which were taken from the side of a cast-iron pipe which had been practically destroyed by electrolysis from stray railway currents, in the city of Dayton, Ohio. These may possibly be some of the very same pebbles to which Prof. Burgess refers.

These and other samples are submitted for your inspection. The deposition of both iron and lead has often been found by the writer upon pebbles, stones and soils adjacent to pipes which were undergoing electrolysis. We have some samples here personally obtained only yesterday, of stones and pebbles, which lay near a 12-inch steel water pipe which was delivering railway current into the soil, which show more or less of such deposit. This pipe, which is in Edgewater, N.J., is badly corroded. Next to the pipe was found a complete covering of black carbon of about ⅛-inch thick; at some points on the pipe there was a bright, metallic luster; next to the carbon distributed in the soil and upon stones was

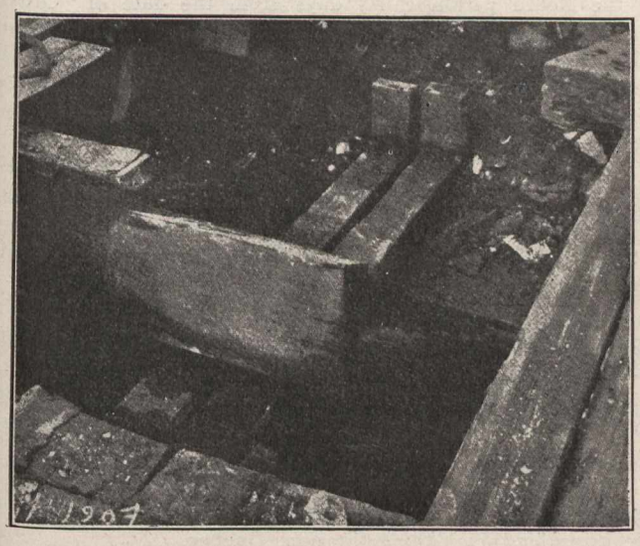

Fig. 4.

over an inch of iron deposit. Samples of lead deposit are shown, also personally obtained from a lead service pipe in Cleveland, Ohio, which lay in sand. This pipe was so badly injured by electrolysis that about 25 feet had to be replaced with new pipe. These samples appear to be as heavy as an equal amount of lead.

While it is appreciated that the electro deposition of iron is difficult under the most favorable circumstances, these samples so coated are shown as a suggestion that there may be something in the process of underground electrolysis not fully understood.

Another sample of corrosion of iron by stray current process was shown after adjournment, and this data ob-

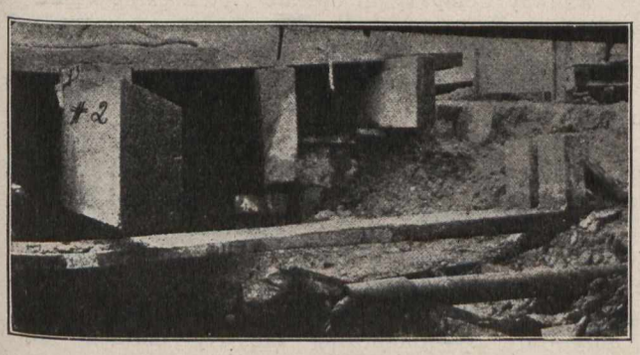

Fig. 5.

tained later. This sample is a mass of oxide of iron 5 inches long by 2 inches deep, and is 1⅛ inches to 1¼ inches thick. It was taken from between two bridge chords which lay 1¼ inches apart, from a bridge that was taken down and replaced by a new bridge, in the city of Providence, R.I. These bridge chords where they lay in soil were badly corroded, and when found were surrounded by a mass of oxide, the same as this sample. Figs. 4 and 5 are photographic reproductions of same; Fig. 6, corrosion at ends of spans. The dimensions of these chords, which were of wrought iron, are given in drawing "A." The comparison of damage with the original size is given in drawing "B." Electrical measurements have been taken upon this bridge for some years past by the writer, who has often predicted damage. The bridge has always been found positive to the soil at the eastern end where this corrosion was discovered. In 1902 corrosion and holes were found upon one of the sheet iron trusses where it entered the soil. The railway power-house was a short distance from this bridge on the west bank of the river. Submarine cables from the power-house were attached to a cable box close to the eastern end of the bridge.

Stray currents have been found on this bridge from July, 1900, up to September, 1903, when they were checked by a change in the railway return conductors, which were placed on poles and the cables abandoned.

This sample and data is an example of what is possible in many bridges in this country.

In conclusion, from the standpoint of the electrical engineer, we are grateful for advice in the solving of electrolysis problems as to cause, effect and remedy in cases where they partly or wholly refer to electro-chemical action. On the

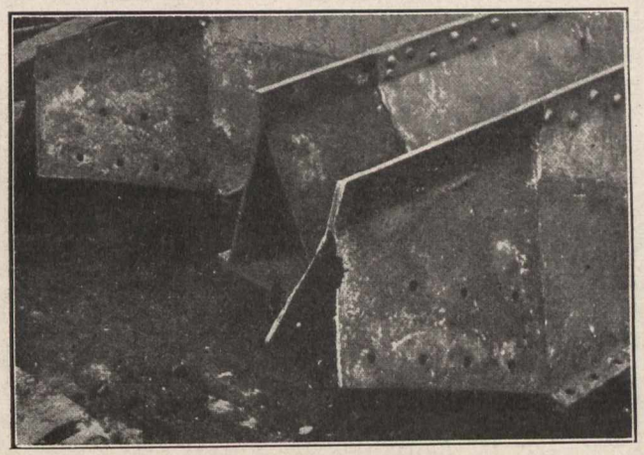

Fig. 6.

other hand, personally, we are always willing to furnish information obtained through long practice as to methods for tracing, locating or identifying stray currents causing electrolysis. It would seem, therefore, as Prof. Ganz has stated, that co-operation in important cases between the stray current specialists and the electro-chemist would be desirable, and to that end we have brought this case of oil tank corrosion, as well as other matters, before this society for discussion, believing they are of the widest importance, and particularly refer to electro-chemistry.

ORDER OF RAILWAY COMMISSIONERS OF CANADA.

(Continued from Page 153.)

7587—July 21—Authorizing the Bell Telephone Company to carry wires across tracks of C.P.R., one mile south of Streetsville Station, Ont.

7588—March 22—Authorizing the C.P.R. to construct railway across eight highways in its authorized grade division between Gull Lake and Carmichael, on its main line, Saskatchewan.

7589—March 22—Authorizing the C.P.R. to construct across nine highways on its main line grade division, Medicine Hat Section, Sask.

7590—March 22—Authorizing the C.P.R. to cross eight highways between Seward and Antelope, Sask.

7591—July 6—Directing the C.P.R. and Kingston & Pembroke Railway Companies to erect and maintain gates at their crossing on Raglan Street Renfrew, Ont. Plan to be submitted to the Board's Engineer on or before August 10th, 1909. Gates to be provided within thirty days of date of approval of plan by Board's Engineer. Gateman to be employed by Railway Companies and be in charge of gates at all times. Twenty per cent. of cost of construction of gates to be paid out of the "Railway Grade Crossing Fund." One-third of wages of men to be paid by Town of Renfrew. The bell at present in use at Raglan Street, be moved to Argyle Street.