THE CENTRAL RAILWAY AND

fiftieth brake in emergency cases (due primarily to inability to reduce brake pipe pressure quickly throughout the train). The most objectionable result of this slow action being serious and damaging shocks to cars and lading. This decision led to further experiments and the subsequent development of the quick action freight triple valve with which device the time of action between first and fiftieth brake was cut down to 23 seconds just within the admissible limits prescribed by the Master Car Builders Committee. This was accomplished by incorporating valves in each triple which in emergency cases aided the engineer's brake valve in reducing brake pipe pressure, producing an effect similar to the falling of a row of bricks each knocking down next in the row, thus the trouble getting quick action previously experienced with the purely pneumatic brake was entirely overcome, and it was generally recommended and adopted for trains of 50 cars in length.

The length of freight trains has grown in the last few years, however, to 75 and even 100 cars, and we now find the present Master Car Builders quick action freight triple valve unsuitable for the new conditions, and for the very reason that the plain triple was not suitable for 50 car train service, namely, inability to reduce brake pipe pressure sufficiently rapid. Now, however, it is the service application of the brakes which has been affected, while in the previous case cited the emergency feature was the one possessing weakness. The brake pipe of a 50 to 100 car train is of considerable length, and as this volume must be reduced throughout the train by engineer's brake valve on locomotive during service brake applications, it will be manifest that the fall in brake pipe pressure must necessarily be slow, with the result that a number of brakes fail to apply owing to back flow of auxiliary reservoir pressure into brake pipe through feed port, and leakage from brake cylinder to atmosphere through leakage groove. After due deliberation the Westinghouse Co. decided the only practical way to correct this difficulty would be to design a new triple valve, which is now known as the "K" type, and make said triple aid the engineer's brake valve to dispose of brake pipe volume as is done when emergency action is desired, and accordingly ports controlled by slide and graduating valves were introduced, which vent to the brake cylinder producing triple valve action similar in a way to that experienced in emergencies and insuring the application of all brakes in a 50 to 100 car train, in fact, tests with 80 car trains having this improvement show that stops can be made from a speed of 22 miles per hour without about one-fourth the expenditure of air necessary with old triples ; reduced to cubic feet of air used this means as 541 cubic feet of free air is to 217, or using more familiar words, a 5 lb. brake pipe reduction will do the same work with

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