

increasing the annual charges over their amount in 1878-9, when the rates were 6, 7 and even 8 per cent. The Treasurer points out the danger of borrowing on easy terms, and recommends that, at each payment of interest there be provided a sum for the sinking fund sufficient to extinguish the debt at its maturity. The chief items of expenditure in 1900-01 were as follows:

Interest.....	\$ 342,144	Fire dep't.....	\$ 35,637
Salaries.....	44,172	Road.....	38,853
Light and fuel.....	36,705	Water works.....	24,368
Police.....	36,309	Health.....	6,391
Markets.....	8,336	Vagrants and insane.....	21,624
Legal.....	2,618	Miscellaneous.....	39,206

Total expenditure for year 1900-01..... \$636,323

The city's properties and franchises are valued in the Treasurer's report at \$4,713,025. The taxes received were, assessments, \$220,177; business tax, \$47,208; personal tax, \$60,007; horses and vehicles, \$3,865; markets, licences, etc., \$85,358; water rates, \$206,160.

The properties exempt from taxation are stated to have a value of \$7,215,560, divided as follows:—Catholic institutions, \$3,063,160; Protestant, \$448,000; Federal Government, \$1,831,800; local government, \$1,872,000.

The most interesting items to be gleaned from the elaborate and able report of the City Treasurer of Quebec, for fiscal year, 1900-1901, are as follows:—

The taxable valuation of property is.....	\$19,012,389
The bonded debt.....	\$,000,000
The total ordinary revenue.....	672,743
The annual interest charges.....	342,144

These figures call for the most careful consideration of the citizens of Quebec.

ELECTRICAL HEAT.

During an exceedingly interesting and instructive lecture on "Electric Furnaces," delivered by Dr. Stansfield, of McGill College, in the auditorium of the Physical Sciences building, on Monday night last, a number of marvellous illustrations were given of the great heating powers of electricity. To the scientists present the experiments were highly interesting, and to others less familiar with the subject they were a revelation. The learned lecturer had a small electrical furnace on the table, which was a cube about 15 inches in each direction. Into this were inserted two carbons about an inch in diameter, the one inserted through the wall on the left side, the other through the right side. Connection was made by an electric wire to a small dynamo. A miniature cupola, the size of a small tumbler, was filled with lumps of crude copper, which was inserted in the furnace, through an opening in the roof, and the current set in motion. In a few minutes the copper was melted by electric heat, and the lecturer poured it out like water. Lumps of silver were also smelted in an incredibly short time, and by other experiments it was shown that iron when immersed in water could be fused in a few minutes by electrical heat. The commercial value of electric furnaces was shown. The process was illustrated by which welding is done that

is almost impossible by other means. Another startling demonstration of electric heat was made by placing the point of a carbon against an iron plate, which was quarter of an inch thick, through which the carbon passed like a knife through a cheese.

When witnessing these experiments, one could not but reflect upon the consequences of such tremendous heat, far exceeding what is obtained in an ordinary smelting furnace, being directed against materials used for structural purposes. Dr. Stansfield stated that even the best fire bricks could be liquefied by electric heat, and that no material was known equal to the purpose of resisting it which could be used for making cupolas and other parts of electrical furnaces. Were large supplies of such material available at a moderate cost, the smelting of iron and other ores would be effected in as many minutes as it now takes hours when the heat is generated by coal or coke. There is, however, no prospect, at present, of this marvel being accomplished. The necessity of protecting dwellings, stores, warehouses and other buildings from excessive currents of electricity by the accidental crossing of wires was emphasized by the above capacity of electricity and its commercial utilities, experimental demonstrations of the enormous heating which, outside scientific circles, have never been fully realized. Yet one could not but see, when watching Dr. Stansfield handling his apparatus, how easily controllable is electricity in its most extreme manifestations. Electricity is indeed the most readily, promptly and absolutely controllable of all agents for generating light, power and heat. This being so manifest, there should be no delay in applying such devices, and installing such arrangements as would render it almost an impossibility for a building to be set on fire by an electric current. The accomplishment of this protection will, ere long, be another service rendered by science.

AMENDMENTS TO THE ONTARIO INSURANCE ACT.

A Bill before the Ontario Legislature contains several amendments to the Ontario Insurance Act. Sub-section 5 of Section 18, which we quote below, proposes in certain cases to allow insurance with un-registered companies. It reads:—

Section 18, Clause 86a. "In the case of any manufacturing risk, if it is proved to the satisfaction of the Insurance Registrar that no insurance or no sufficient insurance can be obtained at the ordinary rate of premium from any insurance corporation standing registered under this Act, the Insurance Registrar may, under his hand and seal of office, grant in writing a permit to the person warned therein, to effect the necessary amount of insurance in one or more foreign unregistered corporations for a term not exceeding twelve months, specified in said permit; and such permit shall for the said term exempt the said person and the said insurance contract from the operation of sections 54, 85 and 86 of this Act. In respect of each such permit, a fee of \$2 shall be payable to the provincial treasurer."