

SCIENTIFIC NEWS.

The Carboniferous Plants of Canada have been explored by Dr J W Dawson, F R S, who has published a series of reports upon the subject, which have been reprinted from the "Transactions of the Geological Society of Canada." The work extends greatly our knowledge of the Lower Carboniferous Flora. It also contains a list of the species of the Middle and Upper Coal Measures, and discusses the character of Sigillarioid and Lepidodendroid stems.

An invention by Signor Abbiati of a new plough for clearing the tracks of railroads, is attracting attention, and the claim is made for it that it is both expeditious, thorough and cheap. The machine, which operates on the snow or ice, is a heavy revolving saw, or fan, which cuts into the opposition deeply, and sends the fragments flying. The snow is thrown to a great distance on either side or, in case of a very steep bank, it is taken up and hurled backward on platform cars, by which it can be removed.

At a private party, given at his London house during the past month, Sir Charles Wheatstone exhibited some curious electrical experiments for the amusement of his friends, which would seem to throw some light on certain so-called "spiritualistic manifestations." In a dark room, by a stamp of his foot, Sir Charles produced a brilliant crown of electric light in mid air, while musical instruments seemed to be played by invisible hands, whereas the sounds really came from an adjoining room, in which the player sat, and were made to appear to be produced by the instruments before the spectators by an ingenious contrivance. A contest between Science and the "spirits" in their own chosen feats would be almost as memorable as the celebrated competition between Moses and the magicians.

The Belleville Ontario is informed that there are fully thirty-five miles of logs in the Moira, including last year's as well as this year's cutting. This one fact is a good index of our lumbering business.

THE FERTILIZATION OF GENTIAN BY HUMBLE BEES.—The closed gentian (*Gentiana Andrensea*) has flowers an inch and a quarter or more in length. These inflated, bright blue flowers of late autumn, appear to be always in the bud, as they never open. The corolla is twisted up so as to leave no opening at the top. The flowers are all nearly erect, with two stigmas considerably above the five anthers. The writer says he sees but one way in which it can be fertilized, that is by insects, but who the writer is we are not told. "Several of my students, as well as myself, more than two years ago, have often seen humble bees entering these flowers. They pry or untwist the opening with their mouth organs and legs, and then pop into the barrel-shaped cavity, with they just fill."

GEM IN FRUIT-TREES CONSIDERED AS A PATHOLOGICAL PHENOMENON.—M. Prillieux says, in "Comptes Rendus," April 27, that the flow of gum is a real disease, which he names *gammose*. The alimentary substances, placed in reserve in the interior tissues, instead of promoting the plant's growth, are diverted to production of gum, and a portion accumulates, awaiting the instant of their transformation about gummy centres, which seem to act as centres of irritation. The case is analogous to what occurs when an insect deposits one of its eggs in the tissues of a plant, leading to production of a gall, which consists of new cells holding a mass of nutritive matter (particularly fecula) destined, not for the wants of the plants itself, but for the development of the small parasite which appears. The production of gum at the expense of the nutritive matter has no other limit than the complete exhaustion of the plant. Scarification of the bark is the best remedy. Mr. Prillieux's explanation is this:—To cure the disease the materials misappropriated to formation of gum must be brought back to their normal destination. Hence a more powerful attraction for them must be introduced than that of the gummy centres. Now the wounds of the bark necessitate the production of new tissues, and under this strong excitation the reserve matters are employed in formation of new cells, and cease to be attracted in the wrong direction.

A HORIZONTAL PENDULUM.—In "Poggendorff's Annalen," C. L., p. 134, is described by Herr Zollner a series of experiments with a form of horizontal pendulum of such surprising delicacy that it seems to open a wide and fruitful field for investigation. This instrument consists of a short horizontal rod suspended by a vertical piece of fine watch-spring, and carrying at one end a heavy leaden weight and mirror. To prevent

the other end from rising, a second watch-spring is attached, and fastened below. The two points of support lie, therefore nearly in the same vertical, and are equidistant, one above and the other below the pendulum. They are connected with the top and bottom of a vertical rod, which rests on a tripod, with levelling screws. If the two points lie in the same vertical, the weight will remain in any position, but if one of the levelling screws is slightly moved, the pendulum will assume a position of equilibrium around which it will vibrate if disturbed. It will act, in fact, precisely like a common pendulum, except that the effect of gravity has been greatly diminished, so that the time of vibration is increased. Its sensibility is of course readily varied by shifting the levelling screw. In the instrument actually employed, the pendulum weighed about 6 lbs, and when removed from its supports and vibrated vertically like a common pendulum, its time of oscillation was about 25 of a second. The springs were about eight inches long, and the delicacy of the instrument was such that its vibrations were easily observed when the time was increased to thirty seconds, corresponding to a diminution of the force of gravity of 14,000 times.

The most extensive deposits of meerschau in Asia Minor (we learn from *Polytechnisches Centralblatt*), is a short way S.E. from the town of Eskischehr, the ancient Dorylea, the population of which is about 12,000. Armenians and Turks, are mostly engaged in the working and sale of it. It is brought from the galleries of pits 8 to 10m. in depth. In one pit there will be 40 to 50 miners; and these, forming a society, share the profits from the mineral. The size of the stones, which are generally very irregular, varies from that of a nut, to a cubic foot or more. The mineral, fresh from the ground is covered about a finger thick with red oily earth, and is so soft that one can cut it with a knife. Its preparation is slow and troublesome. After removal of the earth it is dried 5 to 6 days in the sun or 8 to 10 in a hot chamber, then it is cleaned again and polished with wax. Then the different kinds, of which there are ten, are sorted and carefully packed with wool in boxes. By cleaning and drying, the stones lose about two-thirds of their weight and volume. The largest quantities are sent to Austria (Vienna) and Germany, and the annual export is about 8,000 to 10,000 boxes, representing a value of 1,200,000 florins. The Turkish Government impose a tax of 12½ per cent. at the place of extraction of the raw material and a further tax of 12½ per cent. on the sale.

DELHI CLOCK TOWER.

The Municipal Commissioners of Delhi have effected many improvements in that city since the mutinies. The streets are now amongst the cleanest and best drained, and repaired, of any native city in the upper provinces. A town-hall, with a ball-room, museum, lecture-room, durbar-hall, measuring 80 ft long and 40 ft wide, and an extensive Serai for the accommodation of native travellers, may be specially mentioned amongst the works that have been constructed by the municipality. Trees have been planted along the road sides, cast-iron pillars from England have superseded the old wooden posts that formerly supported the street-lamps, large tanks have been constructed; and new gardens have been formed.

The latest improvement is the new clock-tower, which stands in the centre of the Chandnee Chowk, opposite the town-hall. Of this a photograph is given in "Professional Papers of Indian Engineering," and from that we have prepared the accompanying engraving.

This building is erected on an appropriate site at the crossing of four streets, and stands 110 ft. high, exclusive of the gilt vane and finial. The lowest story is about 20 ft. square externally. The materials used in its construction are brick, red and yellow sandstone, and white marble. The capitals surmounting the main corner pillars are 4 ft. 2 in. wide at top, and 4 ft. 6 in. deep; they are carved out of solid blocks of white sand stone, and each of them weighs about two tons.

The dials of the clock are sufficiently elevated to be visible from the East Indian Railway Station, and from other prominent points in the city. The clock is constructed to work five bells, placed in the open canopy above it; these give out a different peal for each quarter, the largest bell striking the hours.

The building was completed in eighteen months, at a cost, including clock and bells, of 28,000 rupees, the whole of which amount was provided from municipal funds.