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PERSONAL

Mr. Thos. P. McDonough has been appointed Engineer of Track Elevation for the city of Chicago, to succeed Mr. Theodore Buskirk, resigned.

Mr. Jacob R. Rogers, President of the Rogers Locomotive & Machine Works, Paterson, N. J., was seriously injured on Feb. 10 by a cable car in New York city.

Mr. Nathaniel Roberts, M. Am. Soc. C. E., consulting engineer, has removed his office from 120 Liberty St. to Rooms 1430 and 1431 Bowling Green Building, 11 Broadway, New York city.

Mr. George S. Morison, Past President Am. Soc. C. E., of New York city, delivered a lecture on "Masonry" before the students of the Rensselaer Polytechnic Institute, Troy, N. Y., Feb. 8.

Mr. L. S. Doten, Resident Engineer on the Rutland-Canadian R. R., has resigned to accept the appointment as Cartographic Draftsman in the Hydrographic Office of the Navy Department, Washington, D. C.

Mr. Arthur J. Rockwood, of the firm of Guthrie & Rockwood, civil engineers, 836 Elliott Square, Buffalo, N. Y., has been appointed Division Engineer of the Western Division of the Erie Canal, to succeed Mr. W. Little, resigned.

Mr. John McGhie, who for several years has been connected with the General Electric Co. as Manager of the Advertising Department, with offices at 44 Broad St., New York, has resigned to accept the position of Western representative of the "American Machinist," with headquarters in Cleveland, O.

Mr. W. H. Truesdale, First Vice-President and General Manager of the Chicago, Rock Island & Pacific Ry., whose selection by the Nominating Committee of the Board of Directors of the Delaware, Lackawanna & Western R. R. to succeed Mr. Sloan as President of the latter road was noted in our last issue, has accepted the office, and will be formally elected by the Directors.

Mr. Desmond FitzGerald, of Boston, Mass., President of the American Society of Civil Engineers, and Mr. Rudolph Hering, M. Am. Soc. C. E., of New York city, have been appointed by Mayor Dodge, of Worcester, Mass., to act with Mr. F. A. McClure, City Engineer of Worcester, as a commission of experts in preparing a report of the best method of abolishing the grade crossings in that city.

Mr. William E. Baker, electrical engineer, has been appointed General Superintendent and Chief Electrical Engineer of the Manhattan Ry. in New York city. Mr. Baker is a graduate of Lafayette College, Easton, Pa., and was connected with the engineering department of the St. Paul & Pacific Ry., the St. Paul, Minneapolis & Manitoba Ry., the Canadian Pacific Ry., and the Great Northern Ry. He installed the electrical equipment of the West End St. Ry. of Boston, Mass., and had charge of the construction of the Interurban Ry. at the World's Fair in Chicago. Since then he has been General Superintendent of the Metropolitan West Side Elevated R. R. of Chicago.

Mr. W. H. Wells, Civil Engineer of the Southern Ry., with headquarters in Washington, D. C., has reorganized the Engineering Department and announces the following appointments: Mr. Chas. B. Clark, Assistant Engineer and Office Assistant, Washington; Mr. Benj. Thompson, M. Am. Soc. C. E., Resident Engineer of the Eastern Division, with headquarters in Greensboro, N. C.; Mr. W. F. H. Finke, Assistant Engineer, in charge of the Washington and Richmond Division, with headquarters in Washington; Mr. F. de P. Horne, Assistant Engineer in charge of the Norfolk and Asheville Division, with headquarters in Greensboro, N. C.; Mr. W. E. Vest, Assistant Engineer, in charge of the Charlotte and Columbia Divisions, with headquarters in Charlotte, N. C.; Mr. B. C. Milner, Jr., Resident Engineer of the Western Divisions, with headquarters at Atlanta, Ga.; Mr. J. B. Newton, Assistant Engineer, in charge of the Knoxville, Memphis and Louisville Divisions, with headquarters in Knoxville, Tenn.; Mr. J. C. Motley, Assistant Engineer, in charge of the Atlanta and Macon Divisions, with headquarters in Atlanta, Ga., and Mr. J. R. Pili, Assistant Engineer, in charge of the Birmingham and Anniston Divisions, with headquarters in Birmingham, Ala.

OBITUARY.

Mr. O. S. Horton, contractor, of Galena, Ill., died of apoplexy, Feb. 7.

Mr. Robert Falconer, civil engineer, died in the Soldiers' Home, Erie, Pa., Feb. 5, aged 58.

Mr. Herbert Lee Weston, civil engineer, of Bayonne, N. J., died Feb. 7, aged 49. He was associated with Mr. Emmett Smith, City Engineer of that place.

Mr. John Barrett, sewer contractor, of Chicago, Ill., died in that city, Feb. 6, aged 63. He was born in Cambridgeshire, England, and went to Chicago in 1860.

Mr. Hugh Ryan, railway contractor, of Toronto, Ont., died Feb. 13, aged 67. He built the Canadian Sault Ste. Marie ship canal lock and many miles of railway in Canada, Michigan, Illinois, Kentucky and Maine.

Mr. Jesse H. Bunnell, senior partner of the firm of J. H. Bunnell & Co., manufacturers of electrical supplies, 16 Cortlandt St., New York city, died Feb. 8, at his home in Brooklyn, N. Y., aged 56. He was born in Massillon, O., and learned telegraphy. During the Civil War he was a member of the United States Military Telegraph Service in which he distinguished himself and at the close of hostilities he came to New York and established the firm mentioned above.

ENGINEERING SOCIETIES.

COMING TECHNICAL MEETINGS.

NEW YORK RAILROAD CLUB.
Feb. 16. Secy., W. W. Wheatley, 168 Montague St., Brooklyn, N. Y.

CHICAGO ELECTRICAL ASSOCIATION.
Feb. 17. Secy., J. R. Cravath, 825 Monadnock Block, Chicago, Ill.

THE DETROIT ENGINEERING SOCIETY.
Feb. 17. Secy., Henry Goldmark, Wayne Co. Savings Bank Bldg., Detroit, Mich.

ROCHESTER ENGINEERING SOCIETY.
Feb. 17. Secy., John F. Skuener, Reynolds Library Bldg., Rochester, N. Y.

ENGINEERS' CLUB OF PHILADELPHIA.
Feb. 18. "A Sand Filter Plant," J. W. Ledoux. Secy., L. F. Rondinella, 1122 Girard St., Philadelphia, Pa.

ENGINEERS' AND ARCHITECTS' ASSOCIATION OF SOUTHERN CALIFORNIA.
Feb. 18. Secy., Frank Van Vleck, Currier Block, Los Angeles, Cal.

ENGINEERS' CLUB OF COLUMBUS.
Feb. 18. Secy., H. M. Gates, 12½ North High St., Columbus, O.

ENGINEERS' AND ARCHITECTS' CLUB OF LOUISVILLE.
Feb. 20. "The Nicaragua Canal." Secy., Marshall Morris, 16 Norton Bldg., Louisville, Ky.

TECHNICAL CLUB OF OMAHA.
Feb. 20. Secy., J. Harry Lawrie, Omaha, Neb.

ENGINEERS' CLUB OF MINNEAPOLIS.
Feb. 20. Secy., H. E. Smith, 1620 S. E. 14th St., Minneapolis, Minn.

WESTERN RAILWAY CLUB.
Feb. 21. Secy., F. M. Whyte, 225 Dearborn St., Chicago, Ill.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.
Feb. 21. Secy., R. A. Fessenden, 410 Penn Ave., Pittsburgh, Pa.

FRANKLIN INSTITUTE.
Feb. 21. "Progress in the Utilization of Garbage," Dr. Bruno Terne; "A Process for Testing Metals," Joseph Richards. March 3. "Some Features in the Structural Design of Buildings," Prof. Wm. H. Burr. Secy., Wm. H. Wahl, 15 South 7th St., Philadelphia, Pa.

AMERICAN INSTITUTE OF MINING ENGINEERS.
Feb. 21-25. Annual meeting, New York city. Secy., R. W. Raymond, P. O. box 223, New York city.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.
Feb. 22. Secy., Ralph W. Pope, 26 Cortlandt St., New York city.

MICHIGAN GAS ASSOCIATION.
Feb. 22-23. Annual meeting, Lansing, Mich. Secy., Henry H. Hyde, Saginaw, Mich.

ENGINEERING ASSOCIATION OF THE SOUTH.
Feb. 23. Secy., H. M. Jones, 1000 Broad St., Nashville, Tenn.

CANADIAN SOCIETY OF CIVIL ENGINEERS.
Feb. 23. Secy., H. C. McLeod, 112 Mansfield St., Montreal, Que.

CIVIL ENGINEERS' CLUB OF CLEVELAND.
Feb. 28. Secy., Wm. H. Searles, Case Library Building, Cleveland.

ASSOCIATION OF ONTARIO LAND SURVEYORS.
Feb. 28. Annual meeting, Toronto, Canada. Secy., A. J. Van Nostrand, Toronto, Canada.

FOUNDRYMEN'S ASSOCIATION (Philadelphia).
March 1. Secy., Howard Evans, Pier 45, N. Delaware Ave., Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.
March 1. Secy., C. W. Hunt, 220 West 57th St., New York city.

WESTERN SOCIETY OF ENGINEERS.
March 1. Secy., N. L. Litten, Monadnock Block, Chicago, Ill.

BROOKLYN INSTITUTE OF ARTS AND SCIENCES.
March 3. Secy., Henry I. Weed, Brooklyn Institute of Arts and Sciences, Brooklyn, N. Y.

TECHNICAL SOCIETY OF THE PACIFIC COAST.
March 3. Secy., O. Van Geldern, 839 Market St., San Francisco, Cal.

ENGINEERS' CLUB OF ST. LOUIS.
March 5. Secy., E. R. Fish, 2401 N. Spring Ave., St. Louis, Mo.

ENGINEERING SOCIETY OF WESTERN NEW YORK.
March 6. Secy., H. J. March, Library Bldg., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.
March 6. Secy., C. L. Annan, City Engineer's Office, St. Paul, Minn.

AMERICAN INSTITUTE OF ARCHITECTS (New York Chapter).
March 8. Chas. I. Berg, 215 W. 57th St., New York city.

AMERICAN INSTITUTE OF ARCHITECTS (New York Chapter).
March 8. Secy., Chas. I. Berg, 10 West 23d St., New York city.

BROOKLYN ENGINEERS' CLUB.
March 9. Secy., A. J. Provost, Jr., 191 Montague St., Brooklyn, N. Y.

ST. LOUIS RAILWAY CLUB.
March 10. Secy., H. H. Roberts, 511 Commercial Bldg., St. Louis, Mo.

WISCONSIN STATE CHEMICAL ASSOCIATION.
March 10. Secy., I. Ladoff, 154 Knapp St., Milwaukee, Wis.

MONTANA SOCIETY OF ENGINEERS.
March 11. Helena, Mont. Secy., A. S. Hovey, National Bank Bldg., Helena, Mont.

THE LOUISIANA ENGINEERING SOCIETY.
March 13. Secy., J. F. Coleman, 712 Union St., New Orleans, La.

ENGINEERS' CLUB OF KANSAS CITY.
March 13. Secy., F. W. Tuttle, Baird Bldg., Kansas City, Mo.

DENVER SOCIETY OF CIVIL ENGINEERS.
March 14. Secy., W. B. Lawson, 36 Jacobson Bldg., Denver, Colo.

NORTHWEST RAILWAY CLUB.
March 14. Secy., T. A. Fogue, Soo Line, Minneapolis, Minn.

NEW ENGLAND RAILWAY CLUB.
March 14. Secy., Edw. L. Janes, P. O. Box 1158, Boston, Mass.

RAILWAY SIGNALING CLUB.
March 14. Secy., C. O. Tilton, C. M. & St. P. Ry., West Milwaukee, Wis.

BOSTON SOCIETY OF CIVIL ENGINEERS.
March 15. Secy., S. E. Tinkham, City Hall, Boston, Mass.

WESTERN FOUNDRYMEN'S ASSOCIATION.
March 15. Secy., B. M. Gardner, 1522 Monadnock Block, Chicago, Ill.

ENGINEERS' CLUB OF CINCINNATI.
March 16. Secy., J. F. Wilson, P. O. Box 333, Cincinnati, O.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.
March 16. Secy., F. A. Charpiot, P. O. Box 13, Savannah, Ga.

NORTHWESTERN TRACK AND BRIDGE ASSOCIATION.
March 17. Secy., D. W. Meeker, St. Paul, Minn.

WISCONSIN ENGINEERS' SOCIETY.
March 30. Annual meeting, Appleton, Wis. Secy., F. J. Harriman, Appleton, Wis.

BROOKLYN ENGINEERS' CLUB.—A regular meeting of this club was held on Feb. 9. Mr. Wm. P. Gerhard read a paper on "A Half Century of Sanitation."

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—The annual banquet of this society was held at the Hotel Schenley, Pittsburgh, Pa., on Feb. 9, with fully 200 members and guests present.

ENGINEERING ASSOCIATION OF THE SOUTH.—In the future meetings of this society will be held on the second Thursday of each month, at the Berry Building, Nashville, Tenn. H. M. Jones, Secy.

BOSTON SOCIETY OF CIVIL ENGINEERS.—This society held its annual dinner at the Hotel Brunswick on the evening of Feb. 7. Fully 140 were present. Discussion of current topics of engineering interest followed the dinner.

THE WEST VIRGINIA SOCIETY OF CIVIL ENGINEERS AND ARCHITECTS.—The 4th annual meeting of this society, which was to have been held at Charleston, W. Va., Jan. 19-20, was postponed owing to the small attendance.

NEW ENGLAND WATER WORKS ASSOCIATION.—The February meeting of the association was held at the Parker House, Boston, on Feb. 8. The subject was "Low Land and Mechanical Filtration." An abstract of the remarks made is given in the body of this issue.

ENGINEERS' CLUB OF COLUMBUS.—The annual meeting of this club was held on Feb. 4. Routine business was transacted and the following officers elected for the ensuing year: Pres., Edward Orton, Jr.; First Vice-Pres., Prof. C. N. Barrow; Second Vice-Pres., H. A. Lanman; Secy., H. M. Gates; Treas., William Michel; directors, I. M. Wolverton and I. M. Bennett.

ARCHITECTURAL LEAGUE.—The annual meeting and banquet of this society was held in the galleries of the American Fine Arts Society, New York city, on Feb. 9. About 200 members were present. The dinner was followed by a discussion of the topic "The Relation of Art to the Municipality and the Duty of a Citizen, Through Art, to the Municipality."

MASTER CAR BUILDERS' ASSOCIATION AND AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—The annual conventions of these associations will be held at Old Point Comfort, Va., the former beginning June 14, the latter June 19. The Hotel Chamberlain has been selected as headquarters. Further particulars may be obtained from the secretary of both associations, Mr. Jno. W. Cloud, 774 Rookery, Chicago, Ill.

CHICAGO ELECTRICAL ASSOCIATION.—The following is the spring program of this society: Feb. 17, "Police and Fire-alarm Systems of Chicago" (illustrated with apparatus), Edward B. Endicott; March 3, "Patent Systems of the United States and Foreign System Compared," W. Clyde Jones; March 17, "Electric Street Lighting of Yesterday and To-day," Albert Scheible; April 7 (subject to be announced), Charles A. Brown; April 21, "The Adaptation of Electricity to Existing Steam Trunk Lines," W. D. Ray; May 5, "The Electric Protection of Safes and Vaults," Clyde J. Coleman; May 19, annual banquet.

FRANKLIN INSTITUTE.—The February-March program of the Institute is as follows:
Feb. 17. "Latest Development with X-Rays and Their Application," Prof. Arthur W. Goodspeed; "A Process for Testing Metals," Joseph Richards; Feb. 23. "Titaniferous Iron Ores," Prof. J. F. Kemp; Feb. 24. "Ramblies Amid the Canyons, Caverns Chaussees of France," Rev. Horace C. Hovey; Feb. 28. "Some of the Larger Transportation Problems in Cities," Edward E. Higgins; March 8. "Some Features in the Structural Designs of Buildings,"

Prof. Wm. H. Burr; March 9. Discussion, "Mechanical Application of Compressed Air."

NEW ENGLAND ROADMASTERS' ASSOCIATION.—The annual meeting of this association will be held at Portland, Me., in August. The executive committee has selected the following subjects to be reported upon at that meeting: "How Shall the Right of Way be Maintained in a Tidy Manner, with Least Labor to Trackmen?" "The Most Efficient, Durable and Economical Form for Standard Snow Fence; also Best Form of Wire Right of Way Fence, Giving Size of Wire, etc." "What is the Proper Relation Between Weight of Rail and Weight of Rolling Stock? Assuming a Proper Relation Between Weight of Rail and Weight of Rolling Stock, What is the Most Economical Spacing of Ties?" "Chemical Treatment of Ties." "From a Maintenance of Way Standpoint, the Consideration of the Relative Merits for Ballast, of Stone or Gravel Sprinkled with Oil."

AMERICAN STREET RAILWAY ASSOCIATION.—At a meeting of the executive committee of this society, held in Chicago on Feb. 6, it was decided that the annual meeting would be held in Chicago on Oct. 17-20. The meeting will be held at Tattersall's, State and 16th Sts., where a floor space of 50,000 sq. ft. can be had for exhibition purposes. The last day of the convention has been set apart for a systematic examination of the exhibits by the delegates. Headquarters will be at the Auditorium Hotel. The following subjects were selected for discussion at the meeting:

"Maintenance of Car Equipment;" "Modern Street Railway Shops—Their Design, Machinery and Shop Practice;" "Train Service and its Practical Application;" "Construction and Maintenance of Street Railway Tracks;" "Investments in Street Railways—How Can They be Made Secure and Remunerative?" The report of the Committee on Rules for Employees will be fully discussed.

THE AMERICAN CERAMIC SOCIETY.—A meeting of those interested in that branch of science included under the name of ceramics was held at the Ohio State University, Columbus, O., on Feb. 6. The outcome of the meeting was the formation of the American Ceramic Society. The object of this organization is to promote the arts and sciences connected with ceramics, by means of meetings for the consideration of papers and for the publication of professional literature as well as for social intercourse. The following officers were elected for the ensuing year: Pres., H. A. Wheeler, St. Louis, Mo.; Vice-Pres., Ernest Mayer, Beacon Falls, Pa.; Secy., Edward Orton, Jr., Columbus, O.; Treas., Stanley R. Burt, Cincinnati, O. Papers were read at the evening session upon the following subjects: "The Use of Equivalent Weights in Ceramics," Chas. F. Binns; "The Independence of Burned Clay as a Decorative Building Material," Herman C. Mueller; "Practical Experience With Pyrometers," Dr. Wm. H. Zimmer; "Some Mechanical Aids to Kiln Burning," Gustav J. Holl; Discussion, "Cannot the Association Secure the Publication in English of the Works of Dr. Herman Seger."

ENGINEERS' CLUB OF ST. LOUIS.—The regular meeting of the society was held on Feb. 1, with 35 members and visitors present. Mr. H. S. Wilson read the paper of the evening, entitled the "Production of Seamless Tubing." The kinds and characteristics of the ore needed, and some of the requisite processes of its reduction to make the grade of steel necessary for drawing seamless tubes were considered. The various methods of getting the hole in the billet were explained, and the main characteristics of the more important machines used for this purpose were set forth. The annealing and pickling processes were described and the delicacy of the operation shown. The drawing benches, with their attendant drawing devices, the number of reductions necessary, the kinds of lubricants used, etc., were fully discussed, and interesting reasons for many troubles which arise were given. Mention was made of the great variety of grades and sizes of tubes and the care necessary to keep them separate in the factory. The processes for the production of lead, brass and copper tubes were also touched upon. Sketches on the blackboard illustrated graphically and clearly the various points, and a few samples showed how the reductions were made.

E. R. Fish, Secy.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—A regular meeting of this society was held on Feb. 7. A verbal report of Committee on Naval Personnel Bill was accepted. Mr. Hogeland read a paper on "Locomotive Coaling Stations," in which was illustrated by drawings and photographs the evolution of coal handling for locomotive use on the Great Northern Ry. Beginning with the primitive derrick and bucket system which was worked at an expense of 17 cts. per ton, the various improvements, such as: Shoveling into chute pockets; dumping and chain conveying to chutes; and dumping directly into chute, the coal car being raised by a 15-HP. gasoline engine. The Great Northern moves 750,000 tons annually through chute pockets of 5 or 6 tons capacity at an average cost of 3 cts. per ton by measurement. Mr. Truesdell described the improvements at the St. Paul stock yards, 172 acres in extent, bounded on the river side by 1½ miles of levee. The level of the yards is several feet below high water mark and has been flooded to the depth of 3 ft., but now the 5 river outlets may be closed by gates and pump wells have been provided in case of flood; 9 artesian wells supply water. Swift & Co.'s immense packing establishment and half a dozen

minor firms are located on the site. Mr. Wilson displayed an exhibit of asphalt, crude and refined, and spoke briefly of the sources of asphalt and described the Trinidad, Bermudez, Kentucky, California and Utah deposits. C. L. Annan, Secy.

NEW YORK ELECTRICAL SOCIETY.—A meeting of this society was held at the station of the Electric Vehicle Co., New York city, on the evening of Feb. 14. In the absence of Mr. G. Herbert Condit, the electrical engineer of the company, Mr. Crane described briefly the operation of the station equipment, after which the visitors formed into small parties and were piloted through the several departments. In this plant current for charging the batteries is taken from the street mains of the Edison Lighting Co., which are connected to a switchboard from which the various charging circuits are controlled. The battery boxes, or trays, contain 48 small chloride accumulators, manufactured by the Electric Storage Battery Co. They are placed upon tables which automatically connect them with the charging switchboard, and after about three hours are charged to 2.5 volts. Four voltages are used in this charging and those are called for automatically by the batteries, that is when the electromotive force of the battery reaches that of the first charging circuit a red light is automatically switched on. The same is true of the other voltages, the highest of which is 2.5 volts. When charged the trays are picked up by an ingenious elevator arrangement mounted upon a traveling crane and are carried forward to a horizontal chain conveyor table, upon which they are lowered. In the meantime the cah has run in the station and onto a platform directly in front of this conveyor. An arrangement of horizontal and vertical hydraulic pistons center the cah and raise the body to the level of the table. The door of the battery compartment is opened and a claw device on the end of a long piston clutches the end of the exhausted battery and draws it from the cah onto the chain conveyor. The conveyor is then moved along until the charged set is in position in front of the cah. The piston then advances, shoving the tray into the cah, the hydraulic adjusting pistons retreat and the cah is again ready for another run of 25 miles. The whole operation occupies a surprisingly short time, and the ordinary time of running in, removing the old set, placing new and running out is short of 2 minutes. When it is considered that the batteries weigh between 1,300 and 1,500 lbs., the operation of the apparatus can be better appreciated. After witnessing all the operations the visitors adjourned to an upper floor where an enjoyable luncheon was served.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—A special meeting of this society was held at the Society House, New York city, on Feb. 10, to discuss the subject of "Stone vs. Wood Dry Docks." The discussion was opened by Mr. Wm. L. Cathcart, late chief engineer U. S. N. and now Professor of Marine Engineering at the Academy of Naval Architecture, New York city. In the course of his remarks he said:

The modern war vessel is practically helpless without the dry dock, in which she must be placed periodically for the cleansing of the hull and, with more or less frequency, for examination and repair. Of the 11 docks which our government now controls and operates, only four are of masonry, the remainder being timber constructions, and it is proposed further, in recent legislation, to build three more docks of wood. The practice of foreign governments differs widely from this. In Europe, not only national graving docks but all great modern works of this type are constructed of stone or concrete masonry. Our government is the only one in the world which has constructed, directly, a timber dry dock. The governments of Europe have considered it the policy of wisdom to build these important works of the most enduring materials, without regard to cost. This decision has been reached, doubtless, in view not only of the natural decay, the frequent repairs and the large expense thereof to timber dry docks, but, as well, because of the superior stability, permanence and safety of a dock which is built of stone or concrete.

In view of the fact that for 10 years past our government has been practically committed to the policy of timber docks, having within that period built six of this material, and of the further fact that by recent legislation three more of these structures are authorized, the subject is presented for discussion by the members of this society. Our growth as a nation, with the results of the recent war, foreshadows an early and considerable increase in our force afloat. The defense of a coast line, extraordinary in extent, the acquirement of territory beyond the sea, which must be held—as it was won—largely by the navy, our probable entry into Asiatic politics, and the prospective revival of the merchant marine, which the fleet must lead and guard, all point to this. The full consideration of any factor, therefore, which is essential to our naval strength—as a trustworthy system of dry docks surely is—must be of interest not only to the engineer but to every man who has at heart the welfare of our fleet.

Commodore Geo. W. Melville, Engineer in Chief, U. S. N., and Chief of the Bureau of Steam Engineering of the Navy Department, spoke of the great future looming up as a result of our extension, which he said pointed with no uncertain hand to the nation's need in the early future of a strong force afloat and of maintaining the efficiency of that force. Continuing he said:

A worthy system of dock construction is, in my view, a cardinal essential. I desire to place on record my opinion—as I have done in the past—with that of the Secretary of the Navy, with that of my colleague, Commodore Endicott, and with that of his predecessor, Admiral Matthews, as being opposed most strongly to the flimsy structures, costly in their weakness, which have been built as timber dry docks for the navy. As to the use of wood for the docks of private corporations I have nothing to say. It is plentiful and cheap, and the average draft of the merchant vessel is light and the structures less costly.

Commodore M. T. Endicott, Chief of the Bureau of Yards and Docks of the Navy Department, spoke briefly, supporting the views of the former speakers and advocating the stone or concrete form of dock in preference to the present timber construction. Mr. Endicott's recent report to Secretary Long was printed in our last issue.

NEW PUBLICATIONS.

LITERARY MAGAZINES.—The "Review of Reviews" for February has among its timely articles a character sketch of Agulnaldo, which gives a clearer account of the man and his curious life history than anything we have seen elsewhere. Mr. Henry McFarland tells of the work of the Army Signal Corps in the war, and states among other things that the sending up of the balloon on the skirmish line at Santiago was done against the express advice of the officer of the Signal Corps who was in charge. Prof. H. C. Adams, Statistician to the Interstate Commerce Commission, suggests that the present system or lack of system in the taxation of railway property by the states should be abolished and the Federal government should alone lay taxes upon railway property. He presents strong arguments in favor of this plan, and thoroughly proves, we think, that the change would be largely to the advantage of both the railways and the people. It would require very radical changes in the Constitution, however, to bring about such a change, and we can see hardly a remote chance that it could be brought to pass.

In "The Forum" Hon. Geo. E. Roberts, Director of the Mint, writes on "The Increasing Supply of Gold," and discusses the economic and financial changes as well as the political changes that are likely to result from the great increase in the world's stock of the precious metals that is now being made. Another "Forum" paper is by Dr. Walton Wyman, Supervising Surgeon of the Marine Hospital Service, on "Quarantine and Sanitation," and we would heartily recommend it to everyone interested in the task of preventing and checking the spread of disease and in legislation looking to that end. Dr. Wyman emphatically states that local sanitation should be left in local hands; that the work of state boards of health should be in supervising and fostering local work, and that the task of the general government should be the prevention of the entry of disease from foreign ports or its spread by interstate commerce. He explains the method of work of the Marine Hospital Service, which is in fact, though not in name, a national public health department. "Coaling Stations for the Navy" is the subject of a paper by Commander R. B. Bradford, U. S. N., who believes that the United States should possess a chain of coaling stations stretching clear around the globe.

In the January "North American Review" Mr. John Hyde, Statistician of the United States Department of Agriculture, discusses Sir Wm. Crooke's paper on the coming scarcity of wheat. He reviews in detail the prospects of increased wheat production in different portions of the country, and reaches the final conclusion that Mr. Crooke's estimate is a sound and conservative one, and that within a generation the United States will have so increased its own wheat consumption that it will have little or no margin left for export. Mr. Hiram Maxim writes on "High Explosives in Large Guns," describing the development of the modern smokeless powders. He presents an interesting argument to prove that with many smokeless powders, including the British "cordite," there is always a possibility that free nitro-glycerine may be distilled in the cartridge and cause detonation and consequent disaster. The proposition to free merchant vessels from the liabilities of capture in time of war is opposed by Commander Stockton, of the Naval War College. "Tuberculosis in the United States" and how it may be eradicated, is discussed by S. A. Knopf, M. D. He favors the establishment of local sanitariums for the treatment of tuberculous patients in all parts of the country, together with measures by the separate states to eradicate bovine tuberculosis.

In the "Fortnightly Review" for January we find a description of the proposed Tanganika railway, which the indefatigable Cecil Rhodes proposes to build from Bulawayo northward to the famous Central African lake, a distance of about 900 miles. It is stated in the article that the Bulawayo Ry., although so recently opened to traffic, is already making net earnings of \$700,000 per annum. The estimated cost of the Tanganika Ry. is \$10,000,000, and it is said to be altogether likely that the scheme will be carried through.

In the February "Century," Mr. F. C. Penfield describes the great dam which is to be built across the Nile at Assuan, the site of the First Cataract. The dam will be a solid masonry structure raising the water level 40 ft. and setting back the river above for a distance of 140 miles. The total length of the dam will be nearly a mile and a quarter. The reservoir thus formed will contain, it is estimated, 250,000,000,000 gallons of water and will increase the irrigable area of Egypt by 2,500 sq. miles. At the site of the dam a solid ledge of granite extends across the river and furnishes an ideal foundation for the dam, which is to be built throughout of granite ashlar masonry quarried near its site. The contractor for the work is to receive \$800,000 a year for 30 years, the payments to begin when the entire work is completed and turned over to the Egyptian Government. At the present time the preliminary engineering work upon the structure is in progress, and a single order for 3,000,000 barrels of

This little pamphlet contains illustrations and descriptions of the famous "Flyer," which last summer ran regularly between Camden and Atlantic City, the schedule time being 50 minutes for 55 1/2 miles.

SKETCH BOOK.—20th Century Sketch Book for Schools, etc. M. H. Avery, Woonsocket, R. I. 50 leaves in block form; 5 1/2 x 8 1/2 ins. 25 cts.

The peculiar feature of this "sketch book" is a scale of inches divided to 16ths around each edge of the sheet. One style of the book is made in which each page, in addition to the lineal scales, has a 90° protractor, 4 1/2-in. radius, divided into half degrees printed on each page.

JACKS.—A. O. Norton, 167 Oliver St., Boston, Mass. Paper; 3 1/2 x 6 1/2 ins.; pp. 32.

This is a catalogue and price list of the various forms of the Norton ball-bearing jacks for railway, street railway, car, bridge, track and general work, which are operated by a ratchet movement with "pump handle" lever.

THE DIAMOND DRILL AND ITS WORK.—American Diamond Rock Drill Co., New York, N. Y. Pamph.; 7 x 10 ins.; pp. 48; illustrated.

This is an unusually instructive descriptive pamphlet of the construction and operation of diamond drilling machinery and the work which it can do.

BOILERS AND ENGINES.—The Murray Iron Works Co., Burlington, Ia. Paper; 6 x 9 ins.; pp. 72.

This catalogue shows a great variety of boilers, horizontal and vertical, for supplying steam to engines and heating systems.

STEAM BOILERS.—The Sederholm Boiler, Frazer & Chalmers, Chicago, Ill. Pamph.; 6 x 9 ins.

This pamphlet illustrates and describes the "Sederholm" boiler, which is a peculiar-looking modification of the horizontal tubular boiler, designed to overcome one of the chief objections to the latter, viz., the direct action of the flame on the thick shell of the boiler.

ENGINEERING AND SURVEYING INSTRUMENTS.—W. & L. E. Gurley, Troy, N. Y. Cloth; 4 1/2 x 7 ins.; pp. 438; illustrated. 50 cts.

This is the 31st edition of the well-known "manual" of engineering and surveying instruments, which is published by the firm named, and it contains the usual ample descriptions of the various instruments, instructions for their care and adjustment, and tables and other data useful to surveyors and engineers.

STEEL HIGHWAY BRIDGES.—The Hamilton Bridge Works Co., Hamilton, Ont. Pamph.; 8 1/2 x 5 1/2 ins.

This pamphlet is devised especially to acquaint highway commissioners and other municipal officials not engineers with the advantages of employing metal instead of wooden bridges, giving comparative figures and rules, suggestions and general advice respecting the selection of bridges for different conditions.

POWER PUMPING MACHINERY.—The Stillwell-Bierce & Smith-Veile Co., Dayton, O. Pamph.; 8 x 7 ins.; pp. 70.

This is a finely illustrated catalogue (of an unhandy size for filing), describing a great variety of duplex and triplex pumps, driven by belt or other gearing, by electric motors, water wheels, etc.

DUMP CARS AND TRACK APPLIANCES.—The Buda Foundry & Mfg. Co., Harvey, Ill. Paper; 4 1/2 x 6 1/2 ins.; pp. 119.

This catalogue shows a variety of forms of dump cars, hand cars, push cars, etc., for railway work. Also crossing gates, switchstands and a varied line of track tools and appliances, wrecking frogs, etc.

PUNCHING AND SHEARING MACHINERY.—The Long & Allstatter Co., Hamilton, O. Paper; 6 x 9 ins.; pp. 124.

A great variety of machines, for light and heavy work, are illustrated by line engravings, and briefly described. Some are driven by belting, while others have steam engines or electric motors mounted on the framing.

ROLLER BEARINGS, ROLLING, PRESSING AND STAMPING MACHINERY.—Mossberg & Granville Mfg. Co., Providence, R. I. Pamph.; 6 x 9 ins.; pp. 220.

This is a handsomely-printed catalogue of drop, foot and power presses, dies, rolling mills, wire machinery and special tools of the Mossberg & Granville Mfg. Co., which is the successor to the Mossberg Mfg. Co. We notice on p. 192 of the catalogue a table of the "dynamic force exerted by drop-press hammers," which is entirely new to us.

CORLISS ENGINES.—The Murray Iron Works Co., Burlington, Ia. Paper; 9 x 6 ins.; pp. 64.

The company has a large machine shop devoted exclusively to the manufacture of the Sloux Corliss engine, formerly made by the Sloux City Engine Works, and it is said that 75% of the Corliss engines between the Mississippi River and the Rocky Mountains are of the Sloux pattern.

RAILWAY EQUIPMENT, BRIDGES, ETC.—A. S. Males & Co., 413 Vine St., Cincinnati, O. Paper, 3 1/2 x 6 ins.; pp. 74 and 8.

This firm deals in all kinds of new and second-hand equipment, and its catalogues contain descriptions of a great variety of material now on hand, including over 100 locomotives, ranging from a 7-ton switch engine to a 60-ton twelve-wheeler, besides various narrow-gauge and geared engines.

ICE AND REFRIGERATING MACHINES.—The Murray Iron Works Co., Burlington, Ia. Paper; 7 x 10 ins.; pp. 46.

These machines are made in various sizes, with capacities of 1 to 100 tons, and the refrigerating is effected by ammonia or brine circulation.

THE WESTINGHOUSE STANDARD ENGINE.—A BIRD'S-EYE VIEW OF OUR BUSINESS.—The Westinghouse Machine Co., Pittsburg, Pa. Pamphs.; 9 x 6 1/2 ins., and 3 1/2 x 6 ins.; pp. 55; illustrated.

The first-mentioned of these pamphlets describes in detail the Westinghouse standard engine, pointing out its field of application, economy and the materials and workmanship employed in its manufacture.

The small pamphlet contains a series of small half-tone illustrations of Westinghouse apparatus.

IRON AND STEEL WORKING MACHINERY.—The Niles Tool Works Co., Hamilton, O. 8vo. cloth; pp. 571.

The shops of the Niles Tool Works, at Hamilton, have 15 acres of floor space under roof, making, it is claimed, the largest works in the world devoted exclusively to the manufacture of machine tools.

CONSTRUCTION NEWS.

CONDENSED LIST OF CONTRACTS PENDING WITH DATE OF OPENING BIDS.

Table with 4 columns: Bid to be opened, Work, Place, and See Eng. News. Includes entries for bridge to Ellenville, concrete dam, laying water mains, boat house, court house, electric installation, macadamizing, removing garbage, brick paving, asphalt paving, high-school building, school building, bridge work, light fixtures, street grading, steel towers, water-works, boiler house, and water pipe.

Table with 4 columns: Date, Description of work, Location, and Date of advertisement. Includes entries for water bonds, manufacturing plant, water pipe, bridge, park work, paving, brick and asphalt paving, water-works, lift bridge, stone beads, buoys, boiler, valves, sewers, heating, pile platform, pumping plant, cement, macadam road, school building repairs, electric wiring, paving, brick paving, jail building, school building, marble iron work, gun stocks, heating, brick paving, park work, water-works, road roller, sprinkling wagon, culvert bridges, sewers, brick and stone paving, bridge, water department supplies, brick paving, court house, street work, school building, removing garbage, pumping machinery, heating, college building, porcelain insulators, iron bridges, brick paving, masonic temple, gas lighting, electric lighting, water pipe, school building, school building, gas plant, pipe sewers, dust-cart designs, court house, railway and highway bridge, electric lighting, water pumps, paving bonds, broken stone, turbine, sewers, water-works, laying water pipe, road work, road bonds, sewers, road, trunk sewer, sewers, officers' quarters, quarrying stone, brick paving, bridge, water-works, sewerage works, street paving, wharf, water bonds, electric plant, school building, heating and ventilating, brick paving, water-works, street paving, asphalt paving, wharf, sewers, bridge, sewerage works, school building, heating and ventilating, reservoir, road work, electric light plant, drainage ditch, and wooden bridges.

ST. CLOUD, MINN.—Plans have been prepared for new sewers. L. W. Rundlett, Consult. Engr., St. Paul, Minn.

WASECA, MINN.—Chas. A. Smith, Mayor, writes us that a system may be constructed at some future date.

SHERMAN, TEX.—Specifications for the system have been completed by Geo. W. Ruch, Pres. and Engr. Sherman Sewerage Co., 2851 Hutchinson Ave., Philadelphia, Pa. The system will have about 129,000 ft. of 20 to 6-in. pipe sewers. It is stated that about 15 miles additional sewers will be built after this section is completed. Judge R. R. Harlowed is interested.

DENVER, COLO.—Jas. J. Fleetwood, Denver, the lowest bidder at \$24,159 for constructing the Capitol Hill storm sewer, has forfeited his check of \$10,000. The next lowest bidders were the J. M. O'Rourke Construction Co. and the Queen City Construction Co., both of Denver, at \$309,735 and \$322,807, respectively.

ROSWELL, N. MEX.—E. L. Wildy, Chn. Town Trustees, writes us that this city is desirous of establishing a system and water-works, and it should like to have estimates on the cost of the same. It is proposed to issue bonds for the improvements.

SEATTLE, WASH.—Bids have been asked for building 1 1/2 miles of pipe sewers to cost \$12,000. After the contract for this work is let bids will be asked by the city clerk for building sewers in the Upper Pontius district to cost about \$27,500. The following bids were received Feb. 2 for constructing the Lower Pontius sewer: Erickson & Roseleaf, \$25,930; F. McLellan, \$26,799; Stinard & Goetz, \$27,315; T. Ryan, \$27,538.

SAN DIEGO, CAL.—City Engineer Capps has completed plans for about 42 miles of pipe sewers for the district of the city north of N St.; estimated cost, \$108,220.

OTTAWA, ONT.—It is stated that Laverdure & Laflamme, Ottawa, have been awarded the contract, at \$107,035, for constructing Sec. 3 of the new trunk sewer. The next lowest bids were as follows: Jos. Bourque, Hull, Que., \$127,000; ex-Alderman Paulin, \$128,000; Labelle & Payette, Montreal, Que., \$149,000. The contract is but one of several which are about to be given out, comprising an outlay of about \$1,000,000. The estimate of the city engineer for the main line is \$425,000, and in the plan of the council is included the extension of the system all over the city.

MEXICO, MEX.—Philo N. French, Stratford Ave., Pittsburg, Pa., Pres. San Antonio Sewer Pipe & Mfg. Co., has been awarded the contract for furnishing sewer pipe for the system for this city, amounting to about \$600,000, exclusive of freight. The pipe will range from 6 ins. to 4 or 5 ft.

GARBAGE DISPOSAL—STREET CLEANING

BOSTON, MASS.—The garbage disposal plant, at Old Harbor Point, belonging to the New England Sanitary Product Co. and the Semet-Solway Co., was destroyed by fire Feb. 10, causing a reported loss of about \$28,000. David Martin, Pres., Philadelphia, Pa.

MERIDEN, CONN.—Bids are asked until Feb. 16 for removing the garbage twice a week for a year, according to reports. E. S. Smith, Chn. Com.

NEW YORK, N. Y.—Bids are asked by the department of parks, the Arsenal, Central Park, Manhattan, until Feb. 23 for furnishing three sprinkling wagons, three sprinkling carts, etc.

ALLENTOWN, PA.—Bids are asked by the Mayor until Feb. 25 for removing garbage, according to reports.

ATLANTA, GA.—Bids are asked, it is reported, by the board of health until Feb. 17 for disposing of the garbage, etc.

PASADENA, CAL.—W. B. Clapp, Cy. Engr., has reported against the construction of a crematory.

SAN DIEGO, CAL.—E. E. Capps, Cy. Engr., has prepared plans for garbage disposal heat to be 55 ft. long, 16 ft. wide and propelled with a 20-HP. gasoline engine. Garbage burners are to be steel lined, 6 in number, covered with air-tight hatches.

STREETS AND ROADS

BOSTON, MASS.—The commissioners of the Metropolitan board, Boston, propose to construct a road from Hoylston to West Boylston.

BLOCKTON, MASS.—De Witt C. Packard, Cy. Clk., informs us that an act of the legislature authorizing a loan of \$100,000 for street work is now being petitioned for.

NANTUCKET, MASS.—The town council has appropriated \$3,000 for extending Orange St. and \$1,000 for repaving on Union St.

ALBANY, N. Y.—Contracts have been awarded to T. Henry Dumary for brick paving on Dove and Hamilton Sts., at \$3,952 and \$15,005, respectively, and Mulderry Bros., at \$14,462, for paving on Elizabeth St. A petition is being signed for paving Morton St. with brick, from Clinton St. to Delaware Ave.

BATH ON HUDSON, N. Y.—Petitions are being circulated to have an act passed by the legislature for paving the streets.

BUFFALO, N. Y.—The property owners and North Buffalo Business Mens' Association will propose the paving of Tonawanda St. with asphalt.

GLOVERSVILLE, N. Y.—M. V. B. Stetson, Cy. Clk., informs us that it is proposed to pave about 15,000 sq. yds. with brick. It has not yet been decided when bids will be asked. C. Fiske, Jr., Engr.

NEW YORK, N. Y.—Bids are asked by the department of parks, Arsenal, Central Park, until Feb. 23 for one 12-ton steam road roller. Bids are asked by the department of highways, 150 Nassau St., until Feb. 21 for furnishing 20,000 cu. yds. of sharp sand, 100,000 yds. of No. 6 paving cement and 2,000 cu. yds. of washed gravel. James P. Keating, Comr.

ROCHESTER, N. Y.—It is proposed to improve Genesee Park Boulevard, Brooks Ave. cement walks, Selye Terrace roadway, Genesee St. cement walks, Bartlett St. cement walks and Park Ave. macadam roadway. Peter Sheridan, Cy. Clk.

WATERFORD, N. Y.—J. W. Brooks, Village Pres., informs us that a bill has been presented for the paving of Broad St. The hearing will last about two weeks.

YONKERS, N. Y.—Bids are asked by the council until Feb. 27 for grading on Riverside Ave., according to reports.

BLOOMFIELD, N. J.—The county freeholders, Newark, have awarded a contract to Francis J. Marley, at about \$15,465, for macadamizing Broad St., and to Francisco Bros., at \$3,075, for Bay Ave.

ELIZABETH, N. J.—The Meadow Reclamation Co., Elizabeth, recently incorporated, proposes to construct a road from near Seventh St. across the meadows to Newark Bay.

ELIZABETH, N. J.—James A. Long, of Union, John H. Thompson, of Cranford and others have been appointed a commission to survey a route for the proposed extension of South Front St. through Linden township to Tremley.

PASSAIC, N. J.—An ordinance is before the council to grade Water St. between Aspen Place and Park Place. Richard B. Tindall, Cy. Clk.

McKEES ROCKS, PA.—An ordinance has been passed by the council to grade and pave Bell Ave., at a cost of about \$8,000.

PHILADELPHIA, PA.—Bids are asked until Feb. 17 for grading and asphalt paving on Broad St. Thos. M. Thompson, Dir. Pub. Wks.

SCRANTON, PA.—Bids are asked until 7.30 p. m., Feb. 16, for paving on East Market St. with brick. M. T. Lavelle, Cy. Clk.

BALTIMORE, MD.—The council has passed an ordinance to pave Eager St. with Belgian block, and to appropriate \$21,000 for paving Light St.

PETERSBURG, VA.—T. R. Dunn, Cy. Engr., writes us that plans and specifications have been secured from Samuel M. Gray, Providence, R. I., for brick and asphalt paving. The question is now being considered, and it is probable that about \$50,000 will be expended during the coming season.

SCOTTSDORO, ALA.—Bids are asked until March 1 for the purchase of \$125,000 of road bonds. R. S. Skelton, Pres. Road Comn.

BATAVIA, O.—A petition will be presented to the county commissioners March 6 by G. A. Dillinger and others, of Goshen township, for the construction of a road about 1,000 ft. long parallel with the railway.

CLEVELAND, O.—Bids are asked until March 7 for grading, curbing and brick paving on portions of seven streets. Geo. R. Warden, Dir. Pub. Wks.—The board of control has been authorized to prepare plans for grading, curbing and brick paving on Auburn St., Starkweather Ave. and other streets.

CLEVELAND, O.—Bids are asked until March 14 for Medina block paving, grading, etc., on Perkins Ave., from Case Ave. to Wulson Ave. Geo. H. Warden, Dir. Pub. Wks.

ORRVILLE, O.—The council has engaged Cyrus Markly, Wooster, O., to prepare plans for the paving of Main St.

SPENCER, IND.—An election will be held Feb. 24 to vote on the question of constructing 11 miles of roads in Clay and Washington townships; estimated cost, \$16,611. The roads to be improved are the Spencer and Ellettsville, Freeman and White Hall and Hardscrabble and Ellettsville roads.

GRAND RAPIDS, MICH.—Geo. M. Ames, Cy. Engr., informs us that estimates of costs have been prepared for paving Canal St. with brick and asphalt; also for paving East Fulton St. from Jefferson Ave. to Union St. with asphalt and Medina stone blocks on the steep portions of the work.

NORMAL, ILL.—It is proposed to pave the road between Normal and Bloomington; estimated cost, with asphalt and concrete curb and gutter, \$25,175; brick, \$20,988.

MINNEAPOLIS, MINN.—Bids are asked until Feb. 24 for 37,000 sq. yds. of brick paving on 6-in. concrete foundation, and 34,000 sq. yds. of Kettle River sandstone paving. G. W. Suhlente, Cy. Engr.; L. A. Lydiard, Cy. Clk.

ST. LOUIS, MO.—Bids are asked by the board of public improvements until Feb. 24 for grading on 12 streets and for brick paving, granite curbing, etc., on portions of 15 streets. Robt. E. McMath, Pres.; Emery S. Foster, Secy.

COLORADO SPRINGS, COLO.—County Commissioners Doran and Sinton are considering the advisability of constructing a road from Victor to Elkton, Aucaconda and Cripple Creek.

TORONTO, ONT.—The board of control has awarded contracts to the Paving & Construction Co. for asphalt paving, at \$3,065, and for brick, at \$2,666; J. McBean, brick, at \$7,344; J. F. Connolly, brick, at \$3,787; J. H. McKnight, macadam, at \$2,808.

MANUFACTURING PLANTS.

BANGOR, ME.—Press reports state that the Great Northern Paper Co., capitalized at \$4,000,000 by Oliver H. Payne, Grant B. Schley and others, of New York, will begin immediately the erection of mills on the Penobscot River, to have a daily capacity of 250 tons of paper.

BURLINGTON, VT.—The Queen City Cotton Co. is said to contemplate the erection of an addition to its plant in this city to accommodate about 20,000 additional spindles.

TRENTON, N. J.—The 3-story brick machine shop of the New Jersey Steel & Iron Co. was destroyed by fire Feb. 12, causing a total estimated loss of \$50,000. Cooper, Hewitt & Co., owners, New York.

COATESVILLE, PA.—The Lukens Iron & Steel Co. will erect four or six additional open-hearth furnaces; also a universal plate mill, according to reports.

RANKIN STATION, PA.—It is announced that a company represented by John F. Baxter, Carnegie Bldg., Pittsburg, will erect a new mill in this borough adjoining the works of the Duquesne Forge Co.

ASHLAND, MD.—Emmanuel Herman, J. F. C. Talbot and others are said to be interested in the proposed erection of a new cotton and yarn mill at Ashland; capital stock, \$100,000.

BALTIMORE, MD.—The Maryland Cement Co., Builders' Exchange Bldg., informs us that bids will soon be let for the erection of three new buildings for the manufacture of cement, which, together with the machinery, will cost about \$30,000. Henry Brauns, Arch., Builders' Exchange Bldg.

COCKEYSVILLE, MD.—A \$50,000 cotton mill will probably be established here in the spring by Joshua F. Cockey, H. E. Bartleson, Joseph Cairnes and others.

NEWPORT NEWS, VA.—The Newport News Abattoir Co., organized with a capital stock of \$1,000,000, will build a plant near the city limits at an estimated cost of \$500,000. E. Palmer, Pres., Merchantsville, N. J.

PARKERSBURG, W. VA.—Reports state that the Oil Well Supply Co., now located at Bradford, Pa., will erect an extensive plant at Parkersburg for making the wood-work required in digging artesian wells.

HICKORY, N. C.—J. M. Odell, Concord, N. C., and others, are interested in the development of the water power of the Catawba River, near Hickory, and the erection of a large cotton mill nearby.

COLUMBUS, O.—Plans have been prepared, according to reports, for a 4-story brewery building, 130 x 150 ft., for the Columbus Brewing Co., Columbus; estimated cost, \$60,000. Mueller & Mildner, Union Trust Bldg., Detroit.

MANSFIELD, O.—A fire here Feb. 10 damaged the Baxter stove works; reported loss, \$100,000.

TOLEDO, O.—Baker Bros. Inform us that Henry E. Brown has been awarded the contract for erecting an extension to their foundry, 70 x 110 ft.; an extension to their chasing room, 30 x 50 ft.; and also to their pattern shop, 30 x 4 ft.

DUNKIRK, IND.—The Ohio Flint Glass Co., composed of Edwin Reed, Toledo, O.; M. L. Case, Dunkirk, and others, has decided to rebuild the factory at Dunkirk, recently destroyed by fire.

CHICAGO, ILL.—The Falckenau Construction Co., 110 La Salle St., has been awarded the contract for erecting an 8-story building, 124 x 50 ft., a 7-story wing, 27 x 72 ft., and a building 55 x 100 ft., for the Western Electric Co.; estimated cost, \$250,000. S. A. Treat, Arch.

CHICAGO, ILL.—Waite T. Clark & Co. have been awarded the contract for the erection of a new \$100,000 foundry for the Crane Co., at Canal and 12th Sts.

ALBUQUERQUE, N. MEX.—The Southwest Brewery & Ice Co. has awarded the contract for the brick work on its new \$25,000 brick stock house to Dodd & Lembke; for carpenter work, J. W. McQuade, and for cast-iron to the Albuquerque Foundry & Machine Co.

MANILA, PHILIPPINES.—Reports state that bids ranging from \$170,000 to \$250,000 were received from the following for the proposed ice-plant to be built for the U. S. government at Manila: The Vilter Mfg. Co., Milwaukee, Wis.; Fred W. Wolf Co., Chicago; Frick & Co., Waynesboro, Pa.; De La Vergne Refrigerating Machine Co., New York, and the Newburgh Ice Machine Co., Newburgh, N. Y.

YONAGO, JAPAN.—Press reports state that bids are asked by Kota Nokahara, of Yonago, Iokki Province, for the erection of an ice plant at Yonago.

GAS PLANTS.

RICHMOND, VA.—The question of constructing a new plant is being considered. Councilman Wallerstein, Chn. Com.

EAST LIVERPOOL, O.—The Gas & Construction Applance Co., Ltd., will soon let a contract for 100,000 brick for the proposed new plant. It is reported that the director of the company has visited Pittsburg, Pa., to secure bids for the gas holder.

WARREN, O.—An ordinance is being considered by the council to grant a franchise to C. D. Gibbons and others of Cleveland, for establishing a gas plant.

VINCENNES, IND.—Bids are asked until Feb. 27 for lighting the streets and public buildings of this city for a period of 10 years, with, approximately, 200 gas lamps and 175 arc lamps; the gas service to begin Dec. 27, 1900, and the electric light service April 29, 1901. Bond, \$20,000; deposit, \$5,000. Chas. Langel, Cy. Clk.; Bryan & Humphrey, Consulting Engrs., St. Louis, Mo.

NEW COMPANIES.—Eastern Star Oil Co., Los Angeles, Cal.; \$50,000; to develop and sell oil; W. L. Hardison, Guy L. Hardison, of Santa Paula; E. A. Edwards, A. P. Maginnis, F. K. Edwards, of Los Angeles.

Newport Oil Co., Santa Ana, Cal.; \$50,000; J. Irwin, R. Egan, R. T. Harris, H. L. Bachtel and R. McFadden.

Lody Gas & Oil Co., Gowanda, N. Y.; \$2,200; William H. Ward, E. C. Fisher, G. B. Taylor, B. L. Kimble and Michael McIntyre.

Eastern Ohio Oil Co., Steubenville, O.; \$3,200; to lease lands for the production of oil and gas; William Frensdorfer, John L. Means, J. P. Edgar, J. M. Starrett, J. A. Baldwin and J. C. Cape.

Tippecanoe Oil & Gas Co., Tippecanoe, O.; \$5,000; to drill for oil and gas; J. W. Fritz, W. A. Boyd, R. H. Bean, H. W. Auld, William Groves.

White Oil Co., Sistersville, W. Va.; \$8,000; to develop oil and gas wells; G. B. Schlemaker, G. B. West, Charles E. Bailey and others.

Nassau Acetylene Gas Generator Co., Jersey City, N. J.; \$100,000; to do business in New Jersey and other states; Frank S. Hutchinson, James Havens and Edward Machete.

MISCELLANEOUS CONTRACTS.

TELEPHONE LINE.—Emporia, Kan.—The Missouri & Kansas Telephone Co. will construct a line from Emporia to Council Grove.

PARK.—Denver, Colo.—The park commissioners have decided to purchase land and expend about \$29,000 for laying out new parks.

TELEPHONE LINE.—McComb, O.—The council has granted a franchise to Elva Dick for constructing a telephone line to Shawtown.

WHARF.—Sand Point Road, N. B.—Engineer Peters, St. John, N. B., is preparing plans for a wharf about 70 ft. x 150 ft., at South Rodney wharf.

PIERS.—Philadelphia, Pa.—The Philadelphia & Reading Ry. Co. has applied to the Delaware River committee for permission to reconstruct piers A and G.

TELEPHONE SYSTEM.—Richmond, Ind.—Perry J. Freeman, A. C. Lindmuth, John M. Loutz and others have been granted a franchise for a telephone system.

TELEPHONE EXTENSION.—Jacksonville, Fla.—It is reported that the Florida East Coast Telephone Co. will extend its lines from Jacksonville to Key West. P. H. Loud, Jr., Secy., Miami.

TELEPHONE LINES.—Grand Island, Neb.—It is reported that the Nebraska Telephone Co. proposes to construct a line from this place to St. Paul, Minn.; also to Ord and to Brokenbow, Neb.

DIKE.—Elmira, N. Y.—A bill will be presented to the legislature for an appropriation of \$10,000 for constructing a dike on the south bank of the Chemung River between Lake St. and Madison Ave.

PARK WORK.—Peoria, Ill.—It is proposed to make certain improvements to the park at Prospect Heights in the summer, including new walks, an artesian well, an observation tower, bowling alley, etc.

COAL MINING CONCESSION.—Caracas, Venezuela.—Reports state that the Venezuelan government is about to award a concession to Lanyon, Martini & Co., Rome, Italy, for working the Guanta coal mines.

DAMS.—Minneapolis, Minn.—Maj. F. B. Abbott, U. S. Engr., Minneapolis, has awarded a contract to Chas. M. McCoy, 402 Lumber Exchange, for constructing dam No. 2, Mississippi River; requiring about 750,000 cu. ft. of timber.

PIER.—Atlantic City, N. J.—Plans have been prepared by Thomas A. Parker, Pres. of the Palace Circle Co., for a new steel pier about 150 x 100 ft. at Pennsylvania Ave., to be constructed by the Auditorium Pier Co.

METAL WORK.—Baltimore, Md.—Bids are asked until March 15 for furnishing and constructing the metal work for Hooper Island lighthouse, as stated in our advertising columns. Lieut. Col. W. A. Jones, U. S. Lighthouse Engr., Baltimore.

CEMENT.—New York, N. Y.—Bids are asked until March 10 for furnishing American Portland cement, at Forts Schuyler and Totten, N. Y., as stated in our advertising columns. Maj. H. M. Adams, U. S. Engr., Army Bldg., New York.

PNEUMATIC PIPE SYSTEM.—Cincinnati, O.—The Cincinnati Delivery, Power & Refrigerating Co. has applied to the board of city affairs for permission to lay a system of underground conduits on Sixth St. and Central Ave., for supplying compressed air.

CEMENT, IRON BEAMS, ETC.—Baltimore Md.—Bids are asked until March 10 for furnishing at North Point, Hawkins Point, Rock Point and Port Carroll, Md., cement, stones, brick, iron beams and lumber, as stated in our advertising columns. Col. Peter C. Hains, U. S. Engr., 812 St. Paul St., Baltimore.

DRAINAGE SYSTEM.—Albion, Ind.—Reports state that the county commissioners propose to construct a drainage system to cost about \$75,000. The main canal will be 10 miles long and laterals amounting to 60 miles, requiring about 654,790 cu. yds. of excavation.

SEA WALLS.—Annapolis, Md.—The navy department has awarded a contract to P. J. Carlin & Co., Garfield Bldg., Brooklyn, N. Y., at about \$150,000, for the first year's work on the proposed new sea wall along the water front of the naval academy. Arch., Ernest Flagg, 54 Broad St., New York.

PARK WORK, ETC.—New York, N. Y.—Bids are asked by the department of parks, Arsenal, Central Park, until Feb. 23 for furnishing 800 settees, 300 cu. yds. limestone and 200 cu. yds. of trap rock screenings, 350,000 sq. ft. of sod, 5,000 cu. yds. of garden mould, lumber, etc.

TELEPHONE LINE.—East Schuyler, N. Y.—J. H. J. Watkins, Millard Sterling, A. M. Tanner and others propose to organize a telephone company and construct a line between Frankfort and West Schuyler. R. H. Smith, Seymour Johnson and Ward Goodwin have been appointed a committee to purchase material.

CONTRACT PRICES.

RAILWAY.—Rutland, Vt.—We are informed that the following bids were received by the Rutland-Canadian R. R. Co. Feb. 8 for constructing about 50 miles of railway, main line and sidings, as advertised in Engineering News; John W. Burke, Ch. Engr., South Hero, Vt., and 45 Broadway, New York; the work is to be completed by Sept. 1, for which time bids are on, except where otherwise stated:

PLANK SIDEWALKS.—Rochester, N. Y.—The contract for laying 470 lin. ft. of new plank sidewalk, 4 ft. wide, including grading, 10 ft. wide, has been let to Wm. M. Roach at 2 1/2 cts. a ft. The other bidders were J. Mathis & Son, at 24 cts., and John Regan at 26 cts. a ft.

ASPHALT PAVING.—Rochester, N. Y.—The following bids were received Jan. 28 for asphalt paving in Bartlett St.; contract let to Whitmore, Rauber & Vicinus, Rochester:

Table with columns: Bidder, Asp. pavg., 4-in. curb, sq.yds., New surface 6-in. vit. pipes, laterals, 2, sq.yds., New 1/2-in. water side, 20, sq.yds., Cem. 12-in. vitrified pipe, 400, Total.

*Medina stone, set in concrete with tile drain. †These laterals are each 26 ft. long. ‡The services are with fixtures, and those on North side are 35 ft. long while the South side ones are 19 ft. 5 ft. wide including grading, 14 ft. wide. §Pipe is laid in concrete.

ENGINE HOUSE.—Pittsburg, Pa.—E. J. John, Ch. Clk., Dept. Pub. Safety, informs us that the following bids were received Feb. 8 for constructing fire engine house No. 29; all local bidders:

Table with columns: Bidder, Excavation a cu.yd., Stone work, perch., Con-crete, a cu.yd., Total without gas, etc.

Gas Engine, Etc.—The following are the bids for furnishing a gas engine, dynamo, etc., for the engine house; (1) being for Westinghouse direct-connected; (2) Westinghouse belt; (3) Hicks gas engine, Holtzer dynamo direct-connected, (4) same with belt-connection; (5) Pierce

\$1.50 and \$1.53. Asphalt paving in Milburn Ave.—Warren-Scharf Asphalt Paving Co., New York, \$1.80; John J. Carland, \$2.10; Brick paving in same avenue—John J. Carland, \$1.35.

CEMENT, STONE, BRICK, ETC.—Baltimore, Md.—The board of awards on Feb. 8, 1890, let contracts for the subway commission amounting to about \$40,000. Cement for the subways will be furnished by George Hay at 84 cts a barrel for Union, and 74 cts. for Round Top. Crushed

Bids Received at Rochester, N. Y., Jan. 28, 1890, for Asphalt Paving in Bartlett St.

stone will be furnished by the Schwind Quarry Co. at 93 cts. a ton. Sand will be furnished by D. A. Leonard at 60 cts. a ton. Brick will be furnished by J. R. Bussey & Sons at \$5.70 a 1,000.

ELECTRIC CONDUITS.—Redlands, Cal.—F. C. Finkle, Ch. Engr., Redlands Electric Light & Power Co., Redlands, informs us that the following bids were received Jan. 27, 1890, for making electric conduits, the company is to furnish the cement, sand, gravel and other materials, the value of which is estimated at about \$7,000; contract was awarded W. J. Keatinge:

Table with columns: Bidder, 22-in. conduit, Man-holes, 20, Re-ducers, 40, Total.

*26 to 22-in. reducers. The conduit is of concrete.

BIDS RECEIVED AT RUTLAND, VT., FEB. 8, 1890, FOR CONSTRUCTING 50 MILES OF RAILWAY LINE.

Large table with multiple columns for different contractors and quantities of earth, masonry, etc.

Note.—Where two bids are given (.98 or .95) the first is for the work to be finished by Sept. 1; the second, for completion by Oct. 1. *\$250.00 or \$225.00, as per note.

Table with columns: Bidder, Stone embankment, 500,000 cu. yds., 350,000 cu. yds.

Krouch gas engine: Kerr's Sons, (1) \$1,600; Kerr & Fox, (1) \$1,320, (2) \$1,100, (3) \$867, (4) \$590; Daniel Whitmore, (3) \$867, (4) \$590; Lydon & Henderson, (3) \$1,457; Jackson & Fulton, (5) \$824; F. E. McGillick, (1) \$1,200; D. H. Crisman, (3) \$1,250; Martsof Bros., (1) \$1,824. The prices on gas engine and dynamo are separate, so that if desired it can be added. The prices for extra excavations, etc., are given so that should suitable foundations not be secured at contemplated depths, work can proceed until solid ground is reached without another contract.

BRICK PAVING.—Albany, N. Y.—Our correspondent informs us that the following bids were received last week for brick paving in Hamilton St.; both Mulderry Bros. and T. H. Dumary bid on Catskill brick and Helderberg cement, and the latter's bid was accepted:

Table with columns: Quantities, Brick pavement, Curb, Relay's hrk on conc., Sod, Flagstones, Excavation, Lumber, Receiving basins, 6-in. bends, 6-in. vitrified pipe, Days' labor, Days to complete.

GARBAGE DISPOSAL.—Chicago, Ill.—The following are the itemized bids of R. B. Mitchell, Pres. Thackery Incineration & Fertilizing Co., San Francisco, Cal., received Jan. 24, 1890, for garbage disposal: Incineration only, 48 cts. a ton if the city will guarantee to deliver over 1,400 tons a day to the plant, according to specification No. 1, and for specification No. 2 the tonnage bid is 45 cts. a ton for a minimum daily supply of 900 tons.

SEWER PIPE.—Manchester, N. H.—The following bids were received by the street and park commission Feb. 4, 1890, for furnishing sewer pipe for the season: Geo. D. Goodwill, 80.3% off list prices, Akron pipe; Pike & Heald, 79% Akron pipe; Thos. A. Lane & Co., 80 1/4% Akron pipe; Manchester Heating & Lighting Co., 78% Portland pipe.

Total\$15,560 \$15,005 \$17,510

MACADAM PAVING.—Rochester, N. Y.—The following bids were received Jan. 28 for macadam paving in Alexander St.; contract let Jan. 31, to Whitmore, Rauber & Vicinus:

PAVING.—Toledo, O.—The city clerk received the following bids Feb. 6, 1890, for paving in Monroe St. and in Milburn Ave.: Asphalt paving in Monroe St.—Frank E. Cole, \$2.15 a sq. yd.; Warren-Scharf Asphalt Paving Co., \$2.30; Brick paving in same street—Harry G. Jennison,

Bids Received at Rochester, N. Y., Jan. 28, 1890, for Macadam Paving in Alexander St.

Table with columns: Quantities, Pavement: Medina blk on conc., Macadam, trap rock, New crosswalks complete, Curbs: 4-in. Medina in concrete, Redressed and reset, New surface sewer, Surface sewers rebuilt, Laterals, 16 ft. lng, 6-in. v. pipe, Manholes: New, Rebuilt & adjusted to grd. with iron head, 1/2-in water services with fixtures: North side, 25 ft. long, South side, 9 ft. long, Cleaning main sewer.

*With tile drain.

*Pounding hackfill.

Mulderry Bros. have been awarded the following contract for paving with Catskill brick in Elizabeth St.: Brick paving (5,480 sq. yds.), \$1.65; new granite curb, straight (2,430 ft.), 35 cts.; circular curb (360 ft.), \$1.00; relaying sand foundation (50 sq.yds.), 40 cts.; concrete foundation (5 yds.), \$1.50; relaying curb on sand (50 lin.ft.), 20 cts.; on concrete (30 ft.), 30 cts.; brick sidewalk (25,500 sq. ft.), 9 cts.; new 5-ft. flag sidewalk (5,580 ft.), 16 cts.; relaying sidewalk (9,800 ft.), 2 cts.; 6-in. pipe (84 ft.), 60 cts.; 6-in. bends (6) 50 cts. each; labor pounding hackfill (11 days), \$1.50; receiving basins (8), \$75 each; lumber (5 M. ft. B.M.), \$18; days to complete work at \$5 a day, 20; total, \$14,462.—T. H. Dumary has been awarded the contract for 1,120 yds. of brick paving in Dore St., at \$1.75 for Catskill brick and Helderberg cement.

PUBLIC LIGHTING.—Minneapolis, Minn.—The following bids were received Jan. 21, 1890, for lighting the streets for the ensuing year: Gas lighting—Welshach St. Lighting Co., of America, Chicago, Ill., moonlight schedule—100 lights burning 2,238 hours at \$26.50 each per year, for 2,000 hours at \$25.50, for 2,100 hours at \$26.00; all-night schedule—100 lights burning 3,600 hours at \$31.50 each per year. Minneapolis Gas Light Co., \$1 per M. ft.

burners to consume 5 cu. ft. an hour and burn 1,800 hours a year; \$4 a post a year for care and maintenance. Electric Lighting—Minneapolis General Electric Co., 164 all-night schedule nominal 2,000-c. p. at \$112 a light a year; 637 moonlight schedule, \$96. Bids on gasoline lighting were rejected, and the gas inspector directed to do the lighting.

DREDGING.—Baltimore, Md.—N. H. Hutton, Engr., Harbor Bd., City Hall, informs us that the following bids were received Feb. 8, 1899, for about 250,000 cu. yds. of dredging; two bidders of Baltimore; contract awarded the Baltimore Dredging Co.:

Table with columns: Bidder, Channel and harbor, Back basin, Head of basin in main harbor, Docks and middle branch, cu. yds. etc.

ASPHALT PAVING.—Winnipeg, Man.—C. J. Brown, Cy. Clk., informs us that the following bids were received Oct. 19, 1898, for asphalt paving; the bids were not made public until Jan. 30, when it was decided to have the work done by day labor: (1) Warren-Scharf Asphalt Paving Co., New York; (2) Kelly Bros. & Co., Winnipeg; (3) H. N. Keittan, Cy. Engr. (estimate):

Table with columns: Item, Price per unit, Total price.

*Brick or Scoria block.

SEWERS.—Rochester, N. Y.—The executive board received the following bids Jan. 28 for constructing the East Avenue sewer; contract was let to Thos. F. Kearney:

BIDS RECEIVED AT ROCHESTER, N. Y., JAN. 28, 1899, FOR CONSTRUCTING THE EAST AVENUE SEWER.

Large table with multiple columns listing quantities and prices for various sewer construction items from different contractors.

*At Culver Road with East Side Trunk sewer.

STEEL BEAMS.—Washington, D. C.—The U. S. engineer, Washington, received the following bids Feb. 3, 1899, for furnishing steel beams for Sheridan Point, Va., and for Fort Washington, Md.: A. P. Roberts & Co., Philadelphia, 1 31-50 cts.; total, \$933; Carnegie Steel Co., Pittsburgh, Pa., for Sheridan Point, 1 18-25 cts., for Fort Washington, 1 50-100 cts.; Phoenix Iron Co., 1 17-25 cts. \$1,066; C. A. Schneider & Sons, 2 5 cts., \$1,152.

CEMENT, CURBING, CHERT, ETC.—Atlanta, Ga.—The following bids were received by the council Feb. 6 for furnishing certain supplies laying curbing, etc.: Cement, Randall Bros., Louisville, cement in paper sacks, 3.66 cts. a 100 lbs.; cloth sacks, 35.47 cts.; cooperage, 43.40 cts. a 100 lbs. Scriber Sons, Louisville; cement, in paper sacks, 35 cts. a 100 lbs. Sidewalks—Davis Smith, 28 22-25 cts. cash; 32 cts. on time, per sq. yd.; Palmer Brick Co., 30 cts. cash; 34 cts. on time, and W. A. Hancock, 29 cts. cash; 33 cts. on time. Curbing—Venable Bros., 25 cts. cash a lin. ft.; Walsh & McCalpin, 24 3/4 cts. cash or time; W. W. Griffin, 26 8-10 cts. cash; 29 1/2 cts. on time; Lifwith & Crossley, 26 cts. cash, 31 cts. on time. Bishop & Phillips, 25 cash or time. Property owners have option of paying cash or one-fourth cash, balance 1, 2, 3 years. Chert, Randall Bros., 94 cts. a ton f. o. b. cars, Atlanta; Chohutta Chert Co., 82 cts., f. o. b. cars, Atlanta.

WATER PIPE, HYDRANTS, ETC.—Minneapolis, Minn.—The following bids were received Feb. 10, 1899, for furnishing 545 tons of 6, 8 and 12 in. cast-iron water pipe, f. o. b. cars; 2,000 lbs. to a ton; J. B. Clow & Sons, Chicago, \$21.20 a ton; Addytown Pipe & Steel Co., Cincinnati, \$20.35, payment July 1, \$20.50, payment July 1 and Nov. 1; American Pipe & Foundry Co., Chattanooga, Tenn., \$21.30; Dennis Long & Co., Louisville, \$20.94, payment July 1, \$21.14, payment July 1 and Nov. 1; Ohio Pipe Co., \$18.98 and \$19.48, on same payments as above. For furnishing 37 single and 8 double stream hydrants of Mathews pattern; South Park Foundry & Machine Co., St. Paul, \$25.35 a ton; Crown Iron Works, Minneapolis, \$29.50; R. D. Wood & Co., Philadelphia, \$24.90; \$27.90 for improved pattern; Chapman Valve Co., Boston, \$31.50 single stream, \$37.85 double stream. Special castings for the water department during the year: Crown Iron Works, \$50.00 a ton of 2,000 lbs.; Gillette-Herzog Mfg. Co., Minneapolis, \$34.75; Northwest Foundry Co., Minneapolis, \$45; South Park Foundry & Machine Co., St. Paul, \$39.40; Union Iron Works, Minneapolis, \$46.

INDUSTRIAL NOTES.

THE MARION STEAM SHOVEL CO., Marion, O., is busy in all departments, running its shops daily from 6.30 a. m. to 8 p. m.

THE PITTSBURG METER CO., Pittsburgh, Pa., has the contract, according to report, to furnish 1,293 water meters to the city of Columbia, S. C.

THE PLEUGER & HENGER MFG. CO., St. Louis, Mo., has the contract to furnish 425 fire hydrants to that city. WALSH'S HOLYOKE STEAM BOILER WORKS, Holyoke, Mass., has just completed and erected a steel standing pipe, 25 x 40 ft., for the Cromwell Water Co., Cromwell, Conn.

THE PIKE'S PEAK TUNNEL MINING RY. CO., 27 William St., New York, has been placed in the hands of Mr. Louis Hannemann as Receiver, on application of Mr. John B. Toner, according to report.

THE ALBANY BOILER WORKS, Albany, N. Y., is reported to have an order for six 375-HP. and two 250-HP. boilers for South Africa. The company is also stated to have recently shipped five carloads of tanks to Honolulu, H. I.

THE WALKER CO., Cleveland, O., has orders for five sets of electric car equipments for the West Hartlepool Tramway Co. of England, 35 sets to be sent to Rome, Italy, and 18 sets for Kremenchoug, Russia, according to report.

THE P. H. & F. M. ROOTS BLOWER CO., Connerville, Ind., has received through its President, Mr. E. D. Johnston, a contract, amounting to nearly \$100,000, for an irrigation pumping plant at New Orleans, La., using rotary positive pressure pumps.

THEO. SMITH & BRO., Jersey City, N. J., have incorporated their business under the name of Theo. Smith & Sons Co., with the following officers: Pres., Theo. Smith; Vice-Pres., Chas. H. Smith; Treas., Henry B. Smith, and Secy., Peter P. Smith.

WM. TOD & CO., Youngstown, O., are reported to have a contract for ten engines to cost \$35,000 each, for the new mills of the Carnegie Steel Co., Pittsburgh. It is also reported that the former company has purchased land adjoining its present plant and will erect a new machine shop.

THE FORT WAYNE ELECTRIC CORPORATION, Fort Wayne, Ind., is reported to have had bankruptcy proceedings instituted against it by its New York and Providence, R. I., creditors. A new company is said to have been formed with \$500,000 capital, which will purchase the

MR. T. W. SNOW, Western Manager, Otto Gas Engine Works, 390 Dearborn St., Chicago, has an order from the Chicago Great Western Ry. shops at Oelwein, Ia., for a 100,000-gallon tank to be placed on a steel tower 80 ft. high. He has also furnished a new special Otto gasoline engine for electric lighting and power purposes, to the Engineering Department of the University of Illinois, Champaign, Ill.

THE ELECTRIC BOAT CO. has been incorporated in New Jersey with \$10,000,000 capital to build all kinds of electric boats, including ferryboats and river craft. This company is a reorganization of the Holland Torpedo Boat Co. and the officers are: Pres., Isaac L. Rice, President of the Electric Storage Battery Co., and Vice-Pres., Robt. MeA. Lloyd, Chief Engineer of the Electric Storage Battery Co.

THE NORTH PENN IRON CO., Philadelphia, through its New York representative, Mr. Gerald Berry, has recently closed the following contracts: Steel roof trusses for boiler house at Central Islip, N. Y.; for the Manhattan State Hospital; roof trusses for an alteration to the main building of the Kings County Hospital, Flatbush, N. Y., and stairways and bridges for the Manhattan Rty. Co., at the 129th St. yard, New York.

T. W. HARVEY, JR., 1256 Monadnock Block, Chicago, Ill., informs us that he is building for the Caswell Car & Improvement Co. a new form of gondola dump car, equipped with Harvey steel trucks and bolsters, southern couplers and air brakes. He is also building 25 cars of 80,000 lbs. capacity for the Dolose & Shepard Co., which will be equipped as above, having also axles with journals 5 x 9 ins., and Merrill Bros. turubuckles.

THE BETHLEHEM IRON CO., South Bethlehem, Pa., has completed for the Boston Elevated R. R., what is said to be the largest steel shaft ever made. It is 27 ft. 10 ins. long, 37 ins. in diameter, and weighs 170,000 lbs. It will be driven by an 8,000-HP. engine. When completed, it will be shipped on the Pennsylvania R. R. car that hauled the Krupp gun to the World's Fair in Chicago in 1893. The Bethlehem Iron Co. is said to be at work on eleven similar shafts for the Metropolitan Traction Co. of New York.

plant of the old company. The directors of the new company are J. W. White, H. C. Paul, G. W. Pixley, Chas. McCulloch, W. E. Mossman, S. M. Foster, Benj. Rothschild, J. J. Wood, Louisa Fox, A. E. Hoffman and Max Fisher.

THE AMERICAN STEEL BARGE CO., West Superior, Wis., has a contract from the Bessemer Steamship Co. to build two barges of 8,000 tons capacity each, at a cost of about \$320,000 for use in the lake trade. They will measure 460 ft. in length, with 50 ft. beam and 29 1/2 ft. depth.

WADDELL & HEDRICK, Kansas City, Mo., consulting engineers, have been retained by the Tennessee Central Ry. Co. to prepare plans and specifications for, and to superintend the manufacture of some new bridges for its line. The forming of the above firm was noted in our issue of Jan. 26.

PICKANDS, MATHER & CO., Cleveland, O., are reported to have purchased the Elia blast furnace at West Middlesex, Pa., from Boyce, Wheeler & Co. for \$35,000, and will make extensive improvements, including the building of a casting house, elevated tracks, stock bins and a new stock house.

THE AMERICAN CAR & FOUNDRY CO. is reported to have been incorporated with \$60,000,000 capital combining the following car building companies: The Michigan-Penninsula Car Co., Detroit, Mich.; Barney & Smith Co., Dayton, O.; Ohio Falls Car Mfg. Co., Jeffersonville, Ind.; and Haakell & Barker, Michigan City, Mich.

THE CAHALL SALES DEPARTMENT, Pittsburgh, Pa., owing to the rapid increase in price of raw materials for boiler construction, has advanced the prices of its boilers 20% to take effect March 1. The company states that it delayed making this advance as long as possible in hopes that it could go through the season without doing so.

MR. JOS. G. FALCON, Evanston, Ill., has returned from his trip to Alaska, and is again furnishing the Falcon flexible pipe joint for water-works intakes and other purposes. For several years he has made a specialty of water-works intakes, and has recently completed repairs on the intake pipe at Paducah, Ky., made necessary by the shifting of sand bars.

THE FLUSH TANK CO., Aurora, Ill., reports a good business at present, having, among other orders on hand, one for Peerless stop-cock boxes for the Minneapolis Gas Engine Works, three car loads now being furnished. The company is also furnishing a large number of these boxes to the city of Chicago, and to adjacent towns, among them being Aurora and Elgin, Ill.

THE CALIFORNIA AUTO-TRUCK CO., is reported to have been organized with \$5,000,000 capital, and will be incorporated in New Jersey to provide an omnibus system for Los Angeles, Cal., and afterwards a truck system for San Francisco, Cal. The company is promoted by the recently incorporated New York Auto-Truck Co., of which mention has been made in several last issues of our paper.

J. G. WHITE & CO., 29 Broadway, New York, has a contract, according to report, to install a 1,200-HP. mining plant for the Deep Lead Transmission Co., near Melbourne, Australia. It will consist of two 400-K-W. rotary field dynamos and three 250-HP. alternating current motors. The former will be driven by two 600-HP. cross-compound Buckeye engines and the contract will also include condensers and air and circulating pumps.

THE MERCHANTS' WIRE & NAIL CO. has been incorporated in New Jersey with \$500,000 common and \$500,000 preferred stock to manufacture wire and nails, and will oppose the American Steel & Wire Co. and other similar combinations. The incorporators are Clement N. Biddle, Robt. Biddle and Wm. B. Knight, all of Philadelphia, in which city the main offices will be located. Mr. C. N. Biddle is President of the company.

THE MICHIGAN BRASS & IRON WORKS, Detroit, Mich., through J. W. Strackbein, General Sales Agent, has recently received an order for 600 hydrants and for valves ranging from 4 to 30 ins. for the new water works at Mobile, Ala. Mr. Strackbein advises us that work has started on the system and that the contract was awarded to M. T. Lewman & Co., Louisville, Ky. Two 8,000,000-gallon Worthington pumps have also been ordered.

THE CORLISS STEAM ENGINE WORKS, Providence, R. I., are reported to have been purchased by the Leiter-Hoadley-Knight syndicate which is back of the American Air Power Co., and the New York Auto-Truck Co., of which recent notices have appeared in this paper. It is said that the syndicate is contemplating forming a combination of steam engine builders, which will have a capitalization of from \$20,000,000 to \$25,000,000. It is also said that \$1,600,000 was paid for the Providence plant. Col. D. M. Thompson, Providence, is the new President of the company.

THE SCHENECTADY LOCOMOTIVE WORKS, Schenectady, N. Y., are building ten 160,000-lb. consolidated freight locomotives with wide fire boxes designed for burning culm. The cylinders are 21-2 1/2 ins. and the drivers carry 139,000 lbs. weight. The works are also building five 180,000-lb. locomotives of the same type with heavier cylinders, 22-28 ins., the drivers carrying 100,000 lbs. They are all to be used as pushers on heavy grade of the Delaware & Hudson R. R. The company is reported to have shipped six 78,500-lb. locomotives to the Klushiu Ry. of Japan.

J. S. MUNDY, 22 to 24 Prospect St., Newark, N. J., has recently shipped to Cuba a complete hoiler plant; to Gibson, La., a 22-HP. double cylinder dredging engine with double drums and double extension drums; to Pittsburgh, Pa., a double cylinder, double drum winch, with 12-HP. engine and boiler complete and to the Consolidated Gas Light Co., New York, a double cylinder, double drum winch engine for the removal of the wreckage caused by the recent explosion of the immense gas tank at 20th St. and Ave. A. A plant similar to the latter has also been shipped to a coal mine in central Pennsylvania.

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