

**A RECORD IN ORE UNLOADING.**

BY W. FRANK M'CLURE.

A new world's record for the rapid handling of iron ore has been established during the present season of navigation upon the Great Lakes. In the making of the new record the former one was cut straight in two, an accomplishment of no little moment in the industrial world. By the working of two kinds of modern ore machines at one time in the new steamer "A. B. Wolvin," nearly 10,000 tons were removed in four hours and a half.

Soon after the launching of the new steamer "Wolvin" last spring, an article appeared in the SCIENTIFIC AMERICAN descriptive of the distinctive features of that ship which were expected to

work something of a revolution in ore handling. Chief among these was mentioned the hopper bottom, which admitted of keeping the ore at all times within reach of the automatic clam-shell buckets; also that the length of this hopper, without division, is 409 feet. This construction has come up to all expectations in facilitating the work of loading and unloading.

The new record was made at Conneaut harbor, the port which has in recent years been noted for its wonderful machinery and its notable records. The work of unloading was started at 7.22 in the morning and was completed at exactly 11.52. The total delay in the continuous operating of the machines did not exceed five minutes. Eight machines were used in all, four of the Brown machines, which are fitted with clam-shell buckets, and four of the Hulett machines, which are the automatic ore unloaders with the ten-ton buckets. The accompanying protograph shows both kinds of machines at work in the "Wolvin's" hold, those at the forward end of the vessel being the Browns. In all the vessel has thirty-three hatches. As soon as one machine finished a hatch it was transferred to another without a moment's delay. Officials of both the dock and the machine companies were on hand to witness the test and to assist in avoiding the slightest impediment. The exact amount of ore removed was 9,945 tons. The Hulett machines removed 169 carloads of the total of 226 which the boat contained.

The former record was held by South Chicago, where a similar cargo was removed from the "Wolvin" soon after it entered the ore trade. Ten and a half hours were required for the unloading operations at that time. The vessel was under the machines for fifteen hours, of which four and a half hours were lost. Fifteen machines were used.

to be obtained by its adoption are at once apparent. The appreciation of these advantages has already resulted in several successful installations of electric locomotives, both on steam railroads and in other classes of service, which are proving the adaptability and economy of the electric locomotive.

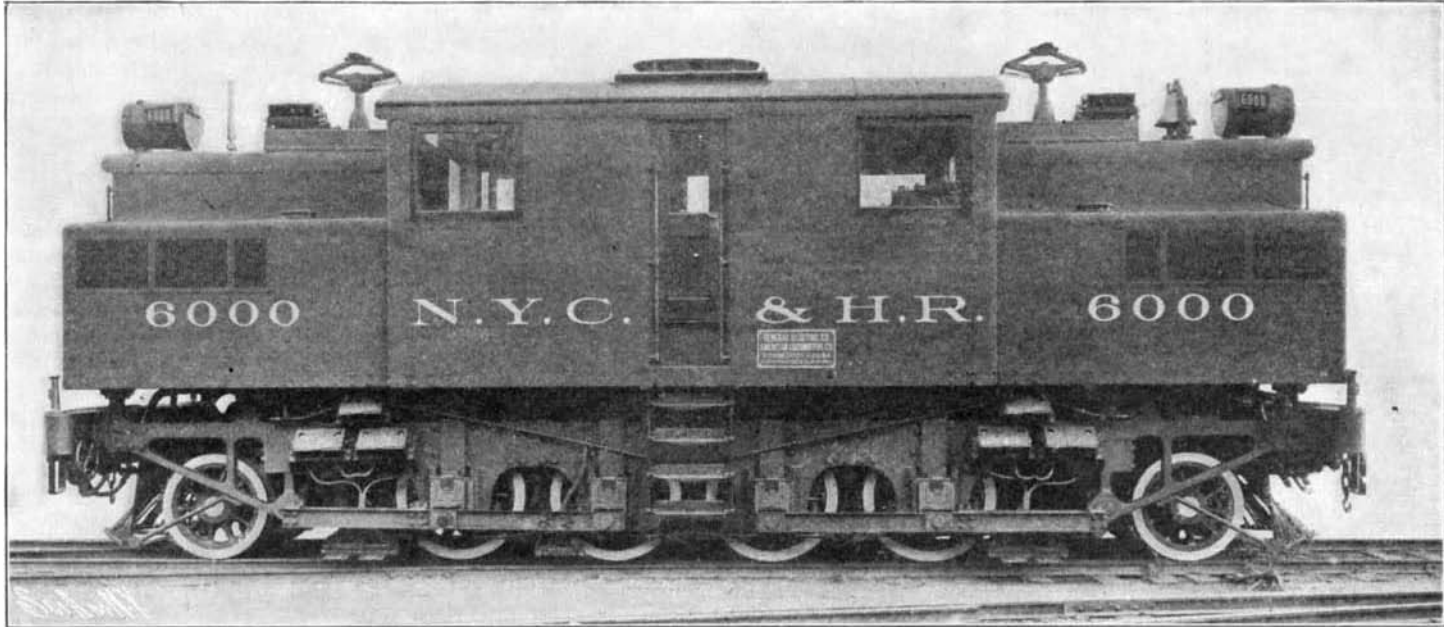
In the absence of noise and smoke the electric locomotive has an advantage that has long been recognized. This feature alone has caused its adoption in certain cases, such as switching around buildings, in city streets or in tunnels. The New York Central and the Baltimore & Ohio locomotives are prominent examples in which this feature would have forced the adoption of the electric locomotive, even if no consideration of economy of operation had been present.

The electric locomotive lends itself to a greater variety of service than the steam locomotive, and has a greater range of capacity. In the steam locomotive the generating station or source of power, the boiler and the fire box, are seriously limited by considerations of space between the drivers and height of center of gravity above rail head, considerations which do not apply to the electric locomotive.

An electric locomotive can be built in several units, or sections. The 160-ton B. & O. locomotive described in these columns some time ago is a characteristic example of this type of construction. One section can be used for a light train, or the several sections coupled together can be operated by a single crew for trains of greater weight. Any such double heading with steam locomotives can be accomplished only by two independent units with separate crews.

The electric locomotive is able to use the power it exerts to better advantage, due to the uniform torque on its drivers, and the perfect control of its speed.

The application of electric traction to trunk line service has not yet been developed to any extent on account of the relative infrequency of service and the enormous expense of sub-stations and distributing systems for operation at the usual potential of 500 or 600 volts. The single-phase alternating current motor, which the General Electric Company has recently de-



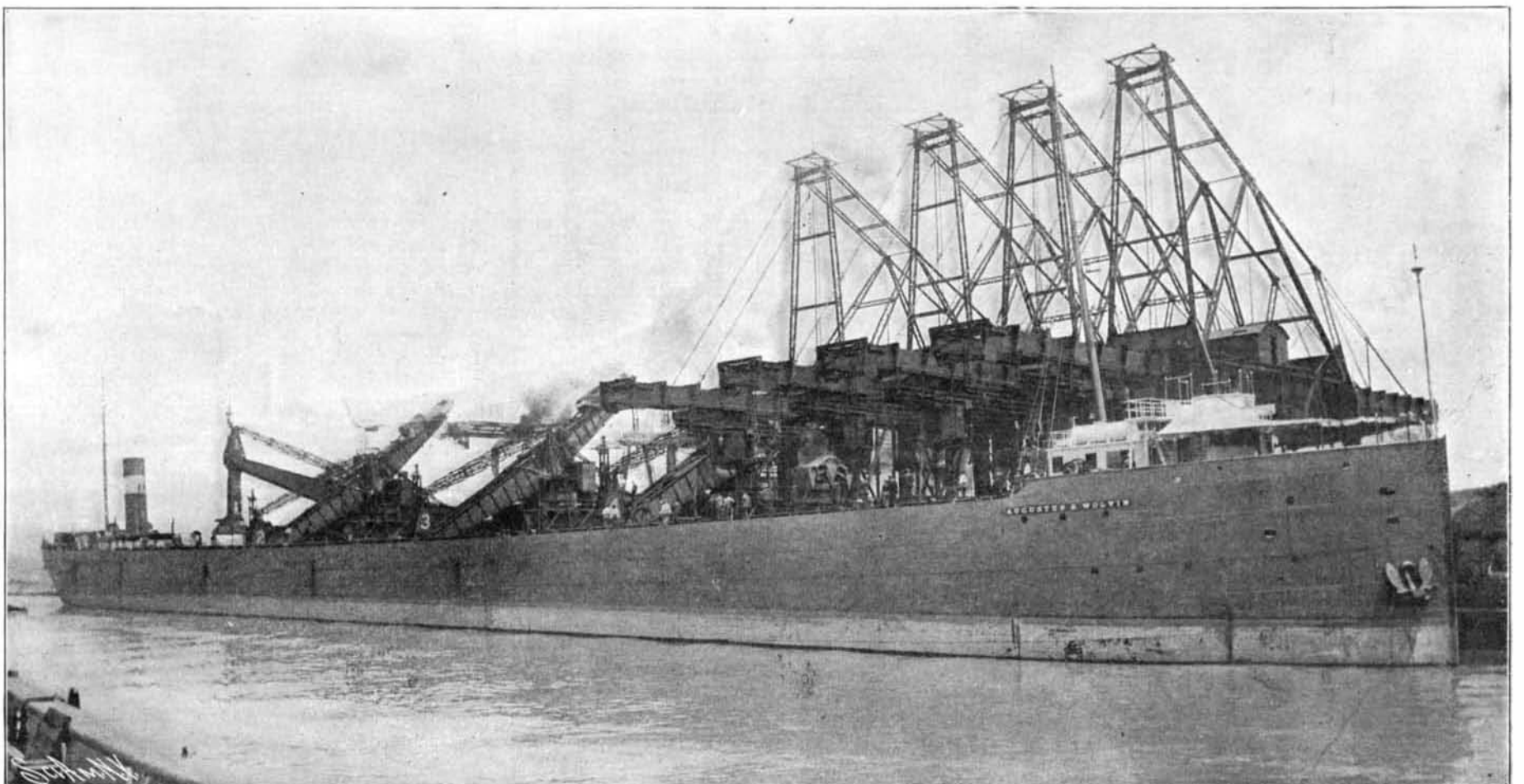
**NINETY-FIVE-TON ELECTRIC LOCOMOTIVE FOR NEW YORK CENTRAL AND HUDSON RIVER RAILROAD.**

Of interest in connection with the records of the "Wolvin" is the announcement which has been made this fall that four vessels still larger than the "Wolvin" are to be built for the Pittsburg Steamship Company, which is the lake end of the United States Steel Corporation. These vessels are to be 569 feet over all, 540 feet keel, 56 feet beam, and 31 feet deep. Their construction will be of the arch system, resembling that of the "Wolvin" and "Sahara." There will be thirty-four hatches and no bulkheads in the hold. The four vessels will cost more than \$1,500,000 and are to be completed by the first of next July.

**ELECTRIC RAILWAY LOCOMOTIVES FOR THE NEW YORK CENTRAL.**

The broad field for the electric locomotive is undoubtedly to be found in the partial or complete electrification of existing steam railroad systems, and the delay in the development of this department of electric transportation must be ascribed to the radical and extensive changes in equipment and operation, the magnitude of the necessary investment in the equipment of trunk lines, and the general lack of appreciation of the merits and economies to be obtained.

There are, however, certain classes of service in connection with steam railroads, electric railways, and industrial transportation systems in which the advantages of the electric locomotive and the economies



**THE FOUR HULETT CLAM-SHELLS AND THE FOUR ELECTRICAL BROWN CONVEYERS AT WORK UNLOADING THE ORE-CARRYING STEAMER "AUGUSTUS B. WOLVIN" IN RECORD-BREAKING TIME.**