

was 15,738 miles, while the average monthly mileage of the Butte, Anaconda & Pacific cars was 135,650, or 8.6 times greater. The yokes on the foreign cars were of 1-in. by 4-in. iron, while nearly all of those on the B., A. & P. cars fitted with friction draft gear were 1-in. by 4½-in. iron. Of the 90 breakages of draft gear on foreign cars, 25 were broken yokes. Deducting this number on account of yokes being unlike, there were 65 couplers and knuckle breakages on foreign cars to three on the B., A. & P. cars, or more than twenty-one times as many. On an equal mileage basis, the breakages on foreign cars were 185 times as many as on the B., A. & P. cars fitted with the friction draft gear.

The assumption is that the couplers on foreign cars were of equal strength with those on the B., A. & P. cars, and as all of the former had the extra large 6-in. shank, and, therefore, were designed for especially severe service, this assumption seems amply justified. The breakages on foreign cars were divided as follows: 35 couplers, 30 knuckles, 25 yokes; total, 90.

On B., A. & P. cars but three couplers were broken, and no knuckles or yokes, this comprising the entire breakage of draft attachments in six months' service. Compared with 35 broken couplers on foreign cars and allowing for the home cars making 8.6 times greater mileage, the breakage of couplers only, on an equal mileage basis, on the foreign cars with the double spring draft gear, was 100 times as great, or 300 couplers, instead of three, would have been broken on B., A. & P. cars had they been equipped with the spring draft gear.

The saving in coupler breakages alone in six months' service by the use of friction draft gear on 155 cars, as shown by the above record, was enough to pay the entire cost of the friction draft gear with which they were equipped, the saving in broken knuckles and yokes being additional and in the nature of an increased interest—and a large one—on the investment.

The ore service on the B., A. & P. is severe, as the grades are steep, reaching 132 ft. per mile, while the locomotives are very heavy and powerful, those used between terminals being 8-wheel connected Schenectady compounds. Trains of 50 and 60 loads are handled one way and empties the other, all the air brakes on the latter rarely ever being used, resulting in additional severe strains on the draft gear.

At each terminal the powerful switch engines employed work on heavy grades, enabling them to handle but few cars at a time, which causes a great deal of switching and an unusually severe service for the draft attachments. The use of heavy locomotives on steep grades, handling cars of large capacity—conditions which are rapidly becoming common on many roads—probably accounts for the inadequacy of the spring draft gear, although of the strongest type and greatest capacity, to protect the couplers from breaking. The record at the same time brings out very clearly the great value and really indispensable character of the friction draft gear under these conditions.

Fifty thousand dollars is the sum paid for the handsomest private car in this country. It was a gift to a wealthy Western brewer by the stockholders in his company, and as a surprise on his recent return from Europe.

#### NEW PENNSYLVANIA UNION PASSENGER STATION AT PITTSBURGH.

After the long periods of preparation and construction, the new Union Station of the Pennsylvania in Pittsburgh is sufficiently near completion for use, and it will soon be formally put into service.

This station is of brick, 352 by 175 ft. and 11 stories in height, with a large and imposing covered entrance with a domed roof and a large train shed in the rear. Accommodations for express, baggage, mail and the kitchens are provided on the lower floor, which is reached by depressed approaches from Grant and Liberty streets. The waiting room, restaurants, toilet and smoking rooms are on the train floor level,



New Pennsylvania Union Passenger Station at Pittsburgh.

with high ceilings, offering an opportunity for exceedingly handsome decorations. Above these floors is the office building of ten stories, with accommodations for local offices and the general offices of the Pennsylvania Lines West of Pittsburgh. This colossal undertaking, including expensive track elevation, has been conducted throughout in a manner characteristic of this railroad and this is sufficient to convey the impression of a most satisfactory and handsome terminal. It is thoroughly worthy of the roads using it.

For heavy turntables the substitution of power for hand turning was recommended by a committee of the Association of Superintendents of Bridges and Buildings at their recent meeting. Electric power is preferred when it is available from near-by shops or where it may be conveniently purchased. Where electricity is not available gasoline engines are recommended. Steam power is not considered economical, though satisfactory in operation. The report on this subject presents figures showing the saving to range from \$13 to \$1.50 per day in favor of mechanical over hand power.