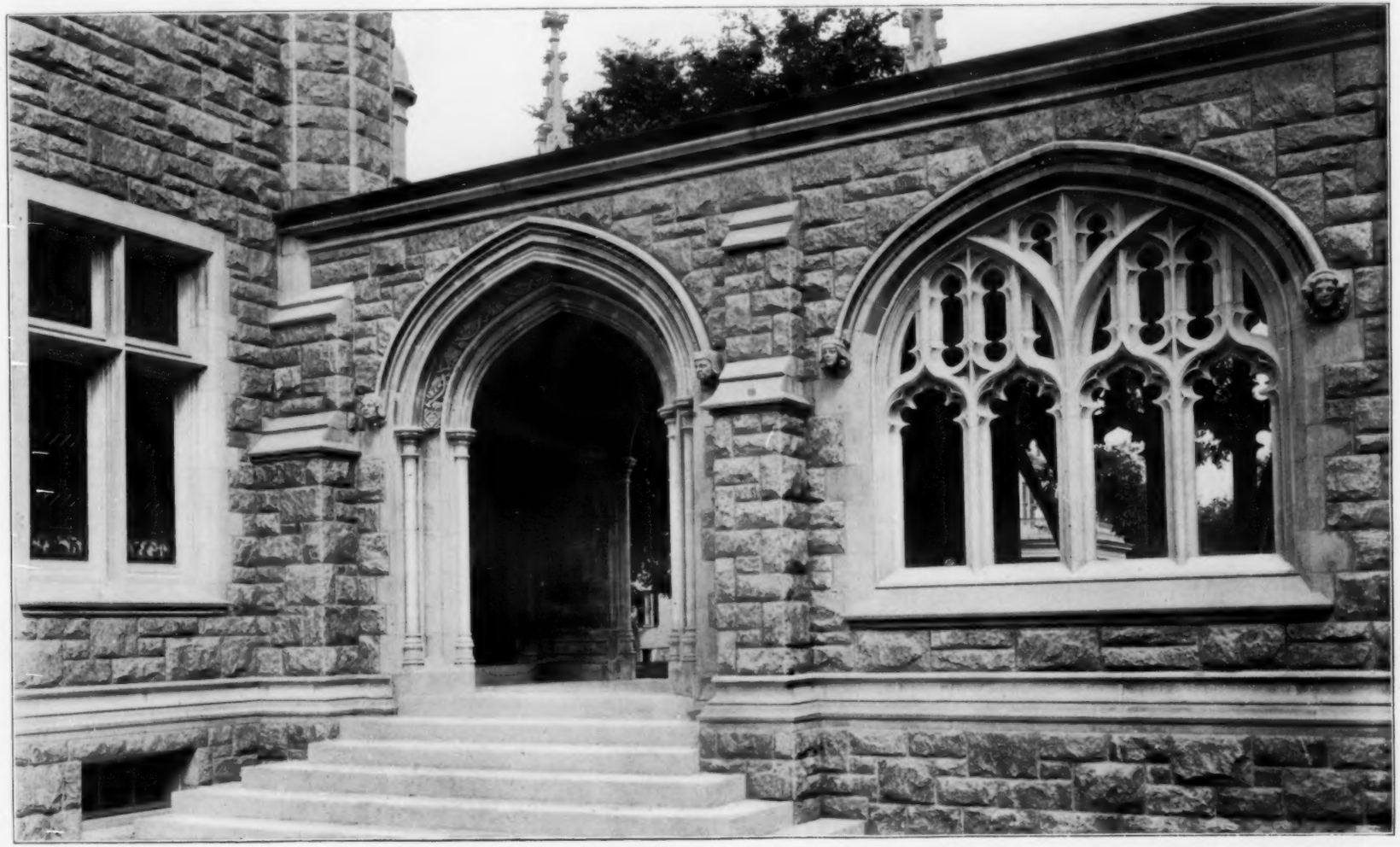
NOTES AND CLIPPINGS

Dam for the Cascade Reservoir, Colo.—The largest dam in the State of Colorado is being constructed for the Cascade reservoir in the San Juan country. The wall will be 105 feet in height, and the water stored will reach a depth of 100 feet. The dam will store 3,071,000,000 cubic feet of water, or 500,000,000 feet less than the famous Cheesman dam, which stores Denver's water supply.—*Exchange.*

Artistic Copyright.—The United States Court of Appeals in New York City has rendered a decision of importance to publishers with reference to copyright protection in this country. Suit was brought in the United States Circuit Court by Emil Werckmeister, proprietor of the Berlin Photographic Company, against the American Lithographic Company and the American Tobacco Company, to prevent the publication as advertisements of cheap and garbled copies of a picture entitled "Chorus," painted by Sadler, an English artist, who had sold the copyright to the Berlin Photographic Company. The defence was that the original picture had been exhibited by the artist at the Royal Academy in London, without attaching a notice of copyright thereon, as required by the United States statute. This defence was sustained by the Circuit Court. The decision of the Circuit Court of Appeals, now rendered, reverses that judgment, and sustains the validity of the copyright. After an elaborate review of the decisions, which goes back as far as the year 1469, when the Senate of the Republic of Venice granted an exclusive privilege of printing, the court comes to the conclusion that the questions presented have not been directly decided in the case of paintings, but that in the analogy of copyright in books, lectures and dramatic compositions, the defence was without foundation, and that such an exhibition is not publication as contemplated by the statute. The decision is of great practical importance, because it was hitherto believed that, under a decision of the Circuit Court of Appeals rendered in Massachusetts, the exhibition of a picture without a notice printed thereon at a public gallery destroyed the validity of the copyright.—*New York Evening Post.*

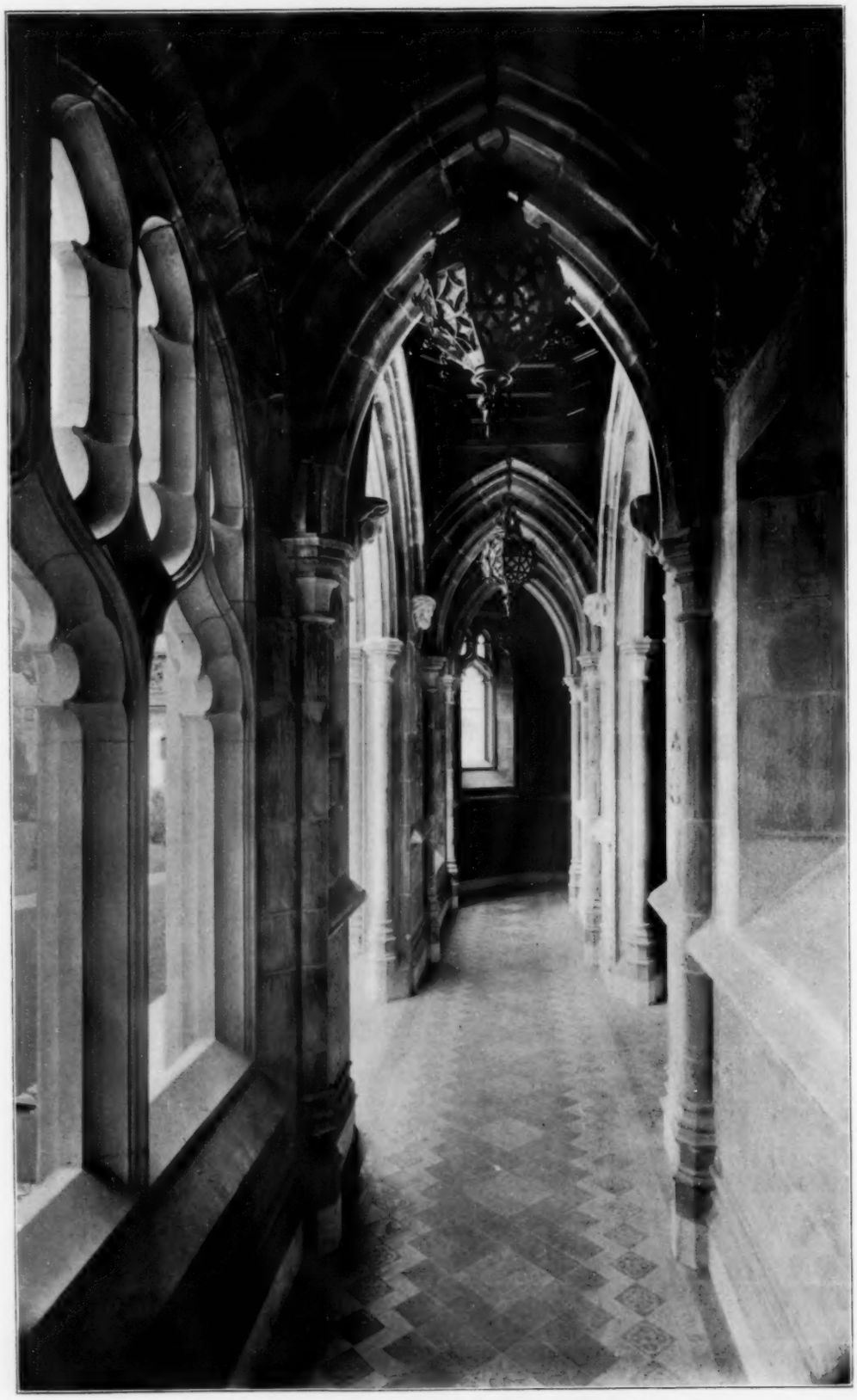
The Hanover of George I.—In the old town one can see the point on the River Leine from which tradition derives the name of the town; it was a fording place where six highways met on a high bank—*Hohen Ufer—Han-nó-ver*—as the Germans say. At this point there still stands a fourteenth century remnant of the now vanished town wall; a massive gray stone tower with an occasional loophole. Like a grim sentinel it has guarded for six centuries the cradle of the town. Of other ancient remains the most interesting is, perhaps, a patrician stone house of the seventeenth century Renaissance. Its most decorative feature is an oriel bearing a sculptured frieze between the tiers of windows, whereon sixteen reliefs picture the principal Bible stories from Adam to the Apostles. This is the house in which Leibnitz lived and died, and where one can still see his study and his curious old desk. Another old building, more quaint and beautiful, is the St. Nicholas Chapel, which is as severe looking as four straight walls, unbroken except by the simplest form of door and window, and a red tile roof, that slopes from the ridge pole to the four sides can make it. Nothing breaks the uncompromising severity of the exterior but its curious incrustation of memorial tablets, each one of which is a study in mediæval theology. These buildings are chief among the few remaining relics of the town over which George I. wept when he reluctantly set forth to mount the throne of Great Britain, France and Ireland. Here he left his heart, and here he returned as often as he could leave England to itself and to Walpole. It was here in the garden at Herrenhausen—so local history recites—that the patriotic nightingales ceased singing for the year on that night when their king, returning to his beloved Hanover, held that ghastly race with death, in which death won at Osnabrück.—*The Chautauquan.*

The Preservation of German Historical Monuments.—For some years past a movement for the protection of historical monuments and places has been spreading rapidly in Germany, and a congress on the subject has just been held at Mainz. The representative of the Hessian Government maintained that all protective operations should be based, if possible, on a common understanding between authorities of State and Church on the one side and local bodies and private persons on the other. A rigid bureaucratic system and sentimentality, he remarked, were equally to be avoided; the needs of the present and the capacity of ratepayers must be weighed dispassionately, and the whole movement based on an instructed public opinion. The representatives of Austria and Prussia reported on various projects of monument legislation in each of those States, and it was announced that a forthcoming Prussian law would arm municipal authorities with legal powers to enforce æsthetic requirements. A "Handbook of the Artistic Antiquities of Germany" is to be published in five volumes, and the Kaiser has authorized a grant of 50,000 marks in aid of the work. A long discussion took place concerning the treatment of the older examples of domestic architecture in historical cities, and it was urged that these should not only be catalogued, photographed and measured, but should be preserved. The subject of local building regulations in relation to the care of historical monuments was introduced by Ober-Baurath Dr. Stübben of Berlin, a great authority. He dwelt upon the danger that old buildings incurred from the inconsiderate enforcement of municipal regulations. Hildesheim and Vienna, he said, had set a notable example in this matter. The Bavarian Government has sanctioned the issue of local regulations with æsthetic intent in the larger towns, and has ordered the preparation of illustrated local inventories of old buildings the preservation of which is desirable. Nürnberg, Hildesheim, Frankfort, Lübeck, Rothenburg, and other cities have local building regulations compelling adherence to traditional style in all new work undertaken in the older districts. A resolution approving such restriction was adopted by the congress, and will be distributed among German municipal authorities everywhere.—*New York Evening Post.*



EXTERIOR OF CLOISTER PASSAGE: ROGERS MEMORIAL BUILDINGS, FAIRHAVEN, MASS.

Charles Brigham, Architect.



INTERIOR OF CLOISTER PASSAGE: ROGERS MEMORIAL BUILDINGS, FAIRHAVEN, MASS.

Charles Brigham, Architect.

American Architect,
December 10, 1904.
No. 1511.

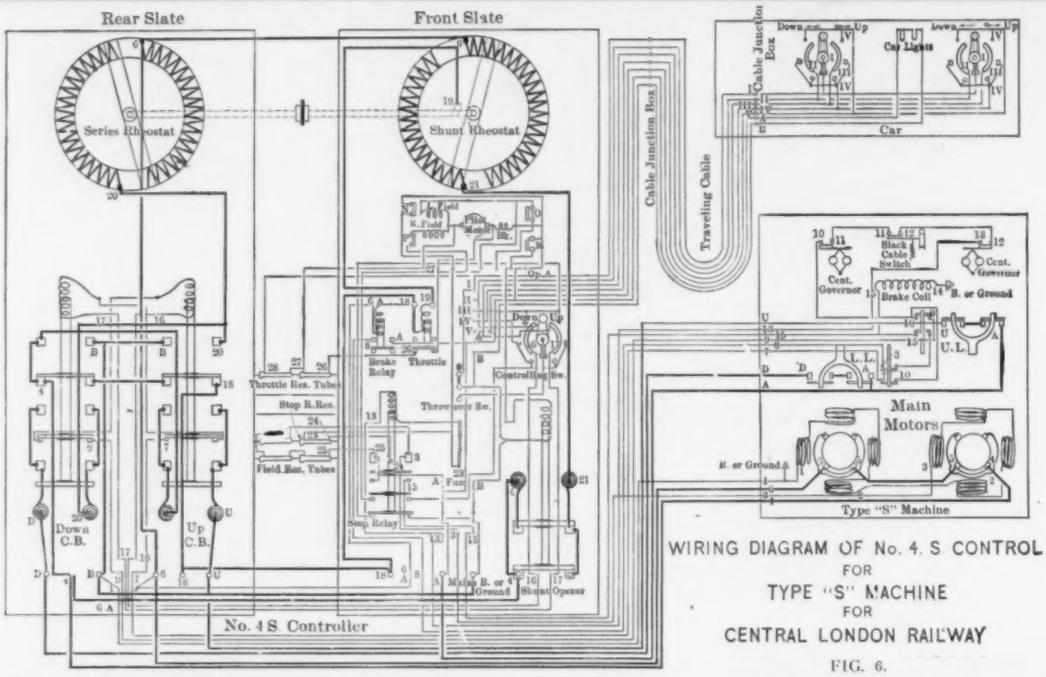


FIG. 6.

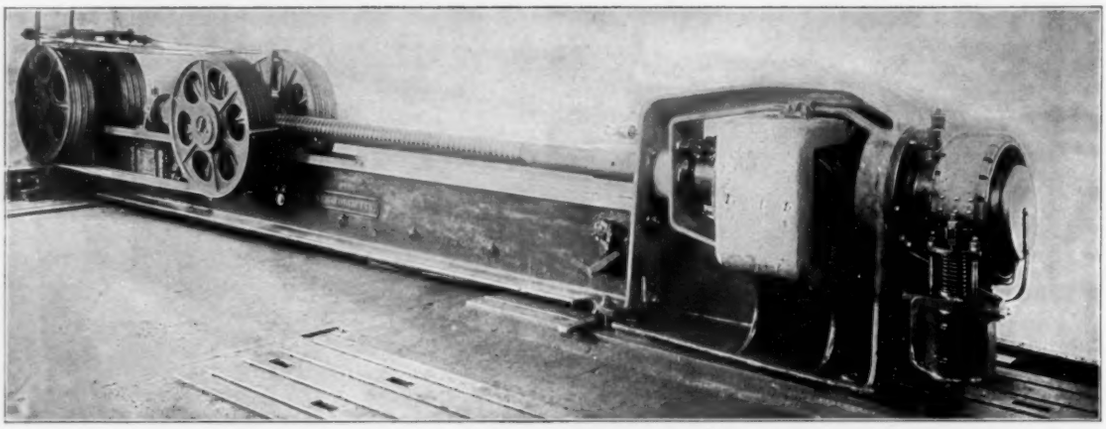


PLATE VII.—SPRAGUE LONG-SCREW ELECTRIC ELEVATOR ENGINE.

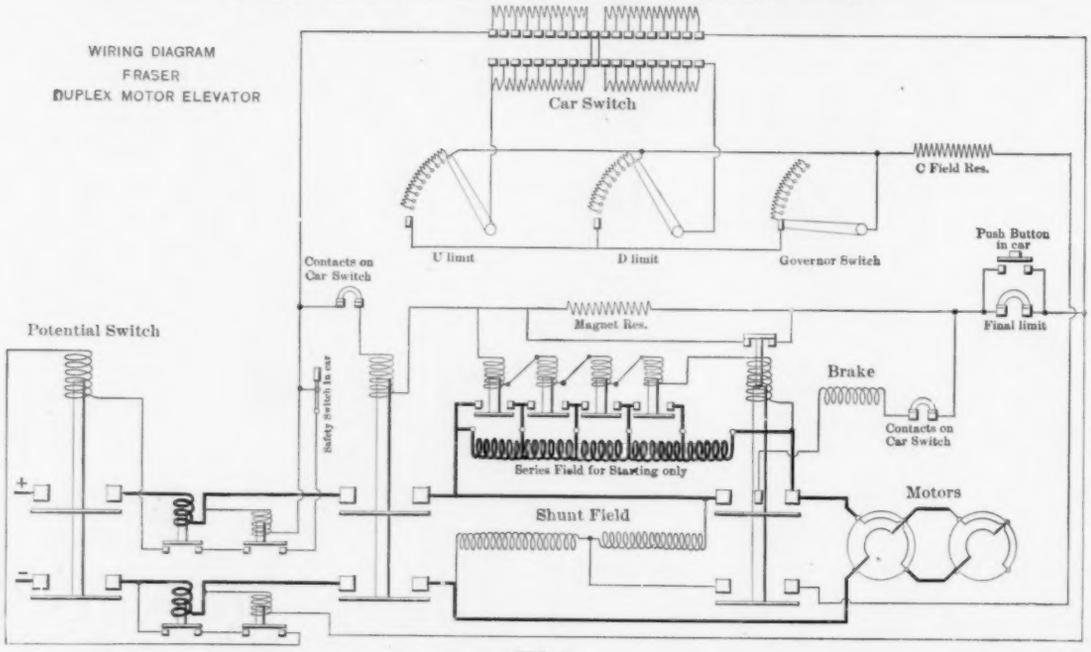


FIG. 10.

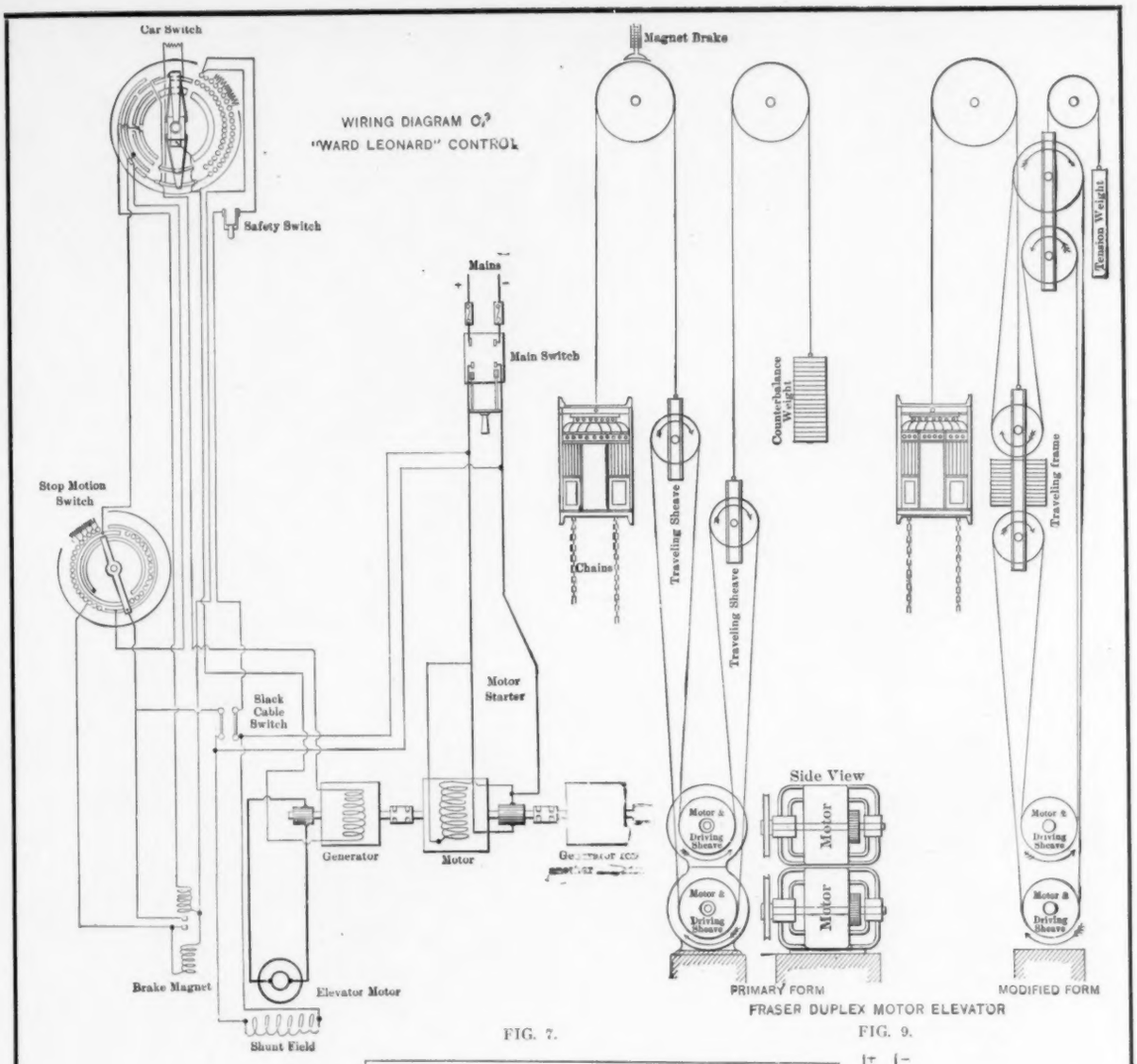


FIG. 7.

FIG. 9.

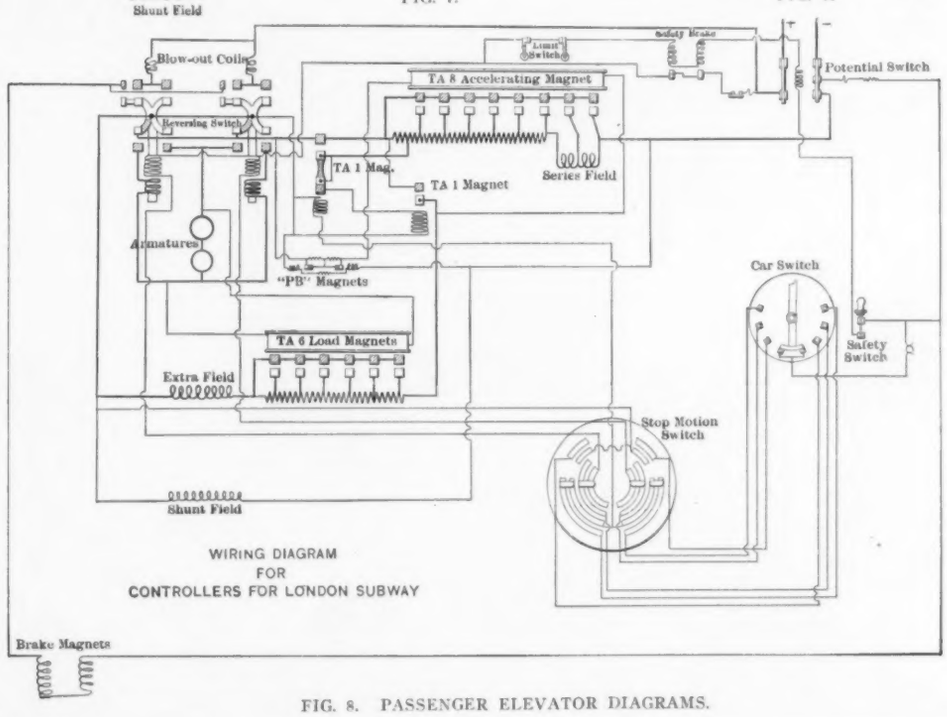
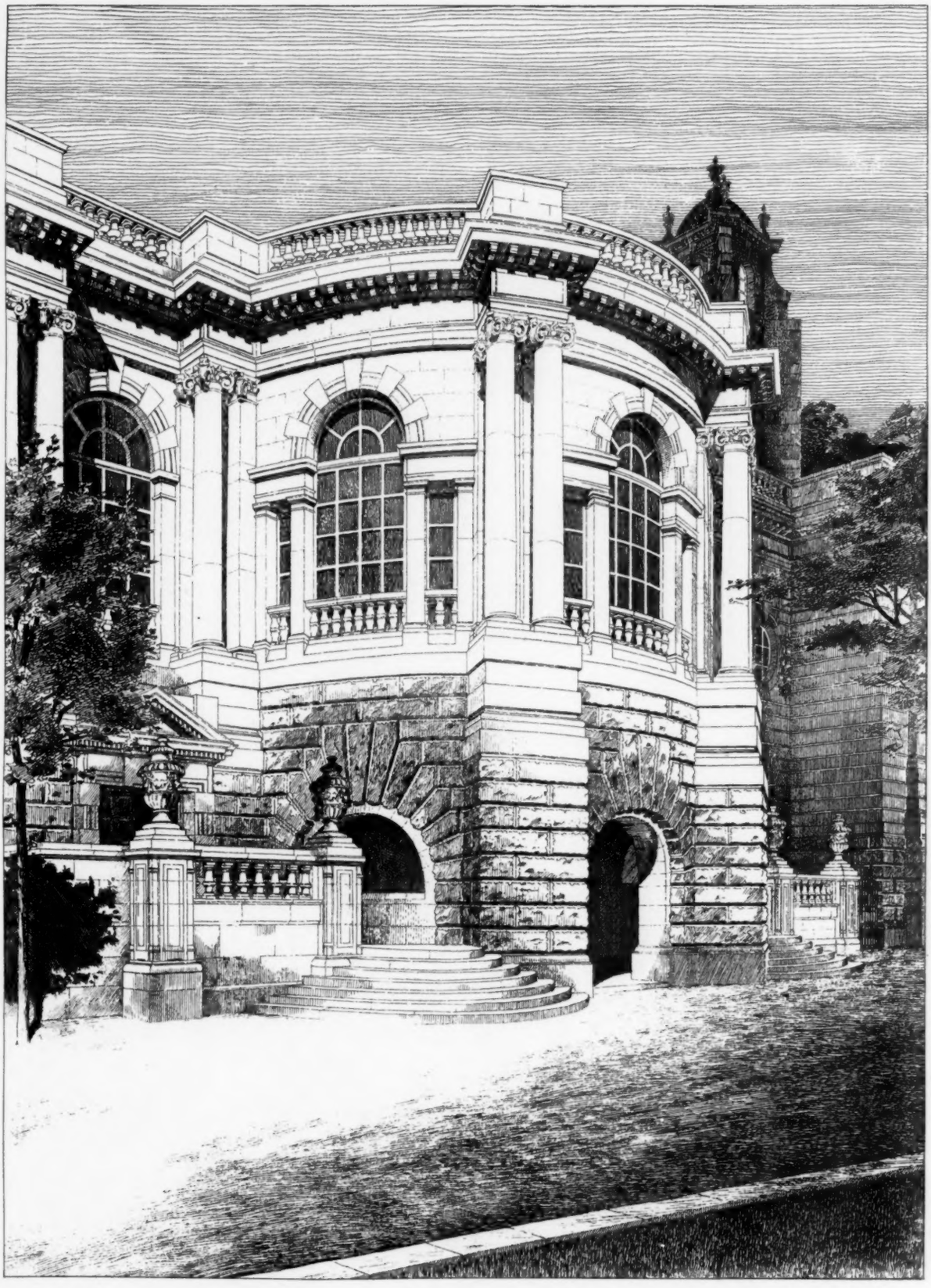


FIG. 8. PASSENGER ELEVATOR DIAGRAMS.



From *The Builder.*

PART OF CARTWRIGHT MEMORIAL HALL, BRADFORD, ENGLAND.

J. W. Simpson & F. M. Allen, Architects.

FRONT VIEW: ROGERS MEMORIAL PARISH HOUSE, FAIRHAVEN, MASS.

Charles Brigham, Architect.