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THE PRESIDENT'S MESSAGE,

position to boost the wheels of progress by artificial means, legislative or otherwise. In the race for wealth and population many sections of the country have overrun themselves, and they are only now enjoying a slow recovery. In a certain degree, this is true of the business of the country at large, and what it now needs above everything else is that it should be letalone and, if we may use the phrase, that nature may be given a chance to assert itself. Our credit is only now beginning to recover from the collapse of 1893. Quick as the wheels of credit are to stop, they are always slow to move again. Its inertia is hard to overcome, and its forward movement may be checked in a single day.

It is possible that the trade of the country has suffered from overmuch legislation; that the change from pillar to post, the perpetual seesaw from one policy to another, is largely answerable for the present stagnation. We need a rest-at least from legislation of the radical and sweeping kind. The expediency of letting matters run as they are for a while, if only for the sake of rest, is suggested by the encouraging figures showing our volume of trade during the fiscal year ending June 30, 1896, when our imports increased over those of the previous year more than \$6,500,000, and the value of the domestic products exported and marketed abroad is nearly \$70,000,000 greater than that of the preceding year.

This is certainly a very remarkable and encouraging showing, and it is fully in line with the conservative affecting our foreign trade relations should be left in

In this connection we would suggest that the most effective means for opening foreign markets and establishing active commercial relations is that which we outlined in a recent issue, and which is now being carried out by the National Association of Manufacturers. This organization, it will be remembered, is establishing exhibition warehouses for the display and sale of American products of various kinds in the South American states. By hiring suitable exhibition rooms and the appointment of a regular staff of competent salesmen, acquainted with the language and wants of the people, it seeks to familiarize merchants of those countries with such American products as they can purchase to advantage. Here is a practical field of enterprise which can do more for the extension of is practical, business-like, and, therefore, full of the is brought within measurable distance. promise of success.

success which has attended the Venezuela negotiations, the subject is dismissed with a modest reference; and while the language in speaking of our relations with the Spanish government is dignified, it deals with the question of the hour in a moderate and conciliatory Congress would do well to carefully consider. The above all things, the lesson of moderation and the value of sober second thought. It is the exercise of these qualities which has brought us to the threshold of a permanent arbitration tribunal with the other great branch of the English speaking race; and also saved us from a step in relation to Cuba which recent developments show would have been decidedly premature. With a sound financial policy assured and confidence restored there is nothing to prevent our entering upon and collapse of 1893.

THE UNDERGROUND TROLLEY AND THE THIRD RAIL IN ELECTRIC TRACTION.

been carrying out experiments in electric traction have is equipped with an electric motor, and handles the to new divisions of their systems. The New York, New ing the station until it is picked up again on the re-Haven and Hartford Railroad Company, whose trial of turn journey. A third rail is used, which is placed on the third rail system on the Nantasket line has been the outside of the track, and is laid continuously closely watched by the electrical world, is intending to across the bridge, electric traction being used for the lay a third rail at various points on its property during the coming year, and it is officially announced that construction of a three rail electrical equipment on the line between New Britain and Hartford, via Berlin, is assured. The other installation is to be made by the Met-danger of collision reduced by using the cable. Thus ropolitan Traction Company of New York, who have decided to adopt mechanical motive power in place of horses on the Fourth Avenue and Sixth and Eighth Avenue lines in this city. The change will affect forty-three miles of the existing lines.

The Metropolitan Company is one of those which has been making careful tests of the compressed air motor; it is also the owner of the Broadway cable road tives is very noticeable. and the electric underground trolley road on Lenox

Avenue: the compressed air experiments having been The dignified conservatism, the studied moderation carried out on the last named branch. The company of the President's message, is what is most needed at is, therefore, in a good position to judge of the relative the present juncture in our national affairs. Many of performance of these three forms of mechanical traction, the troubles with which the country is oppressed have and there is food for thought in the fact that in the sprung from over-speculation and an unfortunate dis-meeting of the directors in which it was determined to make the above mentioned change the weight of opinion was in favor of using the electric trolley in preference to the cable or compressed air. The underground cable was rejected on the ground of its great first cost as compared with the underground trolley, the amount of excavation, concreting and iron work being considerably less for the electrical conduit. The only question on which the company had any fears for the trolley was in regard to its ability to stand the hard test of winter service, especially when there was an accumulation of snow or slush. The behavior of the Lenox Avenue line during the severe snowstorms of last winter, however, was very satisfactory, the cars being run with practically no interruption.

In view of its cheaper first cost and uniform success in operation, it is not surprising that the underground trolley is to be chosen in preference to the cable for the new equipment, but that it should have competed successfully against the Hoadly compressed air motors is a fact which will surprise those people who have been impressed with the claims of economy which have been made by the company for the recent application of compressed air. The present costly experiments—there are five compressed air motors in operation and two more shortly to be so—were not undertaken until the engineers of the company had made an exhaustive examination on the spot of the various self-contained motors, gas, oil, and compressed air, in European cities. The test is particularly valuable for purposes of comparison, spirit of his address that the President should im- because the conditions are precisely the same for both plicitly suggest that for the present at least legislation systems, the compressed air cars being run over the tracks of the underground trolley line. The electric and the compressor plants, moreover, are located under the same roof and probably use the same fuel, all the conditions indeed being excellent for a comparative test. If the air motors are as satisfactory as is claimed, the Fourth and Sixth Avenue lines would furnish an excellent opportunity to use them on a large scale; and the fact that the trolley line is to be put in suggests that the old difficulties, which years ago baffled the designers of compressed air motors, have yet to be overcome.

The announcement that the New Haven Railroad is intending to make a further application of electricity to its steam roads will be taken as evidence that the present Nantasket electric line has given better results than the steam-equipped road. If this be the case, electric traction has taken another step in the direction of its application to the trunk roads of the country, American trade than whole volumes of legislation. It and this goal for which electrical engineers are striving

At a recent discussion of electric traction under steam The tone of the message is equally conservative in railway conditions, at the American Institute, New matters of foreign policy. In spite of the diplomatic, York, Mr. Charles K. Stearns stated that the chief object in view in equipping this line was to demonstrate that an electrically equipped road could be operated as satisfactorily in regard to the facility of handling large numbers of passengers on time as a steam road, and that it could was proved beyond a doubt. The spirit, which the more rash and impetuous spirits in line has now been in operation for two seasons. In 1895 there were 6.86 miles of double track equipped foreign complications of the past year have taught, with special trolley wire, and the train schedule called for 150 trains a day. In 1896 there was the same length of trolley line and 3.64 additional miles of double track equipped with the third rail, over which 68 trains on an average were run per day. According to the table, showing the operation of the power stations during July, 1895 and 1896, the average electrical horse power per hour was 245 in 1895 and $349\frac{1}{10}$ in 1896, the corresponding consumption of coal per electrical horse power hour being 4:24 pounds for 1895 and 2:99 pounds a new era of prosperity equal to if not greater than the for 1896. The difference is partly accounted for by the period of commercial growth preceding the agitation fact that the engines were run non-condensing in the former year and condensing in 1896.

Another much talked of substitution of electric for steam traction is that which has just commenced operation on the Brooklyn Bridge. In place of the switching Two powerful transportation companies which have engines at each end of the road, one car in every train recently taken steps to extend their electrical equipment train from the time the cable is dropped before enterwhole trip during the hours of lighter travel at night and in case of slipping of the cable. It is not used during the day because it is considered that the regular headway is maintained with more certainty and the far the work of the electric motors at the terminals has been a pronounced success. The headway has been reduced to an extent which makes it evident that the forty-five second interval will be attained when all the terminal switching tracks are utilized. The absence of the exasperating jolts which accompany the coupling on and starting of steam locomo-

The success of the New Haven trials raises the question