

however, is not so very serious a difficulty after all, for on country routes where stops are infrequent, and at certain definite places only, it is not required to vary the speed, except, of course, on starting, and perhaps on very sharp curves and crossings of roads. This condition has actually been met in practice, by the expedient of so constructing the motor as that certain poles can be cut in or out, thus causing the rotor to travel at a less or a greater angular speed. Rumors are current of satisfactory results having been reached by experimenters in this field; and we may reasonably expect within the next very few years to have polyphase railways running with commercial success.

The Steam Plant in Central Stations.

We have lately presented in our columns, a paper on the subject of steam engine indicators and the advantages to be derived from their frequent use. The steam part of an electric power house is one that receives but little attention very often from the owners of such plants, and their ill success is due, in great part, to this laxity. We have lately had occasion to critically examine indicator cards taken from a number of engines of different makes that have been continuously in use for a number of years, and if all our readers had the same opportunity of seeing the results as we have, we believe the use of the indicator would be much more frequent than it is. There seems to be an opinion among the smaller steam users, that once an engine has been put in—there is an end of it. They conclude that iron and steel last for ever; that there is no wear and tear; and that if the engine is properly oiled up by a \$1.00 a day mechanic, it requires no further attention. We desire to most emphatically protest against this idea, and urge our readers to keep a constant watch over the performance of their engines. Valves will inevitably wear, pistons have an unfortunate habit of abrading, and the result is some inefficiency of steam use that consumes more fuel than would otherwise be necessary. There is no more useful—we might say essential—instrument in a power house than an indicator, nor is there one that is more seldom found. An intelligent man with an indicator and voltmeter and ammeter can, in the course of a month, learn more about the economical generation of electricity, and the manufacture of dividends, than a whole year of study in mathematical works for which his technical education is not sufficient.

Improved Methods. It is exceedingly interesting to observe the growth of electrical enterprises in Canada during the last few months.

Not only is this evident in the number of new enterprises inaugurated, but in their varied character; and more especially in the fact that considerably more attention is being paid to the preliminary engineering than used to be the case. It seems to be more generally recognized that electric lighting is a business by itself, and deserves careful attention as such. The "survival of the fittest" principle has also been exemplified in the fact that there really seems to be less poor machinery on the market, and more satisfactory apparatus. The purchasing public are becoming more awake to the fact that machinery should not be selected on the basis of its price only, but also in consideration of its inherent electrical and mechanical excellence, and that there is sufficient difference between good and poor machinery, to more than

counterbalance a considerable difference in first cost. We have also observed that there is a greater variety in the types of machines—both steam and electrical—purchased than used to be; and the reason for this seems to be that purchasers are beginning to rely less on their own ideas as to what is best, and to advise with independent authorities. The first result of this course has been that a better all-round class of construction has been undertaken; and the second that purchasers have not been limited to one or two makes of machine, but have felt less hesitation in purchasing in the open market.

CONCENTRATION and improvement are the most marked evidences of electrical progress. Within the last few months many electrical companies have been making great steps in those directions, and, we are glad to learn, always with satisfactory results. It is very interesting and instructive to note the particular lines along which such new dispositions seem to be principally made, and their perfect similarity should give good forethought to electrical men who desire to keep their places in the front rank of intelligent operators. Investigation into the operating economies seems to have had a large influence in suggesting changes; first, in an entire reconstruction of distributing systems, lines and transformers; next, in the substitution of a few large generating units of modern make, for many small units of a type which, although representing the best that could be made some years ago, has been proved wanting. Next we have observed an encouraging tendency to build new power houses and to pay considerable attention to their designing for convenience and efficiency; and lastly, and, we think, best of all, there is an increasing demand for a better educated and more capable class of operator. We take some credit for having in a measure influenced this improvement. During the past eighteen months we have repeatedly called attention, both editorially and through papers by competent authorities, to the many important subjects for investigation by enterprising electrical men. It would be greatly to the interest of the whole electrical generating industry, if they could arrange to tackle central station problems as an association instead of as individuals. The suggestion has been made that there might with advantage be established under competent direction, a central station laboratory, in which accurate tests could be made of the quality of lamps, transformers, carbons, wire and electrical supplies of all kinds. We would be glad to have opinions on this subject.

PERSONAL.

Mr. A. S. Colpitt has been appointed city electrician for Halifax, N. S.

Mr. A. E. Edkins, Registrar of the O. A. S. E., has recently returned from a trip to England.

Hon. Louis Tourville, who was largely interested in the Tourville Electric Light Co., of Louisville, Que., died in Montreal early in November.

On the 25th of November, Mr. Adam Rutherford, secretary-treasurer of the Hamilton, Grimsby and Beamsville Railway, was married at Grimsby to Miss Marie Nelles, of that town. Rev. C. R. Lee officiated.

It is stated that Mr. Romaine Callender has gone to England to commence a telegraphic business between that country, France, Germany, etc., and the United States. Mr. Callender is said to have invented a new system of telegraphy, making it possible to turn out over half a million words in less than 28 seconds.