CHANGES IN THE IRON-CLADS.

It will be a gratification to those members of the press who are in the habit of thundering their indignation at the lack of enterprise on the part of the Government, to learn that the recent experience before Fort Sumter has been valuable to us, inasmuch steps are being taken to rebuild certain portions of the iron-clads now on the stocks and afloat. The 11-inch turrets of the *Roanoke* are to be clothed with three additional inches of iron, in (as we are informed) solid plates. A space is left between the original turret and the addition thereto, which is to be filled with some fibrous substance; the particular value of this last feature is not apparent. The *Roanoke's* sides are clad with 4½-inch iron on the old hull; whether this thickness of iron is sufficient to be comparatively invulnerable is extremely questionable. The query suggests itself that if 11 inches of iron, disposed in the strongest manner to resist assault, are insufficient, what will become of 4½ inches of iron on plane surfaces? The *Mound City*, so says the telegraph, received a shot through her 2½-inch solid plating, which passed through both sides of the vessel, in all five inches of iron. We do not learn that any change is to be made in her construction.

The *Onondaga* at Greenpoint, N. Y., the battery built by Mr. Rowland for the contractor, Mr. George Quintard of the Morgan Iron Works, is undergoing very important changes in her plan and construction. This vessel had an armament of 4½-inch iron plates fastened directly to an iron hull without wooden backing of any kind. It is now intended to place 12 inches of wood over the 4½-inch plating, and to line this wood on the outboard side with a plate 1-inch thick. The wood will be of oak; 9 inches of it will be laid with the grain at right angles with the ships length, and the additional 3 inches will consist of planking. The turrets (*Monitor* plan) are also undergoing a change, so we are informed; and it is thought that these improvements will add materially to the effectiveness of the ship. No through bolts will be used in fastening on the wooden facing of the *Onondaga*, but the armor will be suspended, as it were, from the deck. This plan has also been recommended for the turrets of the *Monitor* batteries.

It is also said that a partial revolution has been effected in the Ordnance Bureau of the Navy Department, in consequence of the failure of the attack on Charleston, and new instructions have been issued respecting the armament of the iron-clads, not only of those at Port Royal but of those now building, and also respecting naval ordnance generally. "The Dahlgren guns are to be removed and an entirely new style of 13-inch gun, using seventy-five pounds of powder at a load, is to be substituted; this is to be done before the attack on Charleston is renewed. Fort Sumter may be effectively bombarded at a much greater distance by the new guns than by those of the Dahlgren pattern. The new guns are now in process of construction, but it is believed several weeks will elapse before they can be put into a sufficient number of *Monitors* to permit a renewal of the attack on Charleston."

We do not give these latter items credit; the former—concerning the changes in the construction of the iron-clads—we know to be correct. It is at all events an encouraging sign to see the Government at last waking up and taking a step in the right direction.

PAINT FOR IRON SHIPS.

Steamships composed mostly of iron, and covered merely with iron plating on wood, are fast superseding entire wooden vessels for mercantile and war purposes. But iron vessels are defective in one important point. When in service for a comparatively short period of time, their bottoms become covered with weeds and barnacles to such an extent as to cause great resistance to their progress through the water, and a considerable loss in their speed is the consequence; this amounts to about one mile per hour, during every month they are in service, hence they require to be frequently put into dock for the purpose of cleaning and painting them. It is stated by men of experience in such matters, that when iron vessels enter warm-fresh-water rivers, all the shell-fish which may have been adhering to them drop off and their bottoms become quite clean. But as most shipping ports are situated in bays of salt water, this fact affords no great comfort to the proprietors of iron ships. The great object for such vessels has been to obtain some composition, like a paint, which, when applied to them, would exert no chemical action upon the metal, and yet would be as effectual as copper sheathing on wooden vessels, in keeping the bottoms free from shell-fish and seaweed. At the bad is the common paint used for iron steamers, but it is not a very efficient protective, and many other paints and compositions have been tried, but hitherto with no very gratifying success, so far as we know. A composition has at last been discovered, which, it is said, answers all the requirements. At the general meeting of the Institute of Naval Architects, lately held in London, W J. Hay, professor of chemistry in the Royal Naval College, Portsmouth, England, described the paint, and related that it had been tried with other compositions since 1857. It consists of the oxide of copper boiled in linseed oil. A sub-oxide of copper is roasted until it has absorbed sufficient oxygen to become black oxide; then it is reduced to powder and boiled in linseed oil until it assumes a puce color. It should be of moderate thickness when applied. The armor-clad frigate, *Warrior*, was coated with this paint, and after she had been nine months in service, Professor Hay stated that, when docked, no signs of oxidation were obserable in her plating, and her bottom was comparatively clean.

THE MANUFACTURE OF CARRIAGES.

Within the past few years the manufacture of fine carriages has become one of our greatest industries. At New Haven and Bridgeport (Conn.), Newark (N. J.), and in this city there are large carriage factories, employing in the aggregate thousands of men. With a desire to lay before our readers some knowledge of the extent of mechanical details of this branch of business, we have recently visited some of the largest establishments in this city, and were somewhat surprised to find how little of the work, comparatively, is done by machinery. In the large factory of Messrs. Brewster & Co., on the corner of Broome and Mott streets, 225 men are constantly employed in turning out carriages of every style and description, from the light trotting buggy of the sportsman, to the elegant brougham for the Central Park. Most of the work is done by hand, it being found impracticable to employ machinery to any great extent, as the styles change so continually, and the quantity of work of a stipulated kind is so small that the automatic exactness with which tools reproduce patterns is of no avail. In managing such a business the proprietors naturally seek out that system which is best adapted to produce the most perfect and uniform style of work. All the foremen in the workshops of Messrs. Brewster & Co. are given, in addition to their regular salaries, an interest in the business, and the amount of profit they derive depends entirely upon the fidelity and business talent which they display. The artisans also work by the piece, and their earnings depend upon the skill they evince. Each man who makes a wheel or other part of the vehicle puts his mark upon it, and if it fails through any defect of his workmanship, the job is returned to him to be repaired. It will thus be seen that each man is his own "boss," and has every incentive to do his best.

Of late years a large foreign trade in carriages has sprung up in this country, principally with Prussia and other portions of Germany, and in our own country the popular taste as well as the demand has greatly improved within the past few years. The upholstering and leather work of carriages is now very thoroughly done, and we are informed that in the article of enameled leather our American manufacturers are fast excelling all foreign competitors.

One fact in regard to Messrs. Brewster's carriages is worthy of mention. This firm sent a large number of their carriages to the Great Exhibition in London, last year, and the leather work was especially admired; all the iron work about the dasher being neatly covered, was much commented upon. At the close of the Exhibition all the leather work was cut and slashed with knives by envious Britons, who declared that it was machine work, and, consequently, not entitled to any consideration. This very fraternal demonstration was, no doubt, satisfying to the perpetrators, yet its effect has not been to stop the business.

VALUABLE RECEIPTS.

HARD CEMENTS.—The following cement has been used with success in covering terraces, lining cisterns and uniting stone flagging:—Take 90 parts by weight of well-burned brick reduced to powder, and 7 parts of litharge, mix them together and render them plastic with linseed oil. It is then applied in the manner of plaster; the body that is to be covered being always previously wetted on the outside with a sponge. When the cement is extended over a large surface it sometimes dries with flaws in it, which must be filled up with a fresh quantity. In three or four days it becomes firm.

TURKISH CEMENTS.—The Turks use common red earthenware pipes with socket-joints, to convey water from springs to reservoirs and fountains. They make and use mortar and cement as follows:—*Mortar.*—Fresh-slacked hydraulic lime, one part, by measure; chopped tow sufficient to mix into the consistency of ordinary hair mortar. The ingredients are mixed dry, then well incorporated by the aid of water; this mortar is used fresh. *Cement.*—Fresh-slacked hydraulic lime, one part by measure; pounded brick finely sifted, half a part by measure; chopped tow as above. The whole is mixed with oil, in place of water. The earthenware pipe-joints are made water-tight with this cement.

PLASTIC MATERIAL FOR DECORATIVE ORNAMENTS.—Take five parts of good whiting and mix with a solution of one part of glue. When the whiting is worked up into a paste with the glue, a proportionate amount of turpentine is added. In order to prevent its clinging to the hands whilst the turpentine is being worked into the paste, a small quantity of linseed oil is added from time to time. The mass may also be colored by kneading any pigment that may be desired. It may be pressed into molds, and used for the production of bas-reliefs, &c. It may also be worked by hand into models for sculptors and architects, during which operation the hands must be rubbed with linseed oil; the mass must be kept warm during the process. When it cools and dries (which takes place in a few hours) it becomes hard.

THE PATENT OFFICE REPORT FOR 1861.

In consequence of the suspension of the project for printing the patents in full, under the law of 1861, it became necessary to resume the publication of the yearly volumes of Reports. The last volumes issued were for 1860. The resumption was only begun a short time ago, and the volume for 1861 is now in course of preparation. The drawings are being engraved by Messrs. E. R. Jewett & Co., of Buffalo, N. Y.; and from some proofs which we have seen, we can say that they will be splendidly executed. If all the contractors for Government work would manifest but a tithe of the fidelity that is shown by the official labors of the above-named artists, the people would indeed be fortunate.

Enterprising Thieves.

There is a bad set of fellows about the Brooklyn Navy Yard. Not content with stealing $30,000, some time ago, from a paymaster there, some thieves actually carried off the safe from one of the gunboats. We expect to hear shortly of the freebooters' entry to the machine-shop and of the mysterious disappearance of the 100-horse engine therein or a lathe or two. The matter is becoming serious. A watchman inspected the operation of carrying off the safe and innocently supposed it to be "all right." Sagacious watchman! We suggest that a strict guard be kept over the receiving-ship, *North Carolina*, lest some person or persons take a fancy to her and the nation be deprived of her valuable services.

AT Black Creek (Canada West) oil region a sublime spectacle was lately witnessed. The creek had got obstructed, and the oil collecting on its surface was set on fire, when immediately the whole creek was in a flame, catching the trees upon its banks and doing much damage. For rods, it is stated, the creek appeared as a boiling cauldron, darting sheets of red flame high in the air to an altitude of nearly fifty feet.

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