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OUR EXPORTS AND THE TRADEMARK.

The most significant and prophetic fact in the history of commerce at the close of the nineteenth century is the phenomenal increase of the export trade of the United States. Measured by the rate of growth of the exports of other countries, it has no parallel. Time was (and that but a few years ago) when we depended almost entirely upon European factories for certain lines of merchandise, which to-day we not only make for ourselves, but sell abroad in large and ever-increasing quantities. It is unnecessary to repeat the statistics of our success; its reality, and its recognition by the nations of the Old World, are proved by the use of the term "American invasion," which originated in Europe and has been voluntarily accepted as best expressing, from a foreign point of view, the gravity of the commercial situation.

Although the success of this "invasion" is due primarily to the low cost of our manufactures, and this, in turn, to improved machinery and methods, our goods are forcing their way into European markets largely an account of certain national characteristics in the way of convenience, handiness, lightness, neat appearance and all-round simplicity. These characteristics are summed up in the European mind under the term "American;" and the purchaser over there has come to recognize the fact that whether the subject of his purchase be a carpet-sweeper or a machine-tool, the fact that it is "American" guarantees its possession of certain qualities that are dear to the heart of the user.

What is true of the national is true of the individual export, and it is evident that if we are to reap the full benefits of a reputation so distinctive and valuable, an effort should be made to protect this reputation against every form of fraudulent imitation. That the successful inroads of American trade will lead to strenuous efforts at imitation goes without saying, and unless our commercial houses make haste to protect their goods by registering trademarks in those countries in which they are establishing a market, they will find that these very trademarks have been already appropriated as a defensive measure by their foreign competitors.

It is a fact, too little understood and appreciated by our commercial houses, that in many foreign countries the exclusive right to use a trademark is granted to anyone who may apply for it, irrespective of the question as to whether he is the first user. Thus, if a United States firm is making large sales, say of an Anchor brand of flour, in Germany, there is nothing to prevent a German citizen from registering that very trademark for flour, and using it on his own barrels, to the exclusion of the actual American product under that particular mark.

In urging our manufacturers to secure trademark protection at a time when they are so successfully establishing themselves abroad, we would speak a word of caution against the practice of registering trademarks in the name of a foreign agent. While this is done to simplify matters in bringing suit against infringers, it is liable to place the manufacturer in a difficult position in case of disagreement with the agent, who, holding the trademark in his own name, is legally entitled to the use of it should he be disposed to open in business on his own account. Although this is an extreme case, and probably would not often occur, we mention it as one among several reasons which render it advisable for a manufacturer to secure the important trademark privileges in his own name.

MASONRY AND TIMBER DRY DOCKS.

If we are quick to learn the lessons of the past, there will be no more timber dry docks built in this country, at least for the uses of the navy. Between a masonry and a timber structure the advantages urged in favor of the latter are, or rather have been, rapidity of construction and small first cost. To these considerations alone is due the fact that so many of these objectionable structures are to be found in our navy yards. The objections to the timber dry dock are many and serious,

and do not diminish with the lapse of time. On the other hand, the advantages are by no means so great to-day as they were forty or fifty years ago. Up to a recent date it has been customary for the advocates of timber structures to quote the cost of the stone docks at Mare Island and New York, in contrast with the relatively low cost of timber docks. Those two docks cost respectively \$2,000,000 and \$2,750,000, whereas timber docks have been built for about \$600,000. As a matter of fact, however, the New York and Mare Island docks were built by the government by day labor, and we all know that work of this kind has never been conspicuous for its economy. The contracts for the two new stone docks to be built at Boston and Portsmouth were let at \$1,013,400 and \$1,089,000, respectively, although these will be larger and more important structures. The reduction of the cost as compared with the older structures is over 50 per cent. At the same time it must be remembered that the contract price for two new timber docks to be built at League Island and Mare Island was respectively \$729,000 and \$782,600; from which comparison we see that all the advantages of a masonry structure may be gained at an increase in cost of from 25 per cent to 30 per cent. The question arises as to whether this increased cost is not completely offset by the greater durability of the masonry structure. Experience proves beyond all question that it is; for the history of timber docks in the navy has been a history of failure. Not only have they been a source of constant anxiety to the officials in charge, but they have been frightfully extravagant in the cost of repairs and renewals. Moreover, on more than one occasion the failure of the wooden docks has brought the ships of the navy within measurable distance of disaster.

The chief drawbacks to the timber structure are that it is liable to rapid and hidden decay, and that seepage of water from the outside channel, or the existence of concealed springs at the back of the dock, may at any time wreck it by bursting in the sides. A notable instance of this was the failure of the two timber dry docks at the New York navy yard, Brooklyn. The big dock, known as No. 3, commenced to leak immediately after it was completed, and repairs were necessitated which lasted for eighteen months and involved an expenditure of \$170,000. The timber dry dock No. 2 of the same navy yard was wrecked during a heavy rain storm in July last, when the hydrostatic pressure due to accumulation of water behind the altars was sufficient to burst in the side of dock. In this case a structure which originally cost \$500,000 has so completely failed within nine years of the date of completion as to necessitate the expenditure of 60 per cent of its first cost to put it again in a serviceable condition. The timber dock completed at League Island, Philadelphia, in 1891, is already so far decayed that shores of timber have had to be placed at certain points which showed signs of weakness, to prevent collapse, and when the dock was uncovered for repairs, it was found that the tops of the piles were in some places entirely rotted away. The timber dry dock at Port Royal station, which was finished just before the Spanish war, is reported by Admiral Endicott as having experienced a series of accidents in the way of failure of portions of the structure, and, indeed, it is in such a perilous condition that \$500,000 is recommended by the Admiral for its immediate rebuilding.

In view of these facts we trust that Congress will disregard the solicitations of the interested parties who may desire to see timber dry dock construction continued in the navy, and that they will heartily support the recommendation of Admiral Endicott, the Chief of the Bureau of Yards and Docks, that stone be substituted for timber in constructing the two docks which are about to be started at the League Island and Mare Island yards. The subsequent repairs to timber docks, as we have seen, bring the ultimate cost far beyond that of a reliable and durable stone structure, and on the question of facility of erection it is enough to say that the contractors for the new masonry docks at League Island and Mare Island undertake to build them in the same time that is allowed for the construction of the two timber docks at those yards.

REMARKABLE FRENCH RAILWAY EXPRESS SERVICE.

In the last issue of the SCIENTIFIC AMERICAN we gave a somewhat elaborate comparison of the great railway systems of the world, based on the length of the track and the magnitude of the equipment and freight and passenger traffic. In this comparison we took no account of speed, which, of course, as a modifying factor should exert a powerful influence in determining the question of relative excellence. The French railroad system, which in point of size and importance ranks about fourth among those of the world, stands easily at the head of the list in respect of the number and speed of its express passenger trains. A recent tabulation of these trains shows that Le Chemin de Fer du Nord operates no less than forty-five trains a day with an average running speed, including stops, of from fifty to sixty miles an hour. Of

these, eleven have a speed of fifty miles an hour, nine of about fifty-one miles an hour, eleven about fifty-two miles an hour, three of about fifty-three miles an hour, ten of from fifty-four to fifty-seven miles an hour, and one train has a timed running speed of sixty and a half miles an hour. It will be evident to anyone who is acquainted with the subject of high speed travel that these are extraordinary results; and while this country and Great Britain have a few trains of from fifty to fifty-four miles an hour speed, and the United States runs two summer trains at rate of about sixty miles an hour, such speeds are not characteristic of the whole of the express service. Mr. Charles Rous-Marten, who is the best known expert abroad on the question of express trains and their performance, states from personal knowledge that the trains are not by any means mere racing outfits, but weigh from 150 to, in some cases, as high as 300 tons. The hauling is done by a new type of four-cylinder compound engine, designed by Messrs. De Glehn and Bousquet. We hope to illustrate these engines at an early date, and at the same time give some further data concerning the grades, consumption of fuel, and other particulars showing the true merit of the performance. As compared with the speed of the average express trains of this country, these results are certainly a great advance. Of course, it would be possible for us to run trains at the same speed and in the same number, but it would necessitate one of two things—either we should have to build engines of even greater power than the powerful types which we have at work (which is scarcely possible), or else it would be necessary to split the trains in two, using two engines where we now use one, which is practically the method adopted on the Continental roads.

THE POSSIBILITIES OF DEEP MINING IN THE TRANSVAAL.

In a paper recently read before the South African Association of Engineers by Mr. John Yates, who has been for many years identified as an engineer with mining on the Rand, the possibilities were discussed of mining of much deeper levels than any that have been hitherto reached. It seems that at present there are what are known as the outcrop mines and the first and second deep levels, while work has been commenced on other shafts which are expected to reach gold-bearing veins at a depth of from 4,000 to 5,000 feet. Mr. Yates is of the opinion that in the future, when it comes to mining at lower depths than 5,000 feet, the best method would be to run from the lowest existing levels down to the underlying reefs by means of inclines, rather than by sinking vertical shafts. It is assumed by the writer that the limit of depth at which mining operations can be carried on will be 12,000 feet, and he bases this estimate upon the fact that the increase of temperature, which in the Rand mines is at the rate of 1° for every 205 feet, would bring the temperature at a 12,000-foot level up to 100° F. or more; at which it is considered that miners would be unable to perform effective work.

This rate of increase of temperature is estimated from observations taken in various bore holes which have been put down in the Rand mines, and the maximum temperature for the greater depth is based on the assumption that the increase would be in a steady ratio. In commenting upon Mr. Yates' paper, The Mining and Engineering Journal draws attention to the fact that this rate of increase is much greater than that which is experienced in our deep Michigan copper mines, and raises the question whether sufficient allowance has been made for the lowering of the temperature which would follow the opening of the workings and would undoubtedly be produced by proper ventilation of the lower levels. We think that the exception is certainly well taken, for it would be possible with our modern improved machinery for ventilation to carry to these lower levels sufficient cool air to very materially modify their temperature, although we think the suggestion offered that liquid air could be used to advantage is based upon an over-sanguine estimate of the practical value of this means of refrigeration. There is a general consensus of opinion among geologists and mining engineers as to the extent and richness of the "banket" beds of the Witwatersrand, and unless they are mistaken, the opening up of the lower beds, even at depths of from 12,000 to 15,000 feet, would be a profitable undertaking in spite of the enormous amount of capital that would be sunk in reaching them. It is estimated, however, that these lower workings must be richer than they have yet proved to be, if they are to justify the enormous amount of capital which would be involved in sinking to such great depths.

RECOVERY OF SUBMERGED LAND IN HOLLAND.

The unconquerable persistence of the Dutch race is very much in the public eye just now. Alike in peace and war the inhabitants of the Netherlands have shown their ability to pursue a project with that tireless patience which, other things being equal, is certain to bring success. The struggle between the people of the Netherlands and the encroachments of the waters of the Zuyder Zee is a thrilling story, and the fight evidently