

Canadian Society of Civil Engineers.

REPORT OF STANDARDS COMMITTEE, JANUARY, 1906.

The Committee, consisting of MR. PHELPS JOHNSON (Chairman), and MESSRS. R. J. DURLEY and R. A. ROSS, reports as follows:—

The first step taken by the Committee was to enquire what had been done in England and in the United States in connection with the question of Engineering Standards. A considerable amount of information has been collected and may be summarized as follows:—

ENGLAND.

An Engineering Standards Committee, under the auspices of the Institution of Civil Engineers, Institution of Mechanical Engineers, Institute of Naval Architects, Iron and Steel Institute, and Institution of Electrical Engineers, has been in existence since 1901. It has appointed thirteen sectional Committees and twenty-two sub-Committees, and has dealt with, or has at the present time under consideration, the following subjects:—

Rolled Sections.

Railway and Tramway Rails.

Locomotives for Indian Railways.

Pipe Flanges.

Screw Threads.

Pipe Threads.

Limit Gauges.

Railway Rolling Stock Material.

Tyre Profiles.

Steel Castings and Forgings for Marine Work.

Portland Cement.

Cast Iron Pipes.

Generators, Motors, and Transformers.

Prime Movers for Electrical Purposes.

Physical Standards.

Telegraph and Telephone Material.

Electric Cables.

Electric Tramway Material.

Electric Automobiles.

Electric Plant Accessories.

The expenses of the Engineering Standards Committee have been met by subscriptions from leading manufacturers, railway companies, etc., and also by an annual grant from the Government. The Standards have been adopted by various Government Departments, and by most of the firms subscribing to the funds of the Committee. Provision has been made for periodical revision of standards, and the Committee has also arranged for the supply at reasonable prices of complete information, and templates of the various standards adopted. The Committee has been kind enough to present to the Canadian Society of Civil Engineers, through Mr. Leslie Robertson, Secretary, a complete set of its publications up to date. The Institution of Mining and Metallurgy of Great Britain has recently appointed a committee on mining and metallurgical standards, which will act in conjunction with the Engineering Standards Committee. Of this Committee, Dr. J. B. Porter, Member of Council of the Canadian Society of Civil Engineers, is a member.

UNITED STATES.

Correspondence with the American Society of Civil Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers, American Boiler Manufacturers Association, American Association of Steel Manufacturers, the Master Car Builders Association, and the Master Mechanics Association, has elicited replies which show a considerable variety of view and practice.

The American Society of Civil Engineers has never appointed a Committee on Standards, although it has had several special committees reporting upon such subjects as Uniform Tests of Cement, Rail Sections, and Concrete and Reinforced Concrete. The reports of these Committees have been received by the American Society of Civil Engineers, and may be found in its transactions.

The American Society of Mechanical Engineers has always taken the view that it would never by formal vote adopt any standard in such a way as to make itself responsible for the correctness or wisdom of such standard. The Society has, however, appointed Committees from time to time, requesting from them reports on certain subjects, after which the reports have been discussed and printed among the papers of the Society, the various Committees then being discharged with thanks. In this manner Committees have reported on the following subjects:—

Standard Methods for Conducting Tests of Boilers.

- " " " " of Engines in General.
- " " " " of Pumping Engines.
- " Thickness of Gauge for Sheet Metal.
- " Threads for Pipe and Fittings.
- " Flanges for Pipe Joints.
- " Unions for Small Pipe.

Standards for Small Machine Screws.

The reports of these Committees have been presented to the Canadian Society of Civil Engineers and may be found in the Library.

The American Institute of Electrical Engineers has a Committee on standardization, and has furnished this Society with two copies of its Committee's latest report. The Committee has dealt with Standard Methods of testing Electric Generators, Motors, and Transformers, and similar questions, without attempting to prescribe definite methods of manufacture. The testing standards are, however, issued with the Institute's official sanction. Dr. R. B. Owens, Member of Council, Canadian Society of Civil Engineers, is at present a member of this Committee.

The American Society for Testing Materials has prepared a number of standard specifications, copies of which are in the Society's Proceedings, and may be found in the Library.

The American Boiler Manufacturers Association has had under consideration for a considerable time the question of Uniform Boiler Specifications. Its Committee has now agreed upon such specifications, in co-operation with the American Association of Steel Manufacturers, and hopes to go before Congress and obtain a revision of the Federal laws governing the construction and inspection of steam boilers, in conformity with the specifications adopted. In connection with this matter, active support has been received from the American Society for Testing Materials. Copies of the proceedings of the American Boiler Manufacturers Association from 1897 to date, have been presented to the Canadian Society, and contain the discussions on the Boiler Specifications, which are thus available for reference.

The American Railway Master Mechanics Association and the Master Car Builders Association have appointed Committees to deal with the standardization of many points connected with railway work. Among such Committees in session at the present time may be mentioned:—

- Committee on Standard Specifications for Cast Iron for Locomotive Cylinders, Standard Fittings for Lubricators, Standard Methods of carrying out Efficiency Tests of Locomotives.
- Specifications for Locomotive Driving and Engine Truck Axles.

Specifications for Locomotive Forgings, Screw Threads, Bolt Heads, and Nuts.

Specifications for Boiler and Fire-box Steel.

Specifications for Iron and Steel Locomotive Boiler Tubes.

Standard instructions for Air Brake and Air Signal Instructions.

The Master Car Builders Committees recommend standards for a very large number of car details, such as couplers, axles, brake-beams, car sills, air brake hose, screw threads, bolt heads and nuts, methods of stencilling cars, and the like.

This list includes all the information in the possession of your Committee up to the present time and indicates fairly the position taken by the leading bodies in England and the United States in connection with the question of Engineering Standards. Your Committee is of the opinion that the attitude taken by the American Society of Mechanical Engineers in connection with this matter is a reasonable one, and recommends that the Council of this Society should not take any action which would commit the Society to the official approval or disapproval of any particular design or method of manufacture. Your Committee thinks, however, that it may be advisable to consider the question of standardizing methods of testing, although in this connection the ground has been so fully covered by the labours of the various committees in England and in the United States, that it is difficult to see that any good end will be served by the adoption in Canada of a third standard differing from those adopted in the two countries referred to. It would undoubtedly be a great gain to the Engineering profession if any action taken by this Society resulted in the adoption of the same standards in England and in the United States, and if further action is thought advisable, it is along this line that your Committee thinks that the Society's efforts should be directed.

Your Committee would also recommend that if further action is contemplated by the Council in connection with this matter, a somewhat larger and more widely representative Committee should be appointed.