WESTINGHOUSE STEAM TURBINES FOR PENNSYLVANIA RAILROAD.

An order for three steam turbines of the largest size has recently been placed with the Westinghouse Machine Company, East Pittsburgh, Pa., by Westinghouse, Church, Kerr & Co., acting as engineers and constructors for the Pennsylvania Railroad in connection with the New York terminal equipment. These machines will form the initial installation in the new Long Island power house, on which construction is just beginning, and which will serve the traction in the tunnels for the Hudson and East Rivers and the New York terminal at Thirty-second street and Seventh avenue, and also such part of the Long Island Railroad system as is in process of conversion to electric traction.

The turbines will be of the Westinghouse horizontal short barreled type, mounted upon a single bedplate, resulting in a particularly compact arrangement and great economy of floor space; they will have a capacity of approximately 7,400 electrical horse-power each, and will drive 5,500-kw., 3-phase, alternating current generators operating in parallel. Their overload capacity will be over 11,000 horse-power, and each turbine will be provided with a by-pass automatically controlled by the governor to accommodate abnormal fluctuations in load. This will also permit operation at full load non-condensing.

The turbine equipment will operate under conditions favorable to the attainment of high economy, viz: 200 lbs. steam pressure at the throttle, 28-in. vacuum and 175 degs. F. superheat. The generator will be direct connected to the turbine shaft through a flexible coupling, each section of the unit having two bearings of ample proportions, thus avoiding excessive shaft stresses. The 3-phase winding will deliver current directly to the distribution system at 11,000 volts, no step-up transformers being employed. The machines will be separately excited and will carry full load continuously at 100 per cent. to 80 per cent. power factor, with a rise in temperature of 35 degs. C., or 50 per cent. overload for two hours, with an increase in temperature rise of slightly over 50 per cent. Each turbo unit will thus be capable of delivering 8,250 kw. for reasonable intervals and considerably in excess of this figure during momentary load fluctuations.

The entire equipment will be delivered by July, 1904, one year from the date of contract. It is somewhat significant of the state of the turbine industry that eleven Westinghouse turbines of approximately the same size are under construction for heavy electric railway service, both in this country and abroad.

BOOKS AND PAMPHLETS.

American Railway Master Mechanics' Association. Proceedings of the Thirty-sixth Annual Convention, Held at Saratoga, N. Y., June, 1903. Edited by the Secretary, Mr. Joseph W. Taylor, 667 The Rookery, Chicago, Ill.

This volume is uniform with the publications regularly issued by this important organization and contains the constitution, list of members, established standards of practice of the association and the papers, reports and discussions of the 1903 convention. This volume contains specially valuable records on the subject of electrical equipment of shops in the report on this subject, this being the most important paper of a large number of good ones. This is undoubtedly the most valuable volume brought out by this association for a number of years. It is a credit to the association, to the railroads and to the secretary.

Lathes, Screw Machines, Boring and Turning Mills. By Thomas R. Shaw. 700 pages, profusely illustrated with 425 engravings. 8vo, cloth. 1903. Published by The Scientific Publishing Company, No. 53 New Bailey street, Manchester, England. Price, 15 shillings, net.

This work is a practical treatise of the design and construction of turning machines, including lathes, automatic screw machines, boring and turning mills, and their accessories, the object of the author having been to review in detail the many types of machine tools in use in the metal-working trades, and to present constructive details of the more important mechanisms and devices employed. It was considered the best way to treat this subject to illustrate with examples from actual practice, showing the different mechanisms with surrounding details—pictures often convey what descriptions fail to do. The variety of mechanisms to be found at the present time is endless, but this volume will be of great value to the designer in placing before him the best of the practice that has been settled upon by experience. A study of this work will also inform the buyer of machine tools what is considered best practice, both in the United States and in England, as to the design of machine shop tools. The text appearing in this volume is taken from a series of articles that are being published in *The Mechanical Engineer*, of Manchester, England, only the portion relating to turning machines, such as lathes, boring mills, etc., being included in this book. A companion volume is in progress which will treat of planing, slotting, drilling, milling and grinding machines, which will be of equal interest with this volume. The above work is an exceedingly valuable one and should be in the hands of everyone interested in machine shop operation. It is the only work of the kind that has been brought strictly up-to-date, covering the field as it exists to-day.

"Throw Away Your Glue Pot" is the advice appearing upon a neat celluloid paper cutter recently received from the Wachter Manufacturing Company, Baltimore, Md., which has been sent out in the interests of the well-known Army and Navy liquid glue, manufactured by this company. It is further stated that the above glue is not a "fish" glue, but a pure hide and sinew glue in liquid form. The Wachter Company will be pleased to send one of these souvenirs to anyone interested.

JEFFREY POWER DRILLS FOR ROCK AND COAL.—A catalogue of 40 pages has been received from the Jeffrey Manufacturing Company, Columbus, Ohio, which is a model of good printing, good engraving, fine paper and excellent arrangement. By aid of halftone and line engravings the Badger rock drills, rotary drills, both electric and pneumatic, hand power drills, drill trucks, hose reels, portable pumps, electric hoists, electric locomotives and other product of this company is described. Each specialty is presented with terse statements of its advantages, so that the reader may at a glance ascertain the results of the many years of experience of these manufacturers.

LOCOMOTIVE SANDERS.—The American Locomotive Sander Company, Philadelphia, have issued a new catalogue of sanders which presents the principles of construction and use of these devices and illustrates various methods of application as well as showing the details of construction. It is admirably illustrated and is well printed. Copies may be had upon application to the company at Philadelphia.

THE CYLINDRICAL, ELECTRIC BLUE PRINTING MACHINE is described in a 30-page pamphlet issued by the Pittsburgh Blue Print Company, 1505 Park Building, Pittsburgh, Pa. A number of different styles of machines are illustrated, and the advantages of blue printing by electric light are set forth. The pamphlet also includes a large list of users of these machines and excellent testimonial letters from well-known firms.

ANATOMY OF CARS.—The Derry-Collard Company, 256 Broadway, New York, have issued a new edition of three railroad car charts with the parts named. These present the "anatomy" of a freight car, a passenger and a hopper gondola car. They were originally published by the *Railroad Car Journal* and are now printed on heavy plate paper, and are suitable for framing. They are mailed in a tube at 25 cents each, or 50 cents for the set of three.

"Dixon's Index for Pencil Users" is an interesting pamphlet devoted to the user of the lead pencil which has been issued by the Joseph Dixon Crucible Company, Jersey City, N. J. In their feeling of interest in the consumers of lead pencils they have issued this little treatise, from which one may easily select the pencil best adapted to their needs. The line of pencils manufactured by the Dixon Company is sufficiently large to supply the wants of all.

THE FORSYTH AUTOMATIC AIR AND STEAM COUPLER.—The construction and operation of this device are illustrated and described in a pamphlet just issued by the Forsyth Automatic Air and Steam Coupler Company, The Rookery, Chicago. Elsewhere in this issue is a descriptive article on this subject.

"Pumping by Compressed Air" is the title of an interesting pamphlet devoted to this subject which has recently been issued by the Pneumatic Engineering Company, No. 128 Broadway, New York. A number of the important installations that have been