

component of the current required for this results in an undesirable phase displacement in the main transformers which must be cared for by compensation transformers. The compensation transformers and ohmic resistances serve to compound the compressor motors so that recuperation will occur at unity power factor both in regular operation and during the period of excitation of the main motors.

#### OTHER EQUIPMENT

The Jeumont Company, in addition to furnishing the Midi Railway with eight more locomotives of the type hereinbefore described, has received an order to supply the following equipment for a line in the eastern Pyrénées: three 6000-volt, 25-cycle, 300-hp hydroelectric sets, four motor cars carrying four 50-hp motors each, one 1000-kw motor-generator and transformers similar to those at the Villefranche substation and overhead material for 17.7 miles of line.

### PURCHASED POWER FOR THE CHICAGO, MILWAUKEE & PUGET SOUND ELECTRIFICATION

In connection with the plans for the electrification of the Chicago, Milwaukee & Puget Sound Railway from Harlowton, Mont., to Avery, Idaho, the details of the contract between the railway company and the Great Falls Power Company, mentioned briefly in the *ELECTRIC RAILWAY JOURNAL* Jan. 11, are of some interest. This contract is made part of the articles of agreement between the power company and the federal government, by which a fifty-year grant of right-of-way for transmission lines across public lands was secured.

The railway company agrees to electrify its line between Harlowton and Deer Lodge, Mont., before Jan. 1, 1918, and also agrees to buy from the power company electric energy at the rate of 10,000 kw for the full period of the ninety-nine-year agreement, but two years' notice will be given the power company that delivery must commence. The railway company has several options for more power, up to a total rate of 25,000 kw, as follows: Not less than 4000 kw, nor more than 8000 kw, if called for prior to Jan. 1, 1923; not less than 3500 kw, nor more than 7000 kw, if called for between the last date and Jan. 1, 1928; or, failing to exercise the foregoing options, the full 25,000 kw may be called for at any time between Jan. 1, 1918, and Jan. 1, 1928, if at least 6300 kw additional has been called for prior to Jan. 1, 1923. Additional energy, when once called for, as above, will be supplied for the entire remaining term of the contract. The power company is not liable for interruption to supply, nor the railway company for interruptions to its consumption, owing to causes beyond their control such as strikes, fires or floods. The contract will be broken automatically in the event that the federal government permanently enjoins at any time from the enjoyment of its privileges. The railway company is made a preferential customer entitled to first service.

Delivery of energy will be made to not more than five stations between Deer Lodge and Harlowton, at 50,000 volts or 100,000 volts, three-phase, 60 cycles, alternating current. The voltage shall not be changed except by mutual agreement. The railway company will receive the energy at the terminals of air-break, high-tension line switches to be provided by the power company and will transform and distribute such energy to its line of railway in such manner as it sees fit. Watt-hour meters and curve-drawing wattmeters will be employed to measure the energy delivered. The railway substations are to contain sufficient synchronous machinery to secure a power factor, leading or lagging, of at least 80 per cent. Twelve months' notice will be given the power company of the location of the delivery points. The power company will also have the right to install Tirrill regulators in the substations for the operation of synchronous machinery in such manner

as to receive any power factor between 80 per cent leading and 80 per cent lagging.

The rate for energy will be \$0.00536 per kw-hr., subject to a minimum bill after the first year of service equivalent to 60 per cent of all the energy contracted for. The power company is also required to pay the federal government a tax of 5 mills per 1000 kw-hr. for all energy delivered over transmission lines crossing the public domain. The power company also has the conditional right to occupy the railroad right-of-way with its transmission lines, subject to sixty days' notice of removal, and such transmission lines shall not interfere with the operation of the railway or its telephone or telegraph lines. The railway company is forbidden to resell any of the energy purchased of the power company. Disputes of any nature between the two companies will be referred to and settled by a board of three arbitrators, chosen one by each company and the third by these two.

### SPEED NOTICES ON DETROIT INTERURBAN LINES

The publicity department of the Detroit United Railway has recently prepared an advisory notice of the character reproduced in the accompanying illustration relative to the necessity for caution when using interurban cars.

The company has found that residents of the larger towns when out in the country do not realize the higher speed of interurban cars, and hence they often fail to signal them in time. The notice not only calls attention to this fact, but also explains how the cars can be most effectively signaled. Furthermore, this notice will act as a warning against accidents, inasmuch as it impresses the passenger with the need for exercising caution when crossing the tracks or boarding a car. This notice has been printed in three sizes, namely, poster type for shelter stations and waiting rooms, medium size (8½ in. x 11 in.) for tacking on telephone poles, etc., at cross-roads, and pocket size (2¾ in. x 5¼ in.) for distribution on the cars.



Warning Notice on Interurban Speeds

As to receive any power factor between 80 per cent leading and 80 per cent lagging.

### THE ASSOCIATION PROCEEDINGS

The bound proceedings of the American Electric Railway Association for the convention of 1912 are now being distributed to members from the office of Secretary H. C. Donecker. As customary, a separate volume is devoted to the American, the Engineering, the Accountants', the Transportation & Traffic and the Claim Agents' Association respectively. An excellent frontispiece portrait of the president of each association accompanies the individual volumes. The proceedings of the five associations as published make 2744 pages, the Engineering proceedings alone totaling 978 pages. A valuable feature of the volume for this year is the summary index of previous reports of the various associations, including the earliest proceedings of the American Street Railway Association.