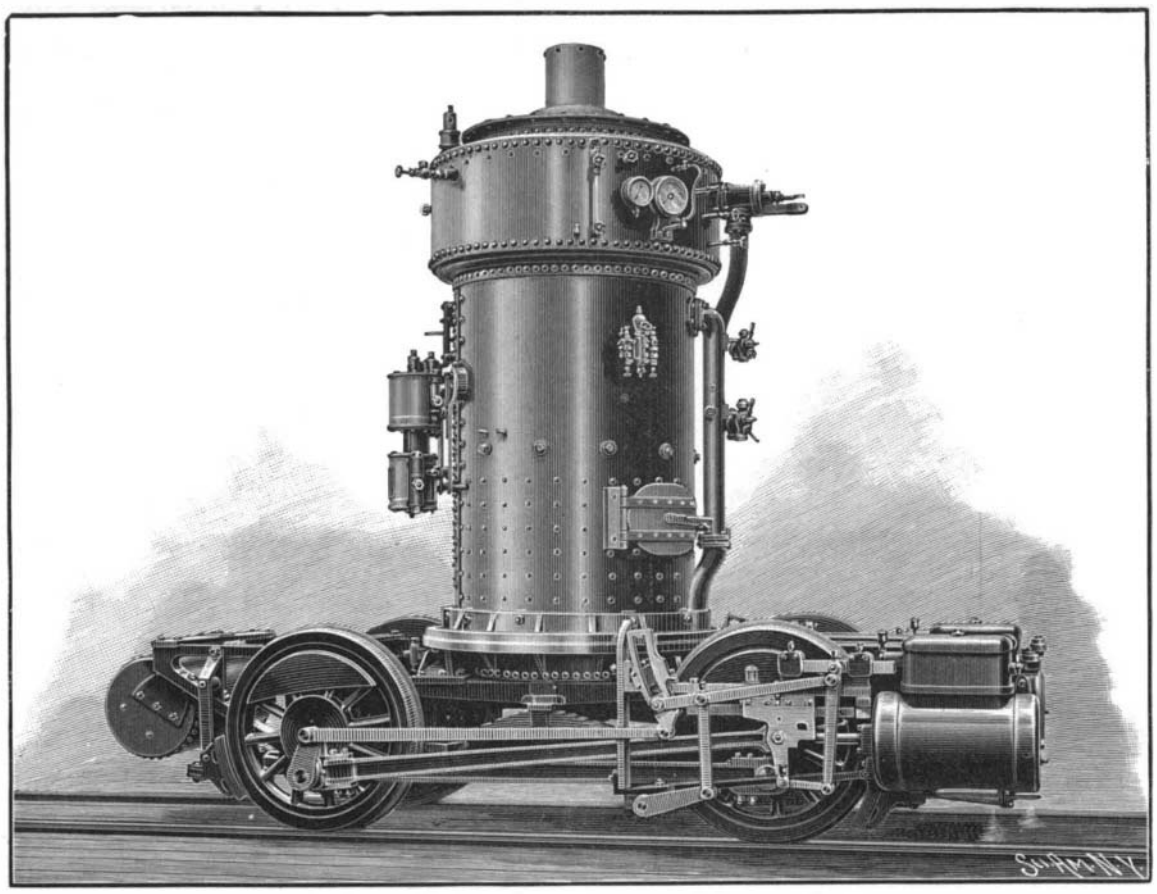
STEAM MOTOR CAR FOR BRANCH LINE SERVICE.

It frequently happens that the large railroads have branch lines on which the travel is so light that they cannot be worked to advantage by the usual locomotive and cars. On such lines, where the traffic is light and scattered, a regular train can only secure a full load if it is run at infrequent intervals—an arrangement which, though it may be to the advantage of the company, is more or less inconvenient to the public. To run a regular train at more frequent intervals would be a dead loss to the company, on account of the large dead weight of the train in proportion to the paying load, and also on account of the large train crew which must be employed. Nor would the electrical equipment of such roads be profitable, the travel being too light to warrant the cost.

It is in this particular class of service that the steam dummy, as the combined locomotive and car is called, is likely to prove extremely useful, on account of its large passenger capacity in proportion to the weight of the motor power and the size of the train crew. The composite car which is herewith illustrated has recently been completed by the Schenectady Locomotive Works for use on a branch line of the New England Railroad, where the traffic does not warrant the services of a complete train of locomotive and cars. As the first motor was somewhat in the nature of an experiment, it was decided to make use of an old dining car. The internal fittings, kitchen, tables, etc., were removed, and the car, which is 64 feet long, was divided by partitions into three compartments, one being given up to the engine and the other two constituting the smoking compartment and day coach.

The six-wheeled truck at one end of the car has been retained, but the other truck has been removed and its place is taken by the four-wheeled locomotive shown in the engraving. The cylinders, which are 12 inches diameter by 16 inches stroke, are carried at the forward end of the frame, and are connected to crank pins on the rear axle. The center of the frame is occupied by the vertical boiler, which projects through the engine compartment of the car and answers to the king pin of an ordinary truck. This connection between the locomotive and the car is an interesting feature. A circular casting, which is bolted to the engine frame and to the lower part of the boiler, is provided with a groove, in which are 125 hardened steel balls 1½ inches in diameter. A similar casting is bolted to the framing of the car, and rests upon the circle of balls. This ball-bearing connection permits the motor to take the curves freely, and it also prevents the vibration of the locomotive from being transmitted to the car. The steam pipe connections from the boiler to the cylinders are laid on the inside of the cast iron rings, and flexible steam joints are avoided.

The furnace door is on the front of the boiler, and above it, on the upper end, are steam and air pressure gages, etc. On the opposite side is the Westinghouse air pump, the receiver being carried on the front end of the truck. The coke fuel is carried in bins within the engine room, and the water is carried in the long cylindrical tank which will be noticed slung beneath the body of the car. The car carries sufficient fuel and water for a run of sixty miles. The driving wheels are 42 inches in diameter and the driving wheel base is 8 feet. The total weight of the car is 115,000 pounds, of which 70,000 pounds are on the drivers and 45,000 pounds on the six-wheeled truck.



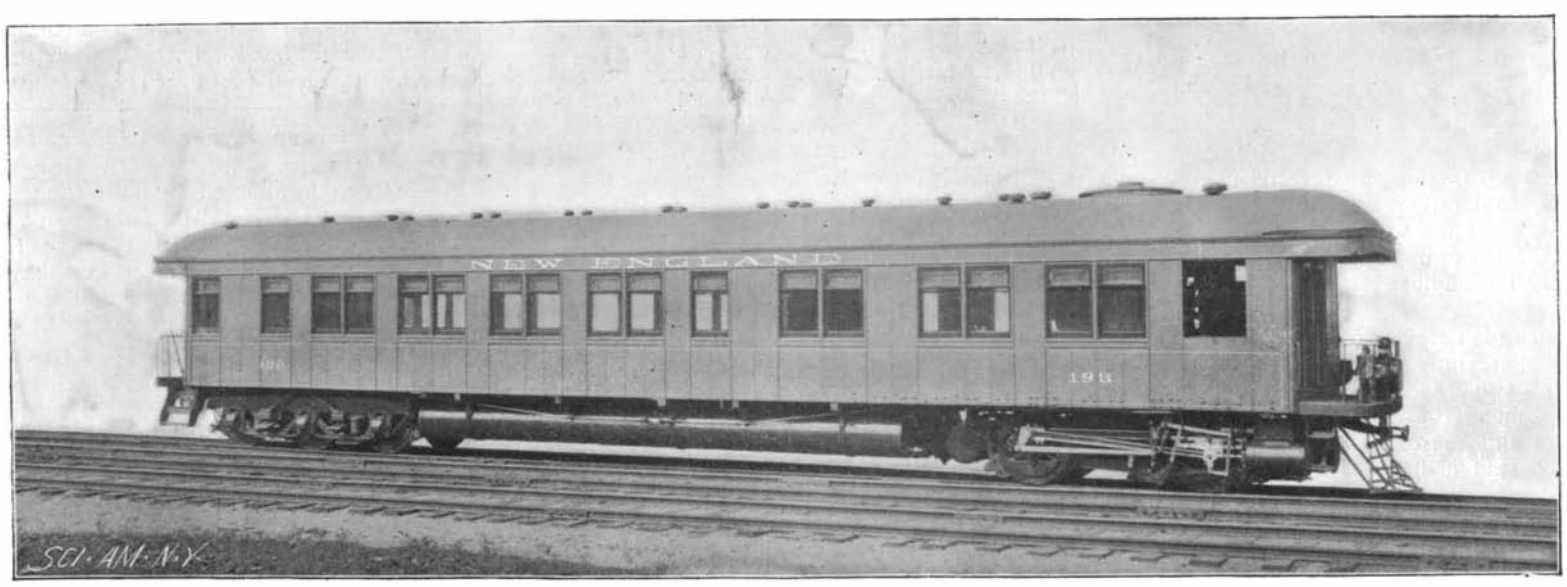
LOCOMOTIVE OF NEW ENGLAND RAILROAD MOTOR CAR.

The car was tested on a grade which varied from 50 to 58 feet to the mile, where, with a regular passenger coach attached, it maintained a speed of thirty miles an hour. A test for speed was made by running the motor car alone on a level track, under which conditions it covered five miles in five minutes and fifty-five seconds. The details of the run were as follows:

	Minutes.	Seconds.
First mile run in	1	20
Second mile run in	1	10
Third mile run in	1	5
Fourth mile run in	1	7
Fifth mile run in	1	13

The fastest mile, therefore, was run at the rate of 53·7 miles per hour.

The car was run under its own power from the Schenectady shops to its destination on the New England road, a distance of 315 miles. It should also be mentioned that the train crew consists of only two men—an engineer and a conductor. This exceedingly interesting design marks a new departure in steam railroad practice, and we shall not be surprised if it proves to be the forerunner of a large and ever-growing number of the same type of motor car.



STEAM MOTOR CAR FOR THE NEW ENGLAND RAILROAD, COMPRISING LOCOMOTIVE, SMOKER AND DAY COACH—CAPACITY, 60 PEOPLE.

A REMARKABLE thunderstorm passed over Italy on April 24. The rain was mixed with sand and seeds of the carob that must have come from Africa, according to Prof. Tacchini, of Rome.

A Tank for Model Ships.

An experimental model ship tank, for which Congress appropriated $100,000 last year, is being rapidly constructed in the Washington navy yard. It is thought the tank will be ready for experimental operations early in the spring. The project is being watched with great attention by naval officers and marine architects, as its novel features and purposes are mainly of an untried character. Similar tanks exist in England, Italy and Russia, but the American tank embraces a number of mechanical contrivances which are expected to add materially to our knowledge of hull design. The tank is four hundred and seventy feet long, and is built entirely of concrete, and will be covered by a substantial steel framed building. Spanning the water surface, a moving bridge will carry the dynamometrical device for measuring the resistance of the accurate models of vessels towed from one end of the tank to the other. These models, representing precisely the form of the ships, will be from fifteen to twenty feet long, and when towed at slow speed will furnish data upon which the efficiency of a full-sized vessel at high speeds may be determined from formulæ. The frame for the building, which is to be five hundred feet long and fifty feet high in the clear, is being delivered at Washington. The shelter is designed to enable the maintenance of a constant temperature and an absolutely still atmosphere during experimentation. The towing gear will be operated by electricity. It will be installed next March. The experimental tank at the Washington yard is the design of Naval Constructor D. W. Taylor, who is superintending its construction.

Accident to the Maasdam.

The Dutch steamer Maasdam, from Rotterdam for New York, returned to Plymouth on November 14, with her machinery disabled, arriving there without assistance, however. On November 7 the high pressure and low pressure cylinders of the fore engine broke, smashing the crank shaft, shaft frame and foundations. The accident occurred in a heavy gale. A steamer tried to take her in tow on the ninth, but the hawsers broke. The Maasdam then got her after engine working and on November 10 proceeded without assistance, but when she reached Plymouth her after engine broke down just as she got inside the breakwater. The vessel anchored and her passengers were taken off and sent to New York on another steamer.

Ice Breaking Steamer for the Arctic.

Capt. Sverdrup, of the Fram, Nansen's Arctic vessel, has arrived at St. Petersburg to take part in the proceedings of a conference which is to be held in that city for the discussion of the feasibility of constructing an ice-breaking steamer to penetrate the Arctic Sea, specially along the coast of Siberia.