of flour is the proper proportion, according to the tenderness of the plants; mixed with land-plaster or plaster-of-Paris, one pound of the poison to a hundred and fifty pounds of the adulterant; with dry road-dust, one pound of the poison to a bushel and a half of the dust. In making liquid solutions, mix one pound of London purple with two hundred gallons of water, but first wet the powder and form a thin paste to prevent it from forming lumps. It should be put in the water twelve hours at least before use, for the best results. Paris green can be mixed in the same proportions, and in the same manner, as above.

WHITE'S STREET-RAILWAY RAIL AND CHAIR.

THE accompanying illustrations show an improved form of rail for street-railways, designed and manufactured by R. T. White of Boston. Fig. 1 shows the rail in section. Two pendant sides or girders are rolled integral with the top or tread of the rail, thus giving greater strength than the ordinary girder-rails having a central vertical rib. This rail has many advantages over the common form of tram or girder rails, being easier to lay and pave to; and the paving, on settling, cannot drop under the head and flange of the rail, — a very serious defect with the common form of girder-rails. The top or wearing part of this rail may be made as shown by the full or dotted lines; but, by making it as shown by the full lines, more wearing surface can be obtained on the head of the rail before the flange of the wheel touches the bottom of the groove. Carriage-wheels can easily pass over or out of this rail, and the groove cannot become clogged, as the flange of the car-wheel acts as a wedge as it passes along, forcing stones or dirt out of the way.

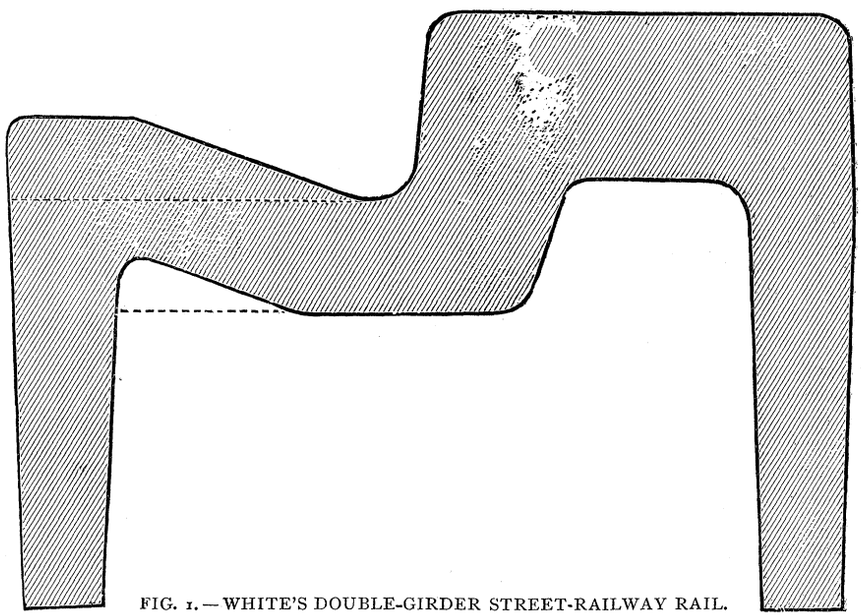

FIG. 1. — WHITE'S DOUBLE-GIRDER STREET-RAILWAY RAIL.

Fig. 2 shows the method of laying the new rail. It is secured on a chair by a bolt passing through the pendant sides of the rail and through the upper end of the chair. These chairs are placed at suitable intervals along the rails, and a similar chair of sufficient length is used at the ends, for connecting the rails together, thus making a substantial and practical joint. The chairs are set on and secured to wooden sleepers by lag screws, as shown; but the wooden sleepers may be dispensed with by enlarging the base of the chairs sufficiently to give them a solid bearing when tamped in the ground, or they may be set in concrete. In this case, tie-rods would be used to hold the rails to gauge.

FROM 1877 to 1888, forty-nine cases of leprosy have been treated at the St. Petersburg hospitals. About one-half of these are reported to be of subjects born in the city proper. Of the others, some come from the Baltic provinces, but there are also a few from districts where hitherto leprosy has been unknown.

ROYAL SOCIETY OF CANADA.

THE seventh annual meeting of the Royal Society of Canada took place in Ottawa on Tuesday, May 7. From the secretary's report, it seems that the delay in the appearance of the "Transactions of the Society" was caused by the incomplete nature of many of the papers. Four vacancies were filled during the year, — three in the English section, and one in the mathematical. In 1887 a committee was appointed to consider the proposition of taking steps in the direction of an imperial union of the services of similar societies, in connection with the Imperial Institute, to co-operate in developing and illustrating the resources of the empire. A favorable report having been returned, the committee was further instructed to communicate on the subject with the authorities of the Imperial Institute.

Delegates from affiliated societies were introduced, representing the Society of Canadian Literature, the Natural History Society, the Numismatical and Antiquarian Society, the Society for Historical Study, the Literature and History Society, the Geographical Society, the Quebec Institut Canadien, the Ottawa Institut Canadien, the Field Naturalist Club, the Entomological Society, the Toronto Canadian Institute, and the Nova Scotia Historical Society.

Mr. Sandford Fleming, in his presidential address, touched on the fact, that, of the eighty original members, seven had passed away, and that the society had reason to congratulate itself upon the justification of all its elections. The address consisted mainly of an examination and inquiry into the origin of the two great races which form the Dominion. L'Abbé Casgrain followed with an address on the objects of the several sections. The scope of the papers may be gathered from the following partial list: "The Study of Political Science in Canada;" "Trade and Commerce in the Stone Ages;" "The Cartography of the Gulf of St. Lawrence;" "Nematophytin;" "De Marseilles à Oran, Souvenirs d'Afrique;" "L'Empereur Maximilian du Mexique;" "The Historical Influence of Physical Geography;" "Canadian Pre-Railway Transcontinental Journeys;" "Trilinear Co-ordinates on the Sphere, and Oblique Co-ordinates in Geometry of Three Dimensions;" "A Problem of Political Science;" "Papers on Higher Mathematics;" "The Ore Deposit of the Treadmill Mine, Alaska;" "The Microscopical Character of the said Ore;" "Fossil Sponges from Beds of the Quebec Group of Sir William Logan at Little Metis;" "Copper Deposits of the Sudbury District;" "Geography and Geology of the Big Bend of the Columbia."

On Wednesday evening a public meeting of the French section was held. Principal Grant addressed the audience on "Who are Canadians?" and L'Abbé Casgrain gave an oration on "The Death of Montcalm."

At a general meeting on Wednesday, and another on Thursday, it was resolved that the council elect four members for three years from the past membership of the council, in order to insure permanency; it was suggested that in future the meetings of the society be inaugurated by a conversazione; the question of extending the term of presidency from one to three or to five years was discussed, and deferred till next session; a committee was appointed to welcome, in the name of the society, the American Society of Mining Engineers in Ottawa in the autumn; a committee was nominated to meet the American Association for the Advancement of Science in Toronto; and the following officers for the ensuing year were elected: L'Abbé Casgrain, president; Principal Grant, vice-president; Dr. Bourinot, secretary; and Dr. Selwyn, treasurer.

Mr. Sandford Fleming entertained a select party of members at luncheon in the Rideau Club, and on Thursday afternoon the entire society was invited to a garden party at Government House.

ELECTRICAL NEWS.

Overhead Wires for Electric Railways.

THE rapidity with which electric street-railways have been introduced into towns and the suburbs of cities, and the success that has attended their introduction, have called the attention of the managers of the larger city lines to this method of traction. Its advantages are unquestionable: it is cheap, it is clean, it gives a rapid and easy service to the public, the cars are more readily and safely handled than by any other known method. There is one legitimate objection to it, and but one; and that is the necessity, except in special cases, of overhead wires to convey the electric current from the power-station to the cars. The public is prejudiced, and generally justly prejudiced, against overhead wires. Overhead wires mean to most of us a confused network of telegraph, telephone, and electric-light wires, unsightly and dangerous. But the wires used for electric railroads are very different from these. The poles used to support them are only slightly larger than the ordinary lamp-posts: they may be made even less objectionable. The line consists of a small span wire going from pole to pole, with the conducting wires supported by these, and extending over the track, one small wire for each track. An inspection of some of the latest and best-equipped electric roads shows a marked advance over those of a year or a year and a half ago. If expense is not spared, the most sightly of the present roads can be improved on, and two or three thousand dollars a mile is a small sum when a city road is to be equipped.

There are alternative electrical methods which do not involve an overhead structure, but they are not at the present time successful enough to warrant their general adoption. The storage-battery system will probably work well on level lines, but can hardly be economically used when grades of four per cent and over are to be taken. The conduit system could possibly be made to work if enough money were spent on it, — $50,000 or $60,000 a mile, — but so far it has not been a success. In Boston it has not worked satisfactorily; and at San José, Cal., where it has been from time to time reported as successful, it has turned out a flat failure. In fact, for an extended system of street-railways, the only electric system which would be any thing more than an experiment is the overhead system. In Boston two lines have been in operation for some time; and they have worked so successfully, and have seemed so unobjectionable, that the Board of Aldermen has given permission to the West End Street Railway Company — a company operating all of the important street-railway lines in Boston — to equip their entire system with the overhead electric wires. There can be no doubt of the advantage that this will be to the public. It will allow rapid transit to the suburbs, and in the crowded portions of the town the cars will make much better time than is possible with horses; they will be under better control, and will occupy less space in the streets.

In fact, the question is getting to be, not shall we use electricity on our railroads, but what system shall we adopt? Shall we use the overhead, or shall we wait for a storage-battery? It is probable that many of the managers will decide to put in the overhead system until the secondary battery is ready to take its place. The loss will not be very great, and two or three years' successful operation will more than pay for the change. The equipment of the Boston roads — if they are equipped — will give a decided impulse in this direction.

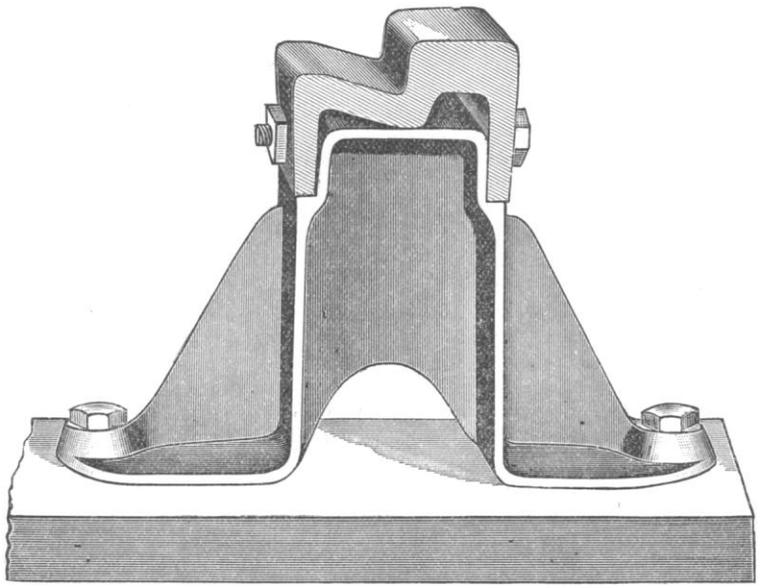

FIG. 2. — WHITE'S DOUBLE-GIRDER STREET-RAILWAY RAIL.

SOME EXPERIMENTS ON LIGHT AND ELECTRICITY. — The following is from the London *Electrician*: "An experiment described by M. J. Borgman has an important bearing upon the explanation of the remarkable discovery of M. Hallwachs, in which a beam of light seems to act as a conductor for an electric current. The latter experiment consisted in placing a piece of metallic gauze parallel with but insulated from a second sheet of metal. The first is connected with the positive, the second with the negative, pole of a battery, and in one of the leads a delicate galvanometer is placed. If, now, a beam of light be made to pass through the gauze, and to fall on the plate behind, a current is set up in the circuit, and continues to flow as long as the illumination is maintained. It has, moreover, been shown that the action is due to the ultra-violet waves. Now, M. Borgman wanted to ascertain whether or not the effect was instantaneous; that is to say, whether the commencement and the cessation of the current was or was not simultaneous with that of the illumination. M. Borgman probably reasoned, that, if the beam acted in some sense as a con-