

**TORONTO.**—It is stated that the present site of Knox College may be sold to an English Co. for a large departmental store.

**KINGSTON.**—An order for 25 locomotives has been placed by the Grand Trunk Pacific Railway with the Canadian Locomotive Works.

#### Quebec.

**MONTREAL.**—Tenders are being invited for heating and ventilating of the new McGill Medical Building. Messrs. Brown & Vallance, Canada Life Building, are the architects.

**MONTREAL.**—The Dominion Car & Foundry Co., Montreal, are now running under a full staff. Some large orders have been received from the Canadian Pacific Railway as a result of the heavy traffic movement.

**SHERBROOKE.**—The E. & T. Fairbanks Co.'s new plant here is now ready for operations.

#### Manitoba.

**WINNIPEG.**—Sir Thomas Shaughnessy, president of the Canadian Pacific Railway, said that the Company had spent \$10,000,000 double tracking the line between Winnipeg and Thunder Bay last year. The company are preparing to operate trains over the mountains by electricity generated by water power for 700 miles.

### MILL AND FACTORY EQUIPMENT.

#### Quebec.

**MONTREAL.**—E. G. M. Cape, Montreal, has been awarded the contract for two additional buildings for the Canadian Spool Cotton Co., at Riverside Park, Maisonneuve. Contracts for an intake and well for the same concern have been awarded to the Rexford-Bishop Construction Co., 3 Beaver Hall Square, Montreal. Messrs. Brown & Vallance are the architects.

### POWER PLANT OPPORTUNITIES.

#### Quebec.

**MONTREAL.**—Mr. Cowie, engineer of the Harbor Commission, is preparing plans for an electric plant to be erected at a central point on the harbor front for the production and distribution of power for every purpose along the harbor.

#### Ontario.

**PORT ARTHUR.**—The power contract between the Kam Co. and Port Arthur, has been signed, and the erection of a sub-station at Port Arthur will be commenced immediately.

**MONTREAL.**—The plant of the Moore Carpet Co., which has been in liquidation for some time has been sold by the liquidator, Mr. John J. Griffith, to T. M. Craig.

### BUSY TIMES IN CAMPBELLFORD.

Campbellford, Ont., is a busy town now. The Trent Valley Woollen Mills have received large orders from leading wholesale houses of Canada, and the future is promising.

The Northumberland Paper Mills are very busy, and large additions are being made to the mill.

The McBurney Lumber Co. have their saw-mill running at full capacity.

The Dickson Bridge Co. have many orders ahead.

The shoe factory, flour mill, foundry, sash and door factories are all busy.

In addition to all this the Dominion Government have spent about \$300,000 on the Trent Canal in this vicinity, and the work is only commenced. The town is putting in a new power plant, which, when finished, will cost over \$100,000, and a large number of men have been employed on the work all summer.

### CONTRACT LET FOR GRAND TRUNK RAILWAY CAR SHOPS.

The contract for the construction of new carshops, etc., for the Winnipeg terminals of the National Transcontinental Railway was awarded to Thomas Kelly & Sons, Winnipeg, on Oct. 19. The tenders call for the expenditure of about \$500,000, and the work will be started at once.

## Malleable vs. Steel Castings vs. Forgings

The Development of the Respective Fields of Cast and Wrought Iron and Cast Steel. With Illustrations of Articles in the Making of which the Three Materials Can be Used to Best Advantage.

By JAMES H. BAKER.

Really only one metal is involved in the present consideration; that is iron as a base. By alloying with other elements, by causing chemical changes in these and by varying physical treatment, we get adaptability to the formation of different shapes in castings, forgings and rolled and drawn material. We also get the advantage of certain physical characteristics, such as tensile strength, resistance to crushing, etc. No metallurgical reader need be told that with the iron, as we find it in the condition of ore, we have phosphorus, sulphur, silicon, copper, etc., and that in the blast furnace part of the carbon and sulphur in the fuel is taken up by the iron. All of these elements are generally kept as low as possible, though pure iron is of little use. It is necessary to control the proportions of such of the above as may be desired, and others are often added, such as manganese, nickel, chromium, vanadium, etc. Detailed reference to alloyed steels is left out of present consideration except to say that their use will likely still further advance the use of castings, especially steel castings. The changes from the use of one material to that of another are often brought about by advances in the different arts. The useful phase of the matter is to find what decides the choice of materials. The difference between wrought iron and

steel is not considered in this paper, nor is it any part of the purpose to describe the differences between casting, rolling, forging, cold drawing, roll forging, pressing, drop forging, etc.

#### CARBON VARIATIONS.

Cast iron, having 3 to 4 per cent. generally of carbon, is easily master in resisting com-

pression and scrap of various kinds intermixed in order to make stronger castings. Also we have had castings which were converted into steel after being molded in sand, but this has not advanced much. Next we have malleable castings, which are cast iron with some of the carbon taken out and part of the balance and other elements changed. These are made into many intricate shapes,

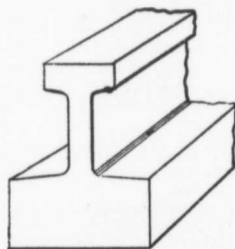


FIG. 1.

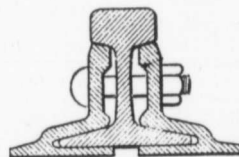


FIG. 2.



FIG. 3.

Contrasts of Cast and Wrought Forms.

pression and in resisting corrosion from many causes. When chilled it has a quality all its own. As to castings, at first we had cast iron, and then we got it with steel turnings

impossible commercially in wrought material, and yet give a service much nearer to wrought iron as to tensile strength and toughness than simple cast iron.