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SCIENTIFIC AMERICAN SUPPLEMENT

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AMERICAN OCEAN COMMERCE.

At one time the United States was awarded the supremacy of the seas. For many years the modeling of ships had not received due attention in the older countries. The shipbuilders of the old world had evolved a type of vessel which as a sailer was very unsatisfactory. In the new world the genius of the Americans seemed to find a congenial occupation in ship building. In very early days we read of their great sloops, one-masted vessels, performing ocean voyages supposed to be beyond the capacity of this type of vessel. Soon the schooner was evolved, and going back over a hundred years, we find the Baltimore clippers, as the most famous type of schooner was called, enthusiastically depicted. The industry of whaling was early established at Nantucket and, spreading to other ports, soon distributed representative American ships all over the seas. The California and China trades were entered into and the American clipper, of New England or New York build, won laurels for herself in many a race half way around the globe. Ships of the same type gave a good account of themselves in transatlantic work.

It is not only the skill of the American shipbuilder that brought about the triumphs of our shipping. The *personnel* of the service ranked very high. The conditions of life on American ships conduced to individual responsibility. On the whale ships a young man barely in his majority would sometimes be captain, and start from Nantucket or New Bedford on a three years' cruise. In the fishing ports, sooner or later, every man of any standing would be in command of a fishing smack, and most daring exploits would be carried out. The flat-bottomed sharpie, drawing but eighteen inches of water, has, it is said, gone as far as the West Indies.

Thus in the old days of sailing vessels the enterprise of Americans gave them a high record upon the seas of both hemispheres.

With the advent of steam and the new conditions established, and with her merchant marine ruined during the war, America was at a great disadvantage in the race for commercial prosperity. The general feeling of the country was opposed to the granting of subsidies. Great Britain, on the other hand, has strained every nerve to attain supremacy on the ocean. As iron and steel ships have come to be the standard, the advantage in cost of building has been distinctly hers. In addition to this, the government has been lavish in its subsidies, and the White Star, Cunard, and Inman ships on the Atlantic and the Royal mail lines on other oceans testify to the results of this policy.

The English ship companies have also adhered to the English scale of compensation in their salary and wage lists. An important economy is doubtless obtained in this division of expense, as compared with the higher salaries which prevail on our side of the ocean. The English shipbuilders have reached their highest point in such ships as the City of Paris and City of New York. For some time past these ships have figured as record breakers on the Atlantic passage.

We elsewhere describe the ceremonies which attended the transfer of the New York, formerly the City of New York, to the American flag. The United States have, by a law destined to have far-reaching consequences, acquired the Inman steamships as the basis of an American line. Officered by Americans, the New York and Paris, marking the highest development of the English shipbuilder's art, are now to try their prowess under the American flag. It will be interesting to see how the new auspices will affect the records of these ocean racers.

The general provisions of the new law under which the transfer was made we give elsewhere. One of the most interesting provisions is the one calling for the construction of American ships. Under the new law, in whose passage all political parties united, the new American line must build American ships. Already the contracts for two ships are awarded. The typical American shipbuilding firm, who have received the contracts, will do their utmost to surpass the New York and Paris. The transatlantic record will hereafter be international in character.

The awarding of bounties or subsidies is provided for in the new law. This is not done on any theory that might raise a political issue. The ships are subsidized as part of a naval reserve. The New York and the Paris are specially built for such use. The new ships will also be of the same character. Fitted out with a main battery of twelve six inch rifles, besides an adequate secondary battery, the New York and Paris will be of great value in time of war. The history of modern warships in their practice and service cruises is one story of troubles. The speed falls below their rating, their boiler tubes leak, and all kinds of difficulties seem to befall them. But in ocean steamships the highest efficiency of engines, ship, and crew is maintained as a matter of profit. The ship must work up to high pressure always and must always be in the best possible condition. The competition will now be hotter than ever. In the ships of the American line the United States will have war vessels which even in action with armored ships might develop unexpected capacity. As commerce destroyers they will be very effective. The exploits of the Alabama during the civil war may be repeated on an enemy's commerce, and ocean tramps may be captured *ad libitum* by such ships as the American line will hold ready for service.

The batteries for the ships will be kept in readiness for instant transfer to the decks and tops of the vessels; the vessels will be always in the best possible condition. We may not only look upon the great development of American shipping which is now to be brought about as a most important effect, but we must also remember that at nominal expense the American navy is to be increased by nearly ten thousand tons.

The enrollment of coasters for possible service in the navy has been in active progress for some time. On the great lakes a movement in the same direction has taken place. The total tonnage of American commerce is already very large. In the addition thereto of the American line it receives a new type of vessel and a most important accession. This is precisely the type which has been lacking. The epoch is a well defined one, and its best feature is that politics did not appear in it. It is the work of the nation, not of a party.

Hard and Soft Phosphates.

At the last annual meeting of the American Association of Official Agricultural Chemists, Mr. N. T. Lupton referred in his presidential address to the immense phosphate beds in the southwestern part of Florida. Two winters ago a visit was paid to some localities where deposits are found, and samples were collected for analysis. They were of two varieties, which may be called hard and soft. The hard variety consists of bowlders of moderately hard rock, some of immense size, cemented together with white clay. A white and friable mass resembling kaolin is occasionally found. This is probably produced by the natural disintegration of the hard rock by rolling, attrition, or concussion. The deposits vary in thickness. A depth of 20 or 30 feet is not uncommon, and even a thickness of 50 feet has been found. As some, especially foreign, manufacturers object to buying phosphates which contain over 3 per cent of oxides of iron and aluminum, large quantites of these materials have accumulated at the mines. A few manufacturers, aware of the agricultural value of South Carolina floats, have established mills in Florida for pulverizing these soft aluminous deposits, which are sold to farmers for use without conversion into soluble phosphates. Experiments are now in progress on the Alabama Experiment Station, under control of the chemist, to determine the chemical composition and agricultural value of these soft phosphates when used alone with cotton seed and with cotton seed meal. If decomposing organic matter, as is believed, renders insoluble phosphates available as plant food to any considerable extent, Mr. Lupton thinks that the question of cheap phosphates will be solved, and that the American farmer will be enabled to purchase fertilizers at a much less cost than at present.

Lithia Waters.

It is one of the curious developments of modern medicine that remedies largely used by practitioners for years are suddenly shown to be lacking in the powers generally attributed to them. For years the profession has used lithia water in various diseases, with the idea that the results obtained were due to the comparatively small quantity of lithia present in solution. Those physicians who examined the subject closely speedily concluded that the greater part of the benefit derived by patients from so-called lithia waters depended rather on the large amount of pure water ingested than upon the lithia contained in it. In other words, the pure water practically flushed the body of impurities. These conclusions were still further supported by the discovery on analysis that one of the widely advertised lithia waters, indorsed by a large number of misguided persons, was only a pure water, with practically not a trace of lithia in it. Still more recently, Haig has told us that while lithia speedily combines with uric acid in a test tube, in the body it has a greater affinity for the acid sodium phosphate in the blood, and combining with this leaves the uric acid untouched. Lithia waters should be used, not for their lithia, but for their purity, and the results obtained placed to the credit of the flushing of the system, not to the lithia.—*Therapeutic Gazette.*

Natural Gas at Geneva, N. Y.

Mr. S. K. Nester, maltster at Geneva, has just successfully completed sinking a well on his premises and from which he has obtained an enormous flow of natural gas. He will use it throughout his immense plant, and the New York Central Iron Works Company, manufacturers of the celebrated Dunning steam and hot water heating boilers, have secured the first contract for the use of the gas, to be used for operating and lighting their entire plant.