Electrical Department.

THE STORAGE BATTERY.

Those who are watching the progress of electricity have followed with interest the experiments and improvements being made in the storage battery, which is now attaining such perfection as to attract the attention of the electrical world. The complete development and its application to every-day purposes of this system has been the goal sought by most students of electricity. As we have pointed out before, one reason the storage battery has not come into practical use in Canada is that we seem generally to follow the lead of the United States, and there the evolution of the system has been delayed by litigation as to patent rights. It is not our purpose now to give a complete *resume* of the storage battery from its inception by E. Julien, of Brussels, Belgium, but to draw the attention of miners to the latest use to which this system has been successfully applied. One of the largest coal mines in Europe, La Societe d'Amercœur at Jumet, has lately been making trials with the storage battery (Julien system), by using an electric locomotive, and has obtained such success that this system will revolutionize the work in all mines. We hope to be able in our next number to give our readers the result of a public exhibition given by the manager of the mine referred to in one of their galleries, before the head engineer of the Government of Belgium and the managers of the largest collieries.

The saving made by the doing away of horse traction, the greater speed obtained, and the vast increase in the work done, make the adoption of this system only a matter of a short time. We might say here that previous trials of this system in mining operations met with but little success. It is only lately that, owing to the high capacity given by the improved accumulators, and the lessening of their weight, it has proved a success. One of the advantages of the system is that the cost of installation is small. If a mine is already using electric light, it is only necessary to use a conduct wire in the galleries in order to charge the batteries. These are placed in a small engine which draws, say fifteen wagons of 1,350 lbs. each, at a speed of five miles per hour. The weight of the battery in the engine is one ton, and the rails may be, say 30 lbs. to yard instead of 56 lbs. as in the trolley system. Batteries last for ten hours. The experiments made by the above company prove that the cost by new system is 7 francs per wagon, compared with 35 francs per wagon, by the horse traction. These figures show in one way the advance being made in the storage battery system. It remains for the future to prove whether the improvements so far made will stand the test of general use.

EYESIGHT AND THE ELECTRIC LIGHT.

Many people have the idea that the electric light injures the eyesight. How far, however, this is wrong may be seen by the following concensus of opinion, obtained by *Lighting* from leading English oculists:—

1. No authenticated case of injury to eyesight through the incandescent electric light has ever been recorded.

2. In point of purity, sufficiency, absence from heat, steadiness and adaptability, electric light is preferable to either gas, oil lamps or candles.

3. The only eyes which are likely to be injured by electric light are those already suffering from weakness or derangement, for which a dark room is necessary.

4. In less serious cases, a change from gas to electric light has been found decidedly beneficial.

5. In its constitution, electric light very closely resembles sunlight, and has a far smaller proportion of harmful rays than any of the rival illuminants.

6. The extreme ease with which it can be managed makes electric light capable of being perfectly shaded and placed.

7. Electric light under proper conditions of use, is the best form of artificial lighting known.

Then, apart from the essential qualities of the light itself, there is another point to be considered. A gas burner or an oil lamp is continually using up the air's oxygen, and substituting for it the poisonous products of incomplete combustion. At large establishments it has been noticed more than once that the improvement in health and attendance of the employees resulting from a change from gas to the electric light has soon paid the whole cost of the installation.

RECENT experiments show that for a given pressure the radiation of positive light from Geissler tubes is proportional to the intensity of the current; the composition, however, of the radiation is constant and independent of the current.

A THERMO-GALVANIC battery has been invented which, when applied by means of wet sponges to the surface of the body, sets free from the water in the sponge pure oxygen or ozone. The inventor claims that by this system the curative effects of these agents make themselves felt in the blood.

A NEW high-speed electric rock drill has been introduced with, it is said, good results. Upon the cradle, which is made of cast-iron and is about three-quarters of a yard long, is fixed a small motor completely enclosed in a brass case. The motor is exceedingly compact and well made, to enable it to withstand rough use. It is wound to work at about 90 volts, and takes about four amperes, which is about a half horse-power, when doing its work. The armature is made up in 16 sections, with the same number of segments in the commutator of phosphor bronze. The speed of the motor is 2,000 revolutions per minute, and it transmits its power to the drill through two cog-wheels, which reduce the number of strokes to about 240 a minute. The drill is also given a slow revolving motion. By a spring arrangement all shock is taken from the drill when the blow is given, thus enabling the motor to work smoothly and without a jar. The whole is fixed upon a tripod stand, which can be inclined at any angle, and fed by a wheel at the upper end of the cradle.