

slack, will be about 8,000 nautical miles. The longest span is that from Kelp bay, on the south coast of Vancouver island, to Fanning island—about 3,561 miles. The shortest sections are from Fanning island to Suva Fiji, 2,093 miles; from Fiji to Norfolk island, 961 miles; from Norfolk island to a point near Brisbane, Australia, 834 miles; and from Norfolk island to the northern end of New Zealand, 537 miles.

The time taken by an electrical pulsation to pass through a submarine cable increases with the length of the cable in proportion to the square of the length. That is to say, if it takes the signal one second to travel 1,000 miles, it will take four seconds to travel 2,000 miles, nine seconds to travel 3,000 miles, and so on. But the speed also depends on the dimensions of the core and its insulation gutta percha, or india rubber. A thicker copper wire and coating of gutta percha gives a higher speed. The Vancouver to Fanning island section of the Imperial cable will be "fast," owing to its heavy core, which weighs about 650 lbs. of copper and 400 lbs. of gutta percha per mile. Such a cable will carry seven or eight paying words a minute, and as it is the longest section, this will be the speed of through messages. For the shorter spans of the line smaller cores will suffice. The messages will be received on the siphon recorder and mirror instrument of Lord Kelvin. The duplex system of Dr. A. Muirhead, by which two messages, one from each end, pass through the wire at once, will be employed on the southern sections at least. Although this system nearly doubles the capacity of a cable it is not considered so advantageous for this cable as for others, owing to the fact that only a few business hours in the day are common to Great Britain and Australasia. It is anticipated, however, that there will be a certain amount of telegraphic communication between Canada and the United States and Australasia, over this cable, in which event the adoption of the system will prove very convenient. Dr. Muirhead has recently improved his system by applying a self-induction shunt to the receiving instruments, which has the effect of curbing the signals, making them easier for the clerk to read, and increasing the speed of messages. Lord Kelvin has recommended the utilization of this appliance for despatching messages for the same purpose. Two repairing ships will be retained to maintain the cable in working order. There is some fear of earthquakes or landslides breaking the cable in the direction of Fiji. Not long ago the Eastern Telegraph Co.'s cable between Sydney and Nelson was bitten by a shark, in 300 fathoms, and so injured that it had to be recovered and a splicing made.

### General Telephone Matters.

Lawrencetown, N.S., wants telephone service with outside points.

The North American Telegraph Co. has built the telephone line from Perth to Balderson, Ont., which was referred to in our last issue as under construction.

The Pacific Telephone Co., will, it is reported, string a telephone line between Grand Forks, B.C., and Republic, Wash., along the telegraph poles of the Kettle Valley Ry. lines.

The Nova Scotia Telephone Co.'s switchboard at its Halifax exchange, which was installed last year at a cost of \$50,000, was practically burned out during a storm, Feb. 17. A temporary switch has been installed.

The farmers residing in the vicinity of Bath, N.B., are contemplating the erection of a telephone line for their own use. For general purposes the district is served by the lines

proposed to be amalgamated as the Union Telephone Co.

The Port Arthur, Ont., town council has appointed a committee to report on the feasibility of establishing a municipal telephone system, and has invited the town of Fort William to take joint action. The Bell Telephone Co. has exchanges in both towns.

The Toronto City Council in its bill before the Ontario Legislature is asking for power, among other things, to operate a telephone system, and for such purpose to acquire the rights or interest of any existing or future company, or to subscribe for stock in any company organized to operate such a system.

M. Welch, Bristol; T. Lynch, Fredericton; J. Love, J. McIntosh, P. Fitzgerald, Glassville; and J. R. Ronald, West Glassville, N.B., are making application under the N.B. Companies' Act for incorporation under the title of the M. Welch Telephone Co., to build and maintain telephone lines in Carleton county.

The Cranbrook, B.C., Electric Light Co. operates telephone lines in the southeastern portion of the Kootenay district. It is proposed to extend the line now terminating at Marysville to Kimberley; and possibly to construct a line to Moyie; and another to Elko, Morrissey and Fernie. An exchange will be put in at Cranbrook.

The Bell Telephone Co. offers to renew its agreement with the Hamilton city council for five years, and to pay on the same basis as at present, which is about 5% on its revenue. It is willing to pay \$2,000 a year for 5 years, and throw off the \$100 charged for the police patrol system. A committee of the council is considering the proposition.

La Compagnie du Telephone de Montmorency is making application to the Quebec Legislature for an amendment to its act of incorporation changing its name to La Compagnie de Telephone Provinciale; increasing its capital to \$300,000, and allowing it to extend its lines within the city of Quebec, and for the better definition and extension of its powers, etc.

Wolfville, N.S., people have organized a local telephone company with a capital of \$5,000, to operate a system of cheap telephones, the Valley Telephone Co., which is now in the field, having given notice of an increase in rates. The officials of the local company are: President, R. E. Harris, Sec.-Treasurer, Dr. deWitt; other directors: G. L. Starr, J. Herbin, J. E. Hales and C. W. Strong.

J. A. Ritchie, Solicitor of the Bell Telephone Co., writes that the press report that the Co. is applying to Parliament for an act empowering it to increase its rates, is untrue, and says that the only legislation which is being sought is an act empowering the Co. to increase its capital stock in order that it may be in a position to satisfy the demands for telephone facilities made upon it from various quarters and generally to meet the growing needs of its business.

The New Brunswick Legislature will be asked at the forthcoming session to incorporate a company to be known as the Union Telephone Co. The lines to be taken over by the new company are two private lines constructed by Dr. Ross, of Florenceville, and Dr. Brown, of Centreville, covering in all about 200 miles of wire and 100 instruments. The lines extend from Woodstock, N.B., to the River du Chute, connecting at Bristol with Glassville, Argyle, Foreston and Highlands, and have been constructed within the last two years. It is proposed to extend the line to Edmundston.

The Eastern Telephone Co.'s new offices and exchange at Sydney, N.S., are expected

to be ready for occupation by April 1. All the wires will enter the new exchange underground, and conduits have already been laid for this purpose on George st., Charlotte st. and the Esplanade. The new circuits are to be metallic, the advent of the electric railway having rendered this necessary. When the lines leave the conduits they will be carried in cables, so that the only open wires will be those for the local work on the streets passed through. The general construction work at the exchange, and generally on the whole system, has been arranged with a view to a very considerable expansion of the Co.'s business.

W. F. Maclean recently introduced in the House of Commons a bill respecting telephone companies. He explained that it was based largely on the present general acts governing railways and telegraph companies. It gave companies power to fix their tolls, subject to the supervision and revision of the Governor in Council, tolls to include both charges for messages and rentals for instruments. No rebate or discrimination would be permitted. The most important clause compelled companies to give the use of their systems to other companies, as railways are compelled to give running rights to other companies. The Government were empowered to take over the telephone systems as they are now empowered to take over the telegraph systems, and the companies could not discriminate unfairly against rival companies or cut rates in one municipality as against another to kill out a rival. The legislation declaring that "telephone" and "telephonic" shall not be construed as "telegraph" or "telegraphic," so as to exclude telephones from the operation of the telegraph laws, it was proposed to repeal.

In commenting on the clause in the above mentioned bill which provides that all companies shall be compelled to allow municipal councils the use of their main lines connecting towns and cities, President Sise, of the Bell Telephone Co., is reported by the Montreal Herald to have recently said:—"The provisions of this clause are both unjust and impracticable. Our lines and equipment in Canada represent an investment of over \$8,000,000 and a small municipal system could be erected at a cost of but a few thousands; yet if we should be forced to permit such a system to use our trunk lines it is obvious that it could, owing to the small amount of its investment, furnish its community with a service equal to ours and at a rate far below that required for the actual maintenance of our lines alone; and the injustice of such a measure is too apparent to need comment. We have no objection to municipal ownership of separate lines, but we do most emphatically object to their furnishing telephone service on our money. We are willing to transmit messages from other telephone lines just as we now do telegrams in certain instances, charging a fair tariff, but this is radically different from having other lines directly attached to our wires. Aside, however, from the question of what is right, equitable and just, the proposed legislation is absolutely impracticable, and for this reason: Our system is materially different in construction and operation from any other in use; it is peculiar to our Co. alone and cannot be acquired by others. If a system different in construction and kind should attach to our wires it could not transmit a single message, and our connection would be absolutely of no use." As to the broader question of municipal ownership of telephone lines Mr. Sise further said:—"In Montreal, with a population aggregating 300,000—upon the basis of five to a family or firm—there are only 15% who have telephones, and the remaining 85% would not subscribe for phones even if the rental was materially reduced. In this instance, municipal ownership would