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THE TEHUANTEPEC SHIP RAILWAY.

Seldom has any public enterprise received such gross misrepresentation at the hands of the press as has been the portion of Captain Eads' proposed ship railway across the Isthmus of Tehuantepec. Every effort to make what is, in itself, an honorable proposition seem odious appears to have been made. The enterprise is one which is open to thorough inspection, and therefore an ignorance of the subject is the more unpardonable in those who assume the position of critics. In many of the statements made there is such an evident absence of truthfulness that one is forced to believe the error is not unintentional. It is asserted in more than one quarter that no survey of the route has ever been made by the present company, when, in truth, the greater part of the \$350,000 already expended has been for a complete hydrographical and topographical survey of the isthmus from ocean to ocean; that the United States is appealed to as a last resort, when, in point of fact, it is the first government approached; that the ship railway is pronounced impracticable by the acknowledged experts of the world, whereas the very opposite is the case. The Canadian Government has just subsidized a ship railway to be built from the Bay of Fundy to the Gulf of St. Lawrence, under the direction of Sir John Fowler, one of the ablest engineers of our times. It is further asserted by Captain Eads' opponents that the capitalists of Europe and America have refused to have anything to do with the project, when they have had no such opportunity, for their aid has not yet been solicited. But of all these misstatements, probably the most flagrant is that the United States is asked to give \$37,500,000 to aid in building the ship railway. By no misinterpretation of the English language can such a conclusion be reached. The bill now before Congress provides distinctly that the government shall not pay a single dollar until the railway is completed, until it has passed a satisfactory official examination, and has successfully carried a vessel of specified tonnage from ocean to ocean.

These conditions could not be stated more plainly nor could a more severe test of the company's good faith be demanded. When this great work has been accomplished, the Government is only asked to guarantee that, for a period of fifteen years, two-thirds of the net annual revenue of the railway shall be \$2,500,000. By no reasonable possibility could the Government be liable for the entire guarantee. As the net revenue is taken at one-half the gross receipts, the total liability of the Government, at the most unfavorable estimate, would not exceed \$7,500,000, and that in equal payments over a period of fifteen years. But even if the entire sum guaranteed were to be drawn from the public treasury, the country, it seems to us, would find the investment highly profitable. Those who so vigorously denounce the enterprise as an attempted raid upon the national revenues do not seem to recall the fact that Congress is each year asked to pay out immense sums of money for the improvement of some insignificant stream or obscure harbor, even the location of which is scarcely known to the majority of the members, and that not only does Congress accede to the request, but duplicates the appropriations when the results show the work to have been a benefit, however local and restricted. In the case of the Tehuantepec ship railway, no direct support is asked. The guarantee for which Congress would be responsible, if the bill passes, would only be a contingency. Every indication points to the financial success of such a road, and it is highly improbable that any money would ever be drawn from the public treasury. But the guarantee is desirable, in order that the seventy-five millions necessary for the construction of the road may be raised on the most favorable terms.

It seems incredible that, under these circumstances, the Government should hesitate to become the patron of an engineering work of such undoubted importance. The advantages of having an interoceanic communication under American control; of being able, in times of war, to have the squadrons of the Atlantic and Pacific co-operate without doubling Cape Horn; of enjoying, in times of peace, the reduced tolls accorded to American shipping, and all the impetus to that industry which such a discrimination means—these seem to us of sufficient value to warrant the assumption of a much graver responsibility than Captain Eads has demanded, and to make what he has asked seem absolutely insignificant.

Much of this violent opposition to the enterprise appears to be due to the adherents of the Nicaraguan Canal, an enterprise which, if the history of the Panama scheme teaches anything, would involve the Government in an expenditure which would be calculated by the hundred millions.

One other charge is brought against the Tehuantepec enterprise, which is alike insulting to those interested in its success and discreditable to those making the assertion. The statement has been made, and is reiterated in a large portion of the daily press, that an extensive and influential lobby is maintained at Washington in the interest of the enterprise. Captain Eads' denial is absolute. The president and vice-president of the company and its counselor are the only

persons who have authority to speak in its interest. We do not believe that these gentlemen have need of such methods, were they willing to employ them, nor do we believe that the committee who have charge of the bill are open to the persuasiveness of such arguments.

LICENSES FOR SMALL STEAMBOATS.

The yachting season is now pretty well upon us, and the number of inquiries which we have already received in regard to the laws regulating steam yachts indicates that it will be one of considerable activity. It may therefore be of interest to our readers to know what requirements must be fulfilled before their pleasure craft may be enjoyed in peace and quietness.

The United States law says that all steam launches of five tons burden or less must pay a license of \$5, and for master, pilot, and engineer 50 cents each. The hulls and boilers must be inspected by the United States local inspectors, and a permit from the nearest custom house must also be written upon the inspection certificate.

In regard to the equipment of yachts of this size, the law provides that, where passengers are carried, the lifeboat may be dispensed with, if the vessel is provided with metallic air chambers placed under the seats or in the ends, of sufficient buoyancy to float both vessel and machinery. One life preserver must be provided for each person whom the inspection certificate allows them to carry. For each fifteen passengers over less two fire buckets and one ax are required.

One of our subscribers in Camden, N. J., had rather an unpleasant experience from his want of knowledge of these requirements. He had an interest in a 25-foot launch of 1¼ tons custom house measurement, which had been built under the impression that no license was required. The vessel had only been out a few times when it was seized by the custom house officers for not complying with the law. After a great deal of trouble and some expense, she was finally cleared, and was licensed, inspected, and equipped to start on her career afresh. A license of \$5 was paid, but a few days later a notice was received that it should have been \$25, and that \$20 was still due. As a refusal to comply with this demand led to a threat of second seizure, the amount was paid under protest. Five dollars was afterward recovered, but where the difference went still remains a mystery to the owners.

SHOP COMMON SENSE.

Sometimes even shop lore, and engineering skill, and mechanical experience are at fault, and there is no resort in an emergency but plain common sense, untrammelled by precedent. And it is not unfrequently the case that the successful suggestion in an emergency comes from a man whose opinions on mechanical subjects would not generally receive much attention.

In a large manufacturing establishment a heavy balance wheel was used as an equalizer between the prime mover and the driven machinery, and was run by a "jack shaft." It was noticed that when in motion—particularly when stopping and starting—the balance wheel was loose on its shaft. But when the machinery was stopped, all attempts to discover the cause of the looseness, or even to detect the looseness, were futile; the wheel was firm on the shaft. Still, the looseness was an apparent fact as soon as the machinery started. The attempts to discover the trouble were given up, with the design of allowing the looseness to increase until it would manifest itself when the wheel was at rest. An observant operative in the mill asked leave to try, and he found the trouble at once. He blocked the jack shaft, and put a purchase on the wheel against the direction of its motion, and showed that the key and key seat had lost their corners, allowing the wheel to move slightly on the shaft. New key seats and keys rectified the trouble. The man had thought out the difficulty in a sensible manner. He imagined that when the shaft stopped, the impetus of the wheel carried it forward enough to squeeze or lock the loose key, and that a purchase backward would reveal the trouble, which it did.

Some years ago an establishment was building some propeller engines for the Government. As this was before the adoption of the plan of raising the propeller when the vessel was to be driven by sail alone, the engines and propeller were disconnected by clutches worked by compound levers. These clutches were large and heavy, the flanges being about six feet diameter. They were shrunk on the shaft. In shrinking one of the glands on, it stuck before coming to place. It was a bad job; the clutches were costly; they had been bored and turned; the jaws were faced with steel; they represented the work of weeks; to smash the stuck gland would be an expensive job. One of the shop hands, who had no particularly high standing as a workman, suggested a way of removing the gland and he was allowed to try. He hung the shaft and gland by the steam derrick, the gland on the ground. He built a high dam of clay on the back of the gland surrounding the hub, and he covered the shaft thick with the clay for some distance above the hub. Large quantities of