

years ago, made an appreciable effect upon the power of locomotives in their winter ratings, and this practice points at once to the very important losses of heat through the cylinder walls. We have taken the position that not only should the cylinders be protected, but also the saddle castings through which the steam must pass on its way to the cylinders, and which are in the most exposed part of the engine. It is well known that water coming into the cylinders during the admission of steam not only affects the economy of the engine adversely, but it also reduces the power of the engine to a considerable extent, and one way to reduce this condensation is to guard as far as possible against the loss of heat of the steam on its way through the saddle castings. It would be easy to improve in this direction, and it is strange that it has not already become common practice.

It is to be hoped that this question will receive attention in the discussion expected from the introduction of this topic. It is important to know the proportion of loss of power in winter, but it seems to be more important to discuss possible ways for reducing the losses, which are known to be large, especially when it must be admitted that the proportion is almost impossible to ascertain.

PENNSYLVANIA RAILROAD PENSION SYSTEM.

The Pennsylvania Railroad has decided to establish a system of pensions and will provide a superannuation fund for the benefit of employees. This example is worthy of being followed, and we hope that one result of the present excellent condition of business will be an increased attention to the duties of the companies to their men. The manner of American railroad development was such as to crowd such questions as this into the background, for the reason that many of the roads have had a continuous struggle to keep out of the hands of the courts, but it is beginning to be recognized that railroad service may be greatly improved by giving the men reasons for desiring to retain their situations. The schemes of urging employees to purchase their homes and to secure shares of stock of the road tend in this direction. Men with responsibilities must be steadier and more valuable to their employers and also more successful from their own point of view than those who feel little hesitation in changing about. There can hardly be a better check against this floating tendency than the pension or superannuation fund, which insures a faithful and competent employee a living after he is too old to work. The prospect which such a plan holds out to a man must necessarily prove a strong influence, which will in the majority of cases result in a net gain to the company, even when viewed only on its commercial side. The pension system may be expected to insure a steady, contented lot of men, who respect their "company," but it need not deaden ambition or retard progress—if the requirements are high. This idea and the system of discipline without suspension have many points in common, and the latter may prove to be an entering wedge for the former.

Many roads have now begun to find their men growing old and the problem is: What to do with them. They cannot earn enough to warrant continued employment, and yet they have served their employers faithfully for perhaps thirty and more years. During all these years they should have been saving against the future, but whether they have done so or not, there is a clear obligation on the part of the employer to provide for them in a way which shall not resemble charity, but shall partake of the idea of reward for long and faithful service in work which is usually both responsible and exacting.

The Pennsylvania is providing for about 75,000 men and will require about \$325,000 as an annual outlay. Employees between the ages of 65 and 70 years who have served the company 30 years will be allowed to retire from active service, or they may be retired by the management of the fund. The age when retirement is compulsory is 70 years, and the pension paid will be proportional to the average wages paid each em-

ployee during a certain number of years, which does not necessarily cover the entire time of service, and an additional allowance will be paid out of the interest on the surplus of the Relief Fund, the amount being based upon the payments which they have made while members of that organization.

It is understood that the pension plan will go into effect at the beginning of next year, the number of pensioners being 775, 672 of these will be over 70 years of age at that time. There are now 3,000 men in the service who are over 60 years old; there are 50 who are over 80 years, and 99 men employed on the Delaware & Raritan Canal have been in the service over 45 years; one has worked for the company 63 years and another 61 years. An accompaniment to the pension plan is a new rule to the effect that no one over 35 years will be taken as a permanent employee, and those taken will be required to pass a physical examination. The pension fund is in the hands of a committee of officers of the company, and its privileges will be offered to employees without regard to the membership in the Relief Fund.

This scheme has been very carefully considered, with a view of the best interests of the company, as well as those of the men. It is to be hoped that the future will find many railroads in position to follow this example. They will undoubtedly take the question into consideration when it is possible, and there seems to be no doubt of the appreciation of the employees. One result which may be expected is a diminution of anxiety in regard to labor difficulties.

A smoke consuming or smoke prevention system has been developed in Berlin, Germany, very satisfactory results being reported by Consul General Mason. The system employs ordinary grate bars alternated with hollow ones perforated to distribute air to the fire from a fan blower. The air is heated in a manifold before passing into the hollow bars and it issues into the fire in the form of highly heated jets. It has been demonstrated that low grades of fuel may be burned by this form of grate without smoke. It is patented in the United States by Paul Cornelius of Berlin. Patent No. 613,359.

The successful replacement of the Passaic River drawbridge of the Pennsylvania Railroad, near the Market Street Station, Newark, N. J., in a remarkably short time is worthy of record. The old bridge had been in use 30 years and was too light for present day requirements. The new span, 213 feet long, was built by the Edgemoor Iron Company and erected near the old span. The old draw span was raised by jacks and drawn out of the way and replaced by the new one in 18½ minutes, although the bridge was out of service for a longer time. The work was entirely successful, credit for the plans and execution being due to Messrs. G. B. Beale and L. H. Barker, engineers of the Pennsylvania. The work was done Sunday, July 23. The new span weighs about 600 tons and the old one 400 tons. As they were coupled together when moved, the load was about 1,000 tons.

The remarkable fast time on the Vandalia, made by one of the new Schenectady 8-wheel passenger locomotives, was briefly noted last month. We have just received particulars of several other runs which, in view of the weight of the trains, are specially noteworthy. Mr. H. I. Miller, Superintendent of the Vandalia, writes that engine No. 16 hauled train No. 20, July 14th, from Clayton to Transfer Station, 18 miles, in 18 minutes. The train consisted of two postal cars, one combined coach and baggage car, eight coaches, one dining car and two sleepers, 14 cars, weighing 548.2 tons and carrying 460 passengers. The same locomotive hauled train No. 20 the next day between these stations in 16 minutes, the train of 13 cars consisting of two postal cars, one combined coach and baggage car, seven coaches, one dining car and two sleepers, weighing 500.8 tons. These weights do not include the locomotive, which weighs 139,000 pounds. The train on the 20th ran from Coatesville to Transfer Station, 26 miles in 26 minutes.