

chief items that should be watched in connection with storage batteries was the first cost—not perhaps in the car itself, but in the different facilities for making low cost of operation. The charging facilities sometimes were difficult to procure. The question of operation of the storage battery car in Canada was important. At certain times of the year, with the temperatures which they had, it was absolutely necessary to start the car out properly charged, but in such cases it had been his experience that there was little trouble. That was one of the serious things that must be given consideration as regarded the proper scheduling, which those having to do with transportation were not always ready to realize.

J. A. Shaw (Canadian Pacific) stated that the railway company with which he was connected had installed four gasoline-engine-propelled cars, to transport passengers from the station to its hotel. They operated for four months each summer and carried all the supplies and fuel as well as passengers. The cost of gasoline for operation per annum was about \$1,000.

Mr. Brooks, in closing, said that the chief reason why he believed that the gasoline-driven car was the most suitable to fulfil the requirements outlined for Class A cars was the requirements of the service.

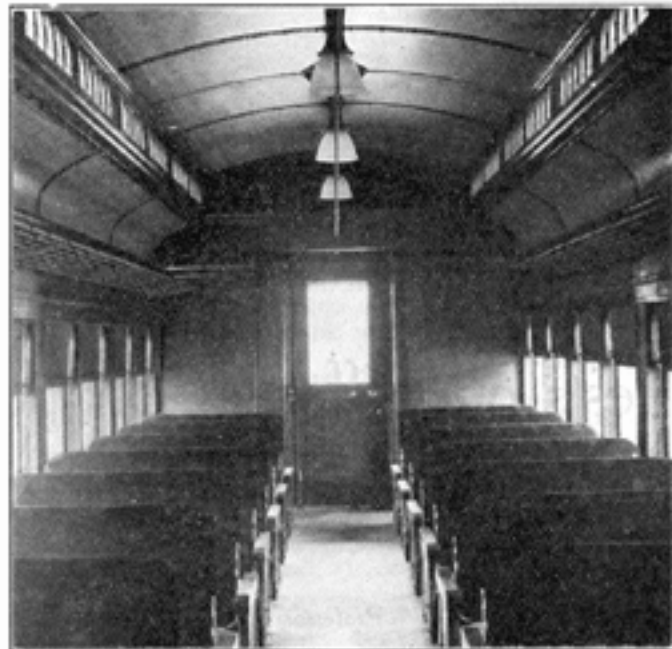
These small units were often used in sparsely settled parts where the only hope railway companies had of making anything out of the service was in its frequency. His company had driven cars fitted with automobile engines on regular schedules which necessitated covering 360 miles per day, up to 50,000 miles before any appreciable repairs had been necessary to the engine.

It was necessary to differentiate between experience derived from highway-run service and mechanical equipment driven on steel rails. He felt sure, from what he had seen, that the life of a gasoline car motor running on steel rails would be five or more times that of a gasoline automobile motor on highway service.

It was necessary to remember that in Canada, where car batteries had to be imported, their cost would run close to \$20,000. If necessary, the complete gasoline power plant in one of the Class A cars could be junked every year for practically the interest on that amount alone, without repayment of the cost of the batteries. It might appear at first that it was wise to figure on writing off the value of an automobile engine driving one of these small units after, say 50,000 miles. Experience had indicated, however, that it would be proper to allow 150,000 to 200,000 miles on that kind of service. But even if conditions were such as to make it advisable to junk the engine at the end of 50,000 miles, he still thought it would be better to do this rather than to incur the heavy expense for the storage battery, which necessitated a large investment in the charging equipment where cheap power could not readily be tapped. He appreciated the value of the storage-battery car, but felt that for certain classes of service it was necessary to have something cheaper and more flexible.

## P. R. R. Combination Car

THE new all-steel combination cars for the Pennsylvania, Class PB-70, built at the Harlan plant of the Bethlehem Shipbuilding Corporation, Wilmington, Del., have a passenger compartment 34 ft. 9 $\frac{5}{8}$  in. long, with seats for 44 persons and a baggage compartment 35 ft. 6 in. long. The length of the body is 77 ft. 8 $\frac{3}{4}$  in. The weight of



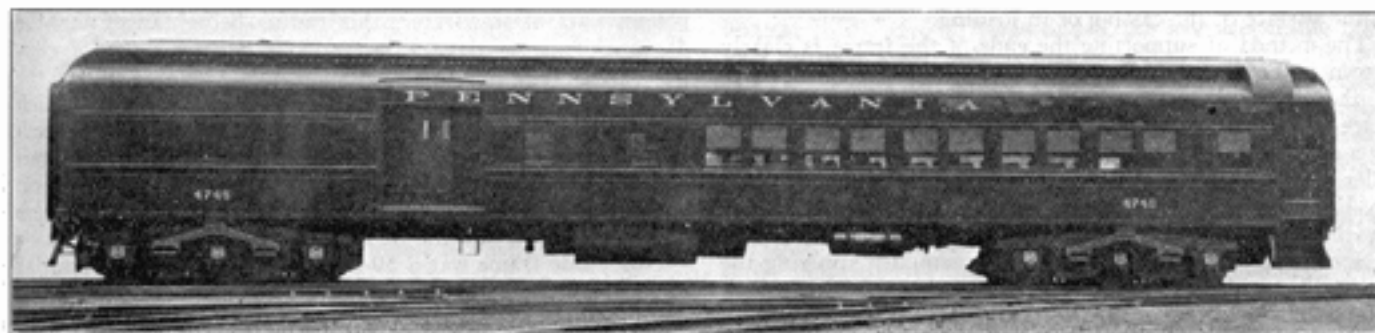
Interior of Pennsylvania Combination Passenger and Baggage Car

the car is 134,600 lb., of which the two trucks constitute 45,900 lb. These trucks, which are of the Pennsylvania patented six-wheel type, Class 1-D, have 36 in. steel wheels, 5 $\frac{1}{2}$  in. by 11 in. journals and a wheelbase of 11 ft. 0 in.

The interior finish, including the ceiling, is in steel with Ceilinite on the back. The flooring is of Flexolith composition. The seats are Hale & Kilburn No. 194. Parcel racks of the continuous type are provided. Window fixtures and trap doors are of O. M. Edward's design.

The Gold Car Heating & Lighting system of steam heat is used in the passenger end and the Vapor Car Heating & Lighting system in the baggage end. The lighting equipment was furnished by the United States Light & Heat Corporation, the batteries being of the Edison type.

The couplers are type D, with Westinghouse type N-11 friction draft gear. Fowler upper buffer springs also are applied. The brake equipment is of the U C type, with 16-in. cylinders. The foundation rigging is of the Pennsylvania clasp-brake design furnished by American Foundries.



Pennsylvania Combination Passenger and Baggage Car Built at Harlan Plant of the Bethlehem Shipbuilding Corporation