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#### THE FONTAINE LOCOMOTIVE.

AMERICAN SUPPLEMENT (No. 305, November 5) several illus- engines of the old type, is manifestly quite another thing trations of the new type of locomotive engine devised by Mr. behavior of engine No. 1, in regular service on that road.

direction of speed and economy in railway service."

This recognition of the apparent importance of the changes cle on "The Fontaine Fallacy" it seeks to demonstrate the made. incapacity of the Fontaine locomotive to do the work and attain the speed accredited it by those who have witnessed its operation, and at the same time the incapacity of the; ments it embodies. This would-be demonstration is fortified, devoted to cotton. Under more skillful cultivation it is not questions at issue to be very convincing. Admitting the cor- would produce the entire crop of the present day. The posrectness of the Gazette's argument, but one inference is pos-sibilities of increasing the yield of cotton in the South are, sible, namely, that our worthy contemporary is talking about therefore, practically unlimited. some other engine than the real Fontaine engine, which has, been doing for months the very things the Gazette so elaborately proves to be impossible.

man's theories, but with the actual behavior of the new the rest going for home wear. The State Department has at engines on the road. The inventor claims that by a better Atlanta specimens of fabrics, prices, etc., from all parts of plan of construction and method of applying the power to Asia and Africa. Ninety per cent of the Chinese, the largest the drivers he is able to secure greater speed with a given body of cotton-wearing people in the world, are clothed with consumption of fuel, or equal efficiency with less fuel, in cloth that is manufactured in the primitive way, without comparison with other engines of the same size.

amply sustains the claims of the inventor; and Mr. Ortton's immense demand. Mr. Atkinson is authority for the statetestimony is confirmed by that of Mr. W. P. Taylor, Genement that when drills can be sold in New York or Boston at ral Manager of the Canada Southern Railway, as will be seven cents a yard, they can be sold cheaper in Asia than the seen in Mr. Taylor's letter printed at length in another col- native hand-made goods. When middling cotton is nine umn. On the basis of the actual performance of engine No. | cents a pound in New York, drills can be made and sold 1, Mr. Taylor pronounces it a perfect success in saving fuel profitably at seven cents a yard. the same amount of work."

speed," either for passenger or freight service.

not to say injudicious and beside the question, to declare and a half cents a pound. cious to add, as the Gazette does: "Under this mistake he without enhancing at all the cost of the cloth. ics should show to be irrational."

Repeating that we are concerned not with Mr. Fontaine's cotton planters of the South may be still further widened. theories, actual or hypothetical, but with the practical performance of his engine, the Scientific American persists in having a higher respect for the results of Mr. Fontaine's acumen of the Gazette. The question is not as to the engine does.

Keely motor, and its assertion that those who accept the important subject. 10 performance of that locomotive as evidence of its value energy."

sura-..... 4912 vention; but the real engine, which has proved its capacity running in all directions through the mass, which are invisi-

to haul a seven car train at a rate exceeding a mile a minute, A short time since there appeared in the SCIENTIFIC and to handle freight trains as satisfactorily as much larger

It is easily possible that under the varying conditions of Eugene Fontaine, accompanied by a letter from Mr. John railway service, particularly as roads are now made, the Ortton, Mechanical Superintendent of the Canada Southern Fontaine locomotive may not in all respects come up to the Railway, describing the construction of the engine and the expectation of the inventor and his friends; it may not, for instance, accomplish a speed of ninety miles. Nevertheless, Referring to Mr. Ortton's communication and the testi- what it has already done, if human testimony is worth anymony of the engineer in whose charge that engine and engine thing, justifies the position taken by this paper, that it No. 3 had been run, we said: "From the evidence thus marks a notable advance in locomotive construction, and furnished it seems to be abundantly established that the that—to repeat our own words—"if experience shall confirm Fontaine locomotive marks a long stride forward in the the promise held out by the performance of the engine now on trial," the new locomotive "must materially increase the economy of railway service." As yet we have seen no in locomotive construction introduced by Mr. Fontaine has adequate reason for doubting the probability that the future greatly displeased the Railroad Gazette; and in a long arti-behavior of the engine will confirm the record it has already

#### THE POSSIBILITIES OF THE COTTON INDUSTRY.

At this time less than one-tenth of the superficial area of Scientific American to correctly estimate the value of the the Southern States is under cultivation. The late census evidence furnished as to the practical utility of the improve-report shows that less than a third of the cultivated area is hy a column of diagrams which lack only pertinence to the improbable that one third of the land now devoted to cotton

Is there any risk of raising more cotton than can be

The census of 1880 shows that we had then 10,700,000 We are concerned not with Mr. Ortton's or any other spindles. The product of only 700,000 spindles was exported, machinery. Almost all Asia is clothed in the same way. Mr. Ortton says that in practical service the new engine Cotton manufacturing machinery has hardly touched this

as well as in developed power and speed. Mr. Taylor con | The question of unlimited extension of cotton manufacture tinues: "The engine has been running for several months thus obviously hinges on the possibility of producing cotton on our road in freight and passenger service. A test was at an average price of nine cents at the mill. It is believed made with her against one of our best Baldwin engines, with that much more than the difference between nine cents and the same sized cylinders, running on regular passenger the market price for cotton is habitually lost by Southern trains. An accurate record was kept of the fuel consumed, plantersthrough careless handling. It is reported that a farmer which shows that the Fontaine made an average of fifteen recently brought to the cotton fair at Atlanta a lot of cotton miles more to a ton of coal than the Baldwin engine doing in the seed which he would willingly have sold to a factor for ten and a half cents a pound (lint), the market price on Touching the capacity of the engine for speed, Mr. Taylor | that day. The manufacturer examined it and gave him sixspecifies time and circumstance and witnesses (including teen cents a pound. In other words, the intermediate steps railway officers of national reputation), proving the ability | between planter and manufacturer cost the planter five and of the engine to haul a "good sized train a mile a minute a half cents a pound. The greater part of this five and without difficulty." Using from 25 to 40 per cent less fuel a half cents loss is caused not by commissions, insurance, than other engines of the same size, the Fontaine, Mr. Tay- storing, and shipping-all these are comparatively small, and lor says, "can perform the same service and has greater will compare favorably with similar costs in handling other produce—but by the universally careless method of handling Until the Gazette has successfully impeached the testi- the cotton. Careful picking from the field, careful ginning, mony of Mr. Taylor, Mr. Ortton, and others, touching the secure baling so as to prevent soiling and to keep out sand, actual behavior of this engine, it is obviously a little unfair, and a careful assortment of the different grades saved five

offhand (and evidently without taking the trouble to go | It is not to be supposed that the extra care in this case cost across the river and look at the machine) that the inventor | the farmer anything like five cents a pound, or roughly, half "seems to sincerely believe that he is able to get what in the the entire cost of his cotton. The desired price, nine cents a West they call a 'twist' on the action of mechanical forces, pound, mentioned above, is for cotton as it usually reaches and that he gets more power out of the cylinders of his the mill. It would be worth several cents more if in proper engine than ever goes into them." It is worse than injudic ondition, increasing correspondingly the farmer's profit

[tle inventor] is spending his own money, which is unwise; From these figures it would seem easy for our cotton but what is worse is that the oldest and most widely circu-planters to increase their profits and at the same time furnish lated scientific paper in this country, by corroborating the our manufacturers with cotton at such a price—improved erroneous theories which have been advanced concerning condition being considered—as would enable them to com the engine, may induce other people to spend money on a mand the markets of the world, even in competition with the device which the first and fundamental principles of mechan- hand work of savages. Of course with possible improvements in processes and appliances the margin of profit to the

# THE CAUSE OF FAILURE OF STEEL BOILER PLATES.

Steam Boiler Notes in the Scientific American of August alleged irrationality and unwisdom than for the critical 20, contain an account of the failure of Russian war yacht's steel boiler shells, and an abstract of a report on their behapossible performance of a theoretical engine, but what a real vior by Mr. W. Parker, chief engineer of Lloyds' Register, which was read before the Institute of Naval Architects of After the "impossible" has been accomplished it usually England. These plates, after having passed through the turns out that the argument which established the supposed; various tests required by the English authorities, gave way impossibility is found to be somewhere defective. Usually, in a most astonishing manner under the official hydrostatic too, the error is found to lie not in the logic of the argument, test after the boilers were completed. The analysis of the but in its inapplicability to the case in hand. That the flaw metal given by Mr. Parker showed a want of uniformity in in the argument of the Gazette is of this nature is evident their chemical composition. The papers lately read before from its comparison of the Fontaine locomotive to the the British Iron and Steel Institute shed more light on this

The paper of Mr. W. D. Allen, on the use of a mechanical "are inclined to believe that Mr. Fontaine has made a agitator in the manufacture of Bessemer steel, shows that, in 'corner' on the law of gravitation and the conservation of addition to the bubbly conditions of the ingots arising from confined gas generated by the admixture of the spiegeleisen The Gazette's mistaken idea of the Fontaine locomotive or ferro-manganese to the decarbonized iron, there are veins