



FRIDAY, APRIL 15.

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Contributions.

The Frost Dry Carburetor.

PHILADELPHIA, April 8, 1892.

TO THE EDITOR OF THE RAILROAD GAZETTE:  
Through some unaccountable sources the impression has gone abroad that the car on the New York, Lake Erie & Western road which was destroyed by explosion and fire on the night of March 30, at New Portage, O., was equipped with the Frost dry carburetor system of lighting. This is not so, as the Erie road uses the Pintsch compressed oil gas system. Such a thing as an explosion with the Frost dry carburetor system has never been known, as it is an impossibility for such an accident to occur.

The Railroad Lighting & Mfg. Co. [The official report of this explosion was published in the Railroad Gazette, April 8, and, as there stated, it was due to an opening or rupture of the pipe and the presence in the compartment of an oil lamp.—EDITOR.]

The Danger in Using White Lights for Signals.

TO THE EDITOR OF THE RAILROAD GAZETTE:  
I am anxious to bring to your notice a proposition for a rather radical change in the present system of night train signaling; for while I approve in general the system recommended by the Time Convention and so thoroughly exemplified on the Pennsylvania road, I think there is one serious objection to it, in the use of an easily mistaken signal for a "safety" signal. In other words, I object to the use of a white light for "safety" in a semaphore signaling practice. Briefly my objections to this are: First, that the white light is easily confused with other white lights, lights in houses and the like, especially in large towns and cities where the tracks are not straight or where there is a complicated network of side tracks and cross overs. Second, the breaking of a spectacle in a semaphore either maliciously or accidentally, may exhibit a white light when a danger or cautionary signal is intended.

These same objections to the use of white lights for the "safety" signal have, I know, occurred to other railroad men, but the question has arisen in the minds of many as to what colors should be used for danger, caution and safety, if the plain white light is discarded. The answer to this may not be so difficult as is generally thought. There seems no reason at any rate for changing the "danger" signal; it seems well chosen and thoroughly understood and, if, as is already the practice on a few roads in this country and I think also abroad, green is used for the "safety" signal, it remains only to choose what shall be the color for the "cautionary" signal. I am inclined to hold that if any of the three signals must be plain white, it would be better to use white for the "cautionary" signal, inasmuch as that signal is less used than the positive danger or the positive safety signal; but I think either blue or violet, now used for back sights on semaphore signals, could be well used for caution signals. The objection to it has been made that it can not be seen as far as other colors, but it is of less importance to see a cautionary signal at a great distance than to see either the safety or the danger signal. If this change is adopted there would be no objection to using the plain white lens for back sights or tell tale.

The rules of the General Time Convention form in themselves one of the strongest arguments in favor of this system of signaling, as they distinctly lay down the principle that the signal for "safety" is quite as important as the signal for "danger" or "caution" and that the absence of a signal is a signal for "danger." No one will deny, I think, that a plain white light is as positive a signal as a colored light, nor that some other light,

having nothing to do with the signal, may be often mistaken for it.

A good deal more might be said on this subject, but I think I have said enough to indicate my idea, and I should like to hear your views on the subject, or see it submitted to a general discussion. The true principle of all signaling should combine the greatest simplicity without possibility of confusion. To appreciate the difficulties involved a man should put himself in the position of an engineer.

S. F. T.

Extended Smokeboxes on Compound Locomotives.

PITTSBURGH, April 6, 1892.

TO THE EDITOR OF THE RAILROAD GAZETTE:  
The communication of Mr. S. M. Vauclain in your issue of April 1, as to the employment of an extended smoke box on Baldwin compound engine No. 385, of the Central Railroad of New Jersey, I understand to be the expression not merely of his personal views on the subject, but also of those of his firm, since it is signed by him in his official capacity. In either regard, the theory which he enunciates is entitled to attention; but notwithstanding its undoubted ingenuity and comparative novelty, it leaves unanswered the essentials of the inquiry and criticism made in my communication in your issue of February 26, and indorsed in that of "C. M. H.," March 18.

Briefly stated, the contention of the two latter communications was that the claimed function and advantage of a smokebox extension was (1) to provide space for a spark arresting netting, and (2) a receptacle for cinders; that by reason of the light exhaust of the compound engine, and its consequent ability to retain its fuel in the firebox until consumed, the extension was superfluous, and that, therefore, its use involves undue cost and weight on truck.

It is clear that as to the above, Mr. Vauclain's reply wholly begs the question. He is known to be original in conception and emphatic in utterance, with all the courage of his convictions. Such characteristics seldom fail to carry with them that of consistency, and it is therefore entirely reasonable that he should not attempt to reconcile two inconsistent propositions (a), that engine 385 does not, in view of her claimed capabilities, require an extension as a netting receptacle and cinder holder, and (b) that she should be fitted with an extension to perform such functions. Whether or not he or his firm recommend or approve the application of an extension to a compound locomotive, by reason of its supposed spark arresting capabilities, remains entirely a matter of conjecture.

The advocacy of the extension from this latter point of view, by the Baldwin Locomotive Works, has been heretofore so pronounced as to be almost proverbial, and has gone to such length as to elicit from them the following remarkable statement, which is quoted from their letter to Hon. Charles A. Goodchap, Commissioner of Railways, Sydney, New South Wales, as published in the Railroad Gazette of June 1, 1888, p. 345, viz.:

"4. The extension smokebox, in connection with a straight stack, is now generally in use in this country. It relieves much of the back pressure on the cylinders, while being one of the most efficient spark arresters known."

The citation is made, not with any wish to enter upon a discussion of the correctness of the proposition, or to seek for proof in its support, but merely as to its applicability to compound locomotives, more particularly when provided with fireboxes of ample size, and designed for anthracite fuel of good quality.

Mr. Vauclain's statement that engine 385 has given entire satisfaction to its owners, as evidenced by an order for four more engines "without a single alteration, even in the minutest detail" is simply an argument *ad captandam*, and has no bearing upon the question. The locomotive engine is a machine whose capacity of endurance is phenomenal, and the mere fact that it can be made to perform satisfactory duty, even when handicapped by an extended smokebox, does not, in any sense, indicate that it would not do better with a smokebox of such normal dimensions as obtain in other steam boiler practice, and in numerous locomotives in regular service to-day.

It is possible that Mr. Vauclain's sorrowful interjection in the opening of his second paragraph, and his subsequent implied admission of the uselessness of an extended smokebox on a Wootton engine, as well as his statement of the entire satisfaction given by the Wootton Compound (P. & R. 618), without an extension, may be indicative of a change of heart, notwithstanding his admission that his firm has built Wootton engines with extensions; which error, it is to be hoped and believed, was due to the purchaser and not to the builder. The Wootton engine, however, has, properly, no place in this discussion.

There is no parallelism between the continuity of liquid flow in a force pump and the easier seating of its valves due to an air chamber on the one hand, and the amplification of smokebox volume about an exhaust ejector in a locomotive by an extension, on the other. Further, this theory, which cannot be claimed to be more than a mere dictum, since it is absolutely unsupported by facts or figures, is in direct contravention of those formulated by such recognized authorities on locomotive engineering as D. K. Clark and Zerach Colburn, which prescribe as good practice, a reduction of smokebox volume, and

are verified by actual and recorded experimental research and continued service. (See Colburn, Proportions of Locomotive Boilers, *Journal Franklin Institute*, Vol. 27, 3d Ser. 1854, pp. 194-199; Clark, *Railway Machinery*, London, 1865, p. 137; Le Chatelier, Flachet, Petiet and Polonceau, *Guide du Mécenicien Constructeur et Conducteur de Machines Locomotives*, Paris, 1859, pp. 113, 114).

It may be said that this is "ancient history," but so is the extended smokebox, which, according to Mr. M. N. Forney, dates from 1850 in the practice of the Rogers Locomotive Works, and was patented in the United States as a *spark arrester*, by one John Thompson, May 29, 1860, although his modest aspirations did not contemplate an extension of more than about 18 in., and he had no thought of an "air chamber" analogy. That the theories of Clark and Colburn continue to be worked on in good English practice will be seen from a description of Midland express bogie passenger engine and tender No. 1833, exhibited at the Paris Exposition in 1889, in which we find the following:

"Smokebox.—The smokebox has been reduced to the same diameter as the boiler, thus greatly lessening its capacity.

"Blast Pipe.—It has been found possible, however, in using the smaller smokebox, by slightly decreasing the height of the blast pipe, to increase considerably the blast orifice, several of these engines having blast pipes from 5 1/4 in. to 5 1/2 in. diameter. By doing this the back pressure on the piston has been proportionately reduced, thus conducing to freedom of running at high speeds."

This engine has cylinders 18 x 26, an open stack, and as it is scarcely necessary to say, no extended smoke box.

If Mr. Vauclain can cite any well authenticated instance in which, all other conditions as to construction, service, fuel and handling, being equal, an extended smoke-box engine has been found to steam as well as one with a short front, and to be equally economical in fuel, his "air chamber" theory may be accepted as a sound one. The spark arrester question is one which is altogether independent of the extension, and, as before stated, I do not understand him to make it his basis for advocating an extended smokebox. So far as the extension of the opposite end of the boiler is concerned, he can have no more cordial and earnest supporter than myself. Substantial prevention is, in that direction, practicable. How far attempted cure at the other end has been successful may be referred to the experience of the passenger who is rash enough to leave his window open on a day ride, or sufficiently curious to observe pyrotechnic displays before seeking his berth of a night.

J. SNOWDEN BELL.

Compulsory Legislation on Safety Appliances.\*

Colonel Haines devoted the first half of his address to a careful review of what the Master Car Builders' Association has done since 1869, in securing united action by the railroads on the coupler question, and supplemented that with an account of the principal legislative and commission hearings, and reports on the subject, and the laws of Massachusetts. These facts our readers are more or less familiar with, and we must omit this part of the address for lack of space. Proceeding to his general argument the speaker said:

I have given you a brief but correct outline of the history of the action on safety appliances by railroad organizations, by state legislatures and by state commissioners. I think that you will agree with me that the railroad companies have no reason to be ashamed of their record. We are now facing the possibility of immediate legislation of a compulsory character, insisted upon as an urgent matter of national importance, and also the probability that, in its eagerness to respond to the appeal for protection to railroad employes, Congress will act without sufficient knowledge as to what has been done and without a proper appreciation of the unfavorable effect which injudicious legislation will have upon the very cause in which we are interested equally with the employes who are to be protected. This will undoubtedly be the case if the principles should prevail which are embodied in some of the numerous bills now under consideration by congressional committees.

These bills generally provide for compulsory legislation of a penal character. . . . The difficulty in the way of prescribing the form of safety coupler with that exactness necessary to make a penal statute effective is said to have prevented the Committee of Railroad Commissioners from agreeing upon a bill, and the same difficulty has evidently been experienced in framing the bills now before the congressional committees. This difficulty it has been sought to avoid in various ways; in some of them by a vote of "members of established and recognized organizations of railroad employes" for the most popular safety coupler, just as they might vote for the most popular conductor or superintendent. In others resort is had to commissioners, who, at the public expense, are to either select a coupler already patented or to devise one themselves. The more or less remote possibilities with such a commission are enough to make such a position more desirable than any other that Congress or the President could bestow. In one or two of these bills there is a recognition of the existence of the Master Car Builders' type, and the evidence of an earnest desire to bring about in the interest of humanity the early and general adoption of that type of coupler. For the spirit evinced in such bills we should all have profound respect, even though we should be skeptical as to the results.

The choice of a standard coupler by popular vote of railroad employes recommends itself to some of the advocates of such a course who look for political preferment through the support of labor organizations; but others seem to regard it as the obvious way of arriving at a correct conclusion. To those who sincerely hold this opinion we may say that the brakemen and switchmen

\* Address of President H. S. Haines before the American Railway Association, New York City, April 13, 1892.