

Association is the proper place to find good air-brake men. Both Robert Burgess and S. D. Hutchins were presidents of that organization at the time they accepted Westinghouse employ.

We would advise air-brake men not to rush hurriedly over the indicator cards of piston travel and brake-cylinder pressures published in last month's issue. They are not pictures; they are graphics, containing a solid column of printed matter each, and must be given careful study in order that their full contents may become known. For these cards we are indebted to F. B. Farmer, chairman of the Air-Brake Men's Committee on Piston Travel.

The introduction of their cylinder-pressure indicator cards and train-pipe pressure recording cards would seem to signify that the Westerners have yet considerable undeveloped air-brake resources, and that they are determined to retain their acknowledged supremacy in air-brake practice; but, judging from the active interest now being taken in air-brake matters by some certain Eastern railroad officials, the Westerners will have to hustle to retain their reputation.

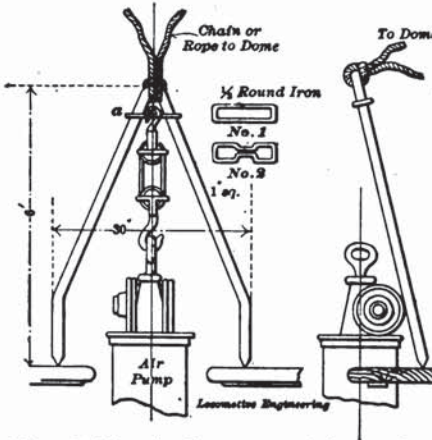
The engines of the crack ocean liner "Campania" to-day develops 30,000 horsepower on the same amount of fuel required

CORRESPONDENCE.

A Device for Hoisting Air Pumps.

Editors:

In answer to your request in the February number of "Locomotive Engineering," requesting a simple way to lift an air pump, I inclose a sketch of a frame for the purpose. It is of 1-inch square iron,



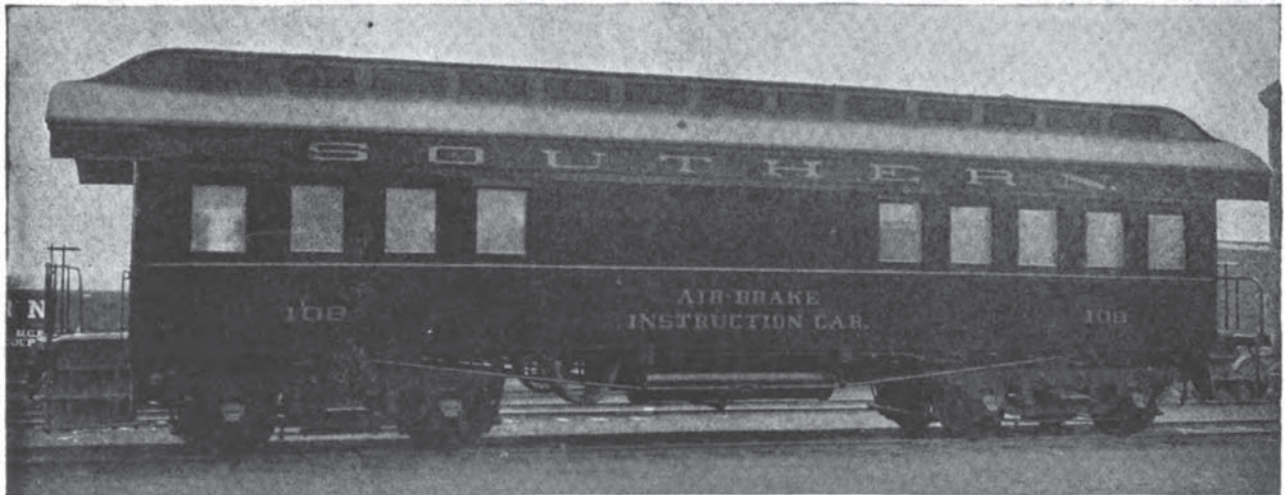
6 feet high. At the vertex of the angle a piece of round iron is shaped as Fig. 1, and put on the frame and bent as Fig. 2. It is a cheap concern, and little trouble to make. An eye-bolt is made with threads turned the same as reversing valve cap.

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be discharged at once, through a chute in the floor, to the outside. Water for supplying the boiler is carried in two tanks arranged longitudinally on either side of the car, between the tie timbers, as shown in photograph. The boiler is fed by a 2 x 1 1/8 x 2 3/4-inch duplex Worthington pump. Where air can be gotten from yard plant conveniently it can be attached to steam chest of pump; and when boiler is washed out, it can be easily filled by running pump with air pressure. This is found to be very convenient.

Next is an 8-inch pump for supplying air pressure; and next after this is the main reservoir, to which an E-6 brake valve is attached. The train pipe leading from the same, in crossing to the opposite side of the car, passes underneath the floor—the driver, tender and passenger-car brakes, in regular order, being attached to the same. This pipe continues 50 feet beyond the passenger brake, in order that the full effect of quick action may be shown. Directly under the passenger brake is a branch that passes through the floor, and is the beginning of the pipe for a 16-car freight train. The stop cocks are so arranged that either a 16-car freight or a 1-car passenger train may be put into operation. The same driver and tender brake are used for both trains. The freight train consists of six-



by the engines of the Great Eastern forty years ago to develop 8,000 horse-power. This improvement is due to the use of the indicator, which has pointed out the faults and directed betterments. While the air-brake service on many roads is quite creditable, and we cannot therefore reasonably expect such enormous improvement as that above cited, yet there remains on some roads much to be done to bring the air-brake service up to its highest efficiency; and there would seem no more efficient and satisfactory manner to do this than by the use of a train-pipe pressure recorder.

Southern Railway Air-Brake Instruction Car No. 108.

Air-Brake Instruction Car No. 108, of the Southern Railway, was built at the Manchester shops, Va., in the early part of 1895, under the direction of the writer, who is now in charge of the same.

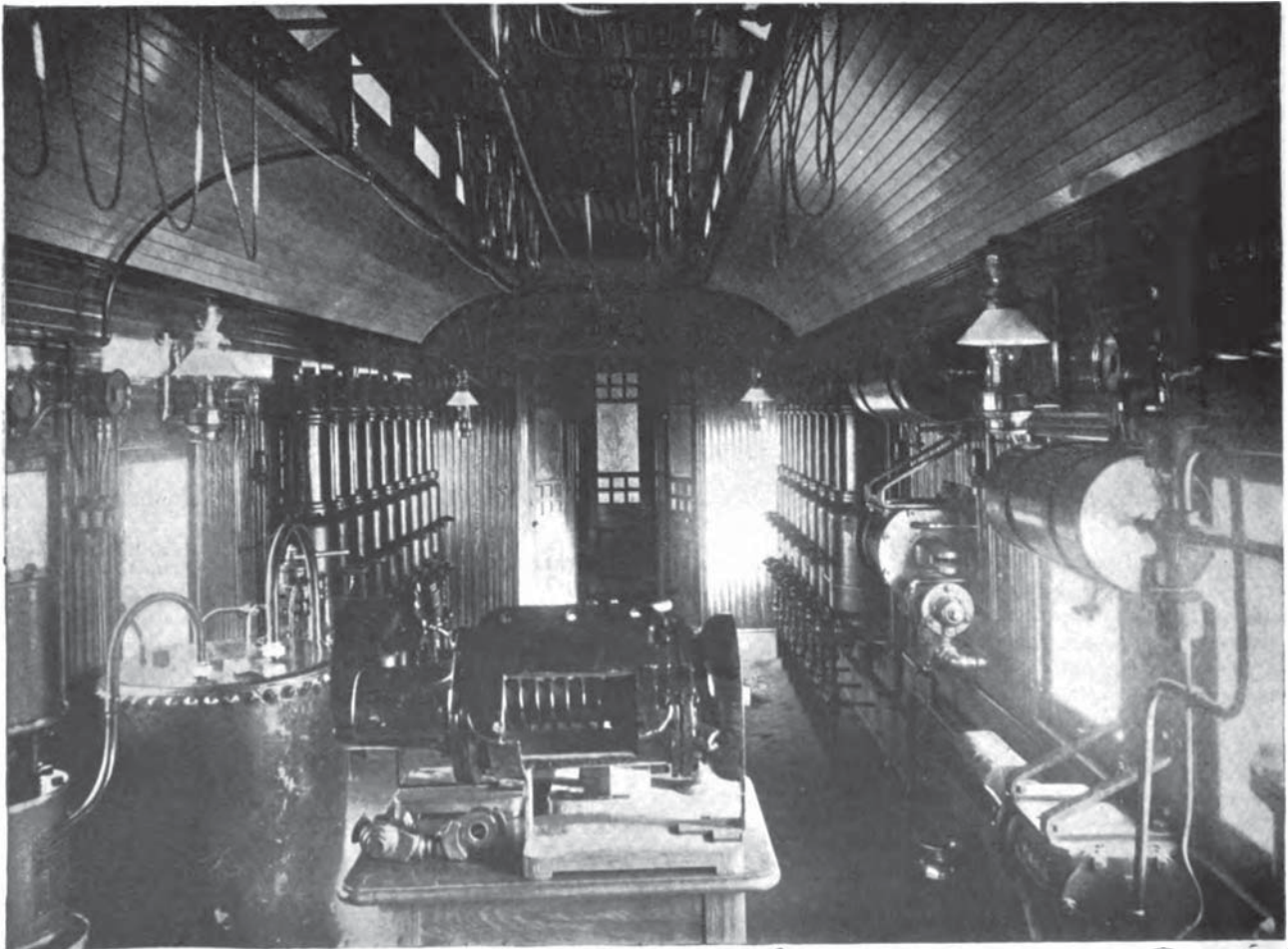
One of the first things to be noted on entering the car is the steel boiler, 32 inches outside diameter, with seventy-eight 2-inch tubes. This boiler has a record of steam in nine minutes from cold water. It has a drop grate, and, with swinging trap in ash pan, allows ashes to

teen freight brakes, eight of which are located on either side of the car, against the wall, leaving one wide aisle down through the middle of the car.

The arrangement of piping under the car, for the 16-car freight train, is one of the cleverest pieces of mechanism about the car. There are no short return bends used. On one end the return is made with a half circle of 14 1/2-inch radius, while the other end is made with a quarter bend of the same radius and an L. By this arrangement the frictional resistance is materially reduced. Each car has its full length of pipe, hose, strainers, stop



THE OFFICE.



INSTRUCTION ROOM.

cocks, etc., being the same as in regular service. The arrangement of piping in the clear story, for signals for an 8-car passenger train, is worthy of special notice. Like the piping for the 16-car freight train, this has no short return bend, but one half circle for both ends—one 4½-inch and the other 5¾-inch radius.

The car has a seating capacity of thirty-six men, this number of camp-stools being carried. The sections of the parts of the brake and signal apparatus being brought before the class in regular routine, are placed upon the table shown in the end of the car. Even the old three-way cock

"horse." On the afternoon on which it is known that the "horse" is going to be brought out, quite a number may be found in the car, who are not repairmen. The "horse" is no other than a freight cylinder, auxiliary reservoir and triple valve mounted on a trestle, which, when not in use, is taken apart and put in the locker under the work bench, and when wanted, is brought out and put together by two repairmen who are chosen from the class for that purpose, while two others put together the frame with four legs and two cross-bars, to which this cylinder and auxiliary are swung. This frame is made rigid by cross-bracing on the two sides

Expensive Air-Brake Men.

Editors:

That excellent paper, "Qualifications of a Superintendent of Air Brakes," read by Mr. F. B. Farmer before the Northwest Railroad Club, points out some valuable lessons.

From among other valuable things set forth by Mr. Farmer, I would like to quote the following: "Improperly made repairs, new material used when old is yet serviceable, and old retained when worn out," etc. "An inexperienced air-brake machinist will prove to be an expensive man to any railway company. Air-brake repairs, when made by an in-



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has its place among the other sections, as our idea is that it is easiest to master the brake by carrying it through the different stages of evolution. After the lecture is over, the men are divided into classes of six and carried into the office for examination. The office has an upper and lower berth, not shown in the photograph, and is altogether quite tastily fitted up. Oak graining, cherry molding, brass fittings, etc., make it quite cosy and inhabitable.

We are paying close attention to the care of passenger and freight brakes, and believe that one of the most important factors is the proper education of the men put in charge of same. For this reason I have rigged up what is known as the

and ends, and, when in position, the center of the cylinder stands about the same distance from the floor as the standard cylinder from the track. The first thing done is to remove cylinder and clean same. Each man is fully drilled in this. Then by a section of hose the apparatus is supplied with air; and the same being operated by the engineer's valve, then one by one the defective parts are substituted and the effect noted closely. The men being fully instructed beforehand by section—and these same defects having been explained to them—the object-lesson is very impressive.

W. F. BRODNAX,
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experienced machinist, are costly and soon run up into dollars."

Personal experience and observation have proven to my satisfaction that air-brake work on running repairs, made by a man not thoroughly posted on the air-brake system, is unsatisfactory and particularly expensive. Such a machinist will not understand the numerous insufficient reports made out by some engineers, and instead of locating the trouble readily, as an experienced man would do, he makes the repairs by using a lot of new material from the store-room without ever knowing the true cause of the trouble. All his work will be done in a like manner, or after useless and costly experimenting. Much good material is thus displaced and