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THE

Complete

ELECTRICAL WORLD

A REVIEW OF CURRENT PROGRESS IN ELECTRICITY
AND ITS PRACTICAL APPLICATIONS

VOLUME LV

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As yet it has not been possible to ascertain whether varying the frequency has any effect on the phenomenon.

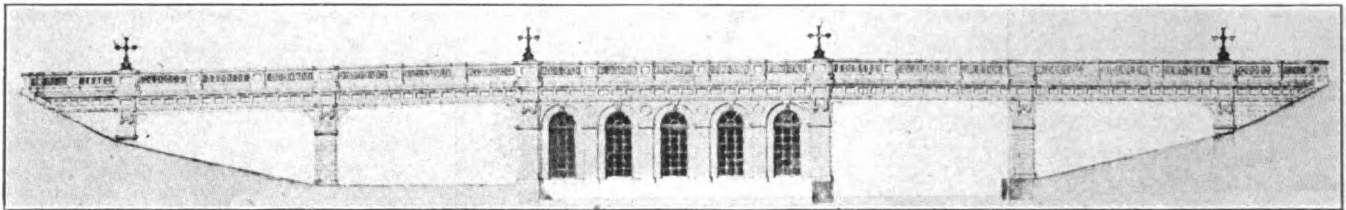
The phenomenon is so distinct when once it has been seen that it is difficult to believe that it has not been observed before by those who have been working with transformers. Nearly four years ago Professor Birkeland, of Christiania, told Professor Thompson that his workmen at the nitrate factory at Notodden declared they could see lights over the choking coils used to limit the currents supplied to the electric furnaces. This may have been in reality a subjective phenomenon, similar to that now recorded.

No effect upon the senses of smell or hearing has yet been observed; but an effect on the sense of taste has been noted.

ELECTRIC PUMPING STATION UNDER ORNAMENTAL BRIDGE.

Near the place where the new North Shore Channel of the Chicago Drainage Canal will connect with Lake Michigan at Wilmette, Ill., a rather unusual disposition will be made of the electric pumping station to be erected at that point. It is necessary to lift the water 3 ft., and this will be accomplished by four Allis-Chalmers screw pumps each having power to lift 250 cu. ft. of water a second. These pumps will be driven by four 150-hp electric motors, probably of the alternating-current type made by the General Electric Company. Electrical energy will be obtained, no doubt, from the hydroelectric plant of the Sanitary District on the main channel of the Drainage Canal at Lockport, Ill.

As shown by the accompanying illustration, the Wilmette pumping station will be placed under the ornamental Sheridan Road bridge, of which it will form a part. Sheridan Road, running parallel with the lake shore, crosses the channel about 400 ft. west of the inlet. The bridge is of steel construction faced with cut Bedford stone, with concrete roadway and side-



Pumping Station Under Bridge.

walks and cut-stone railings. It is to be in six spans, the two center spans enclosing the pumping station, which is to be faced with cut stone also. A lock 32 ft. wide will be built under the bridge, adjoining the pumping station building on the south. The bridge will be 215 ft. long, with 46-ft. driveway and two 8-ft. sidewalks. The entire cost of the bridge, pumping station, lock and retaining walls on the sides of the channel between the lake and the pumping station will be about \$165,000, and the pumping machinery will cost \$75,000 additional. It is expected that the North Shore Channel will be completed during the present year.

PRODUCER GAS PLANTS.

Mr. William H. Spiller, of Kansas City, gave a talk before the Iowa Electrical Association convention, at Sioux City, April 20, on producer-gas plants. Commercial investigations on this subject, he said, reached back to 1890. Some of the first commercial plants were installed in 1903 and 1904 at the World's Fair, at St. Louis. In 1909 over 50,000 hp in producer-gas engine plants were in use in America. It was found frequently that producers which were successful on European fuel would not work well on American fuel in all cases, and the producers had to be redesigned for American fuels. There were also difficulties in getting a sales force which understood producer-gas plants, and which could intelligently sell them. Producer-gas manufacturers also had to contend with the ridicule of their claims for high fuel efficiency, because of the great difference between the claims made for the producer-gas plant and the actual consumption of steam-engine plants. Another difficulty which the manufacturers had to overcome was that of getting competent gas-engine operators who understood producers and gas engines. Since 1900 some 20 American makers of gas-producer power plants have come into the field.

The first cost of the gas engine and producer was also against it at the start, as compared with the steam plant. The cost of a gas engine and producer plant is now from \$40 to \$70 per horse-power. He told of the case of a man who said that the low fuel consumption claim for a producer-gas plant was absolutely impossible, his ideas being based on his knowledge of the performance of steam-engine plants. This man was finally induced to go to a gas-engine producer plant and personally make a test lasting several days on the amount of fuel used by the engine and the output. He was then thoroughly convinced.

In the suction-type producers, where the draft is produced

by the suction of the gas engine, anthracite, coke or charcoal is used. In the bituminous producers forced draft is usually applied. He referred to Bulletin 416 of the United States Geological Survey (abstracts from which have appeared in these columns) as giving much valuable information about gas-producer plants. Manufacturers now guarantee coal consumption of not over 1.25 lb. to 1.5 lb. per hp-hour. The water required in the scrubber runs from 2 gal. to 3.5 gal. per hp-hour, and in the jacket from 4 gal. to 6 gal. per hp-hour. In some plants the fuel cost has been brought as low as 0.78 lb. per hp-hour.

Central Station Management, Policies and Commercial Methods

WHEN CUSTOMERS KICK.

A progressive Southern electric light company has one of its office employes scan all the local newspapers for notes and reports of parties, receptions, dances, etc., given by people who are customers on its lines. These items are carefully clipped and filed in a scrapbook, for office reference. Then when a complaining customer appears in the company's office and avers that the increase in his lighting bill is totally unaccounted for, as no

excess energy, he says, has been used during the month it covers, the office employe is frequently able to turn to the scrapbook and remind the customer that he had an entertainment at such a date, which is probably responsible for the additional consumption. This explanation usually pacifies the customer and is of service frequently enough to make the slight trouble involved well worth while.

The same scrutiny of the social columns might also be used, as has been noted here before, to get the "dates-ahead" of affairs



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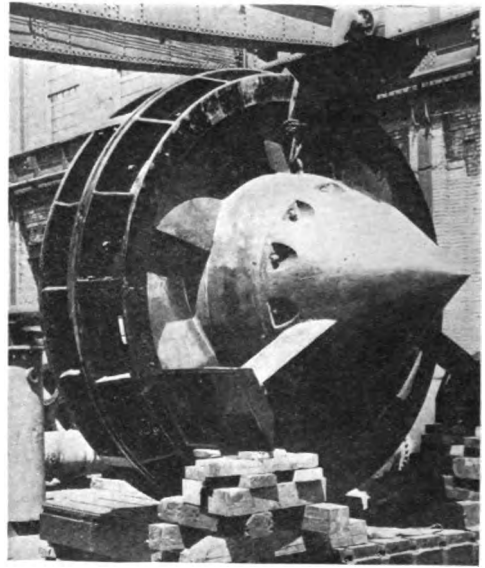
The Technical world magazine

Armour Institute of Technology



SIGHTING THE TELEPHONE CANNON.

sea was hurried out to the point where the washout had occurred. Half a pound of black powder was used and the projectile attached to its coil of line was put in place and then the fuse was set off. The photographer focused his camera upon the cannon and as the powder exploded secured a remarkable snapshot, showing the lifeline high in the air and the mortar flying into a thousand pieces. Evidently half a pound of powder was more than it could take care of, but the line was put across the river, which was the main consideration, and the only victim of the explosion was an innocent by-stander, a mule which was grazing some distance from the scene of trouble. In spite of the accident, the foreman is



SUCTION SIDE OF DRAINAGE PUMP AT WILMETTE NEAR CHICAGO.

This pump has a capacity of 15,000 cubic feet per minute.

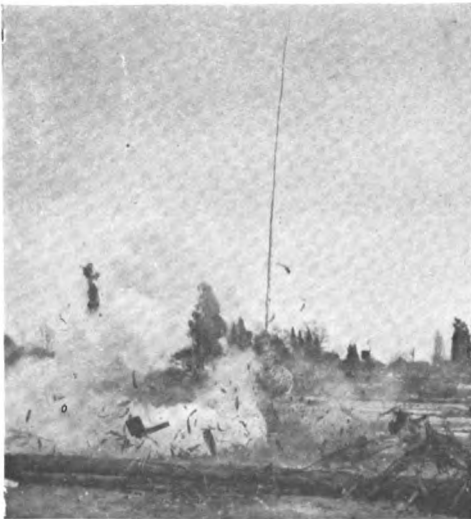
enthusiastic over the possibilities of artillery practice in repair work, and states that he will make a small cannon part of his regular emergency outfit in the future.



HUGE PUMP FOR SEWAGE

AT the electric pumping equipment of the Sanitary District of Chicago at the Wilmette pumping station there are four pumps, each having a capacity of 15,000 cubic feet of water per minute, working against a head of three feet and operating at a speed of 75 revolutions per minute. They are designed for the special purpose of pumping water from Lake Michigan and sewage through the northern sections of the city of Chicago to the Drainage Canal, which empties, after crossing the state of Illinois, into the Mississippi.

The accompanying illustration shows the suction side of one of these pumps. The North Shore station near the suburb of Wilmette is located about 400 feet from Lake Michigan and is one of the most up-to-date electric drainage plants in the country and one of the largest for this service to be found anywhere in the whole world.



THE CANNON EXPLODED AS THE PHOTOGRAPHER PRESSED THE BULB.

Observe the life-line going straight up.