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INVENTIVE GENIUS AT THE SOUTH.

In our last number we briefly discussed the importance of encouraging inventive genius to support the military and naval powers of the country. We have recently noticed an extract from a secession journal stating that the ingenuity of southern mechanics had, thus far, proved itself unequal to the demands of the crisis. We are by no means surprised at this result. We have long known that the great bulk of mechanics and inventors were found north of the line, and that three-fourths of all the valuable inventions patented in this country are made by northern inventors. Many have been disposed to use this argument to depreciate Southern skill in the arts, and thereby draw comparisons between the two sections unfavorable to the South. Now, while the fact itself is fully established by the records of the Patent Office, still we have never been able to favor the motive that has stimulated its use. It is a spirit of aggrandizing sectionalism which has aided very much in weakening the cords of sympathy and good fellowship between the Northern and Southern States. The people of the South have been devoted mainly to the production of four great staples, viz., cotton, rice, sugar and tobacco, which have been sources of great national wealth, and have paid no considerable attention to mechanical pursuits. They have been content to pursue their own industries as most profitable, and, as a consequence, they have shown but little skill, comparatively, in the mechanic arts. They have been satisfied to produce their principal staples, and all this time have expended thousands and thousands of dollars at the North to enrich our mechanics and manufacturers, who have, no doubt, supplied them with engines, agricultural implements, shoes, coarse clothing, &c., much cheaper than they could have done it for themselves, and far cheaper than the same materials could have been supplied from any European country. We are unable, therefore, to sympathize with that spirit which we have seen in some sections to belittle Southern mechanical enterprize. It seems to us neither just nor fair. In the prosecution of this struggle against the rebellion the loyal States have had control of the great mechanical power of the country, as well as that of the entire navy. Supposing all these advantages had been at the disposal of the Cenfederates, who believes that they would not have made more impression upon us than we have upon them? Considering all the disadvantages under which they have labored, it must be confessed they have shown a wonderful energy in conducting their unholy crusade against the government, and should the war continue long it must tend greatly to develop the ingenuity and multiply the mechanical resources of the seceded States. With the blockade rigidly enforced, and with all their sources of supply cut off, they are thrown upon their own resources entirely, and, as necessity is the mother of invention, they will develop their latent powers and bring them into use, thus rendering them more and more independent of northern mechanics and manufacturers. This is a fact which must be patent to all who think, and nothing is gained by trying to conceal it.

THE ERICSSON BATTERY.

The steam battery designed by Capt. Ericsson, which was fully described on page 331 of our last volume, is rapidly drawing to completion. The lower iron portion and the wooden part of the upper portion of the hull are finished, and the latter has received four of the six iron plates upon its sides. The propeller, the rudder and one stratum of the iron turret are in place, and the vessel will soon be ready to be launched.

Iron-plated vessels could be made of any size, however small, if the thickness of the iron plates could be varied with the size of the vessel, but as plates must be at least 4½ inches thick to resist solid shot, only a very large ship will float under the enormous weight of this iron armor. The narrow ends even of large ships, have not sufficient buoyancy to sustain two 4½-inch plates upon their sides, and they are consequently left unplated, the armor being applied only to the midship sections.

On account of the unwieldy character of large vessels, the large amount of wealth thus concentrated in a single risk, and, more important still, the great depth of water required for their navigation, it has been considered very desirable from the beginning to construct iron-plated vessels of smaller size, and many plans have been suggested for effecting this. One of the earliest of these contrivances was the erection of an iron-plated tower or turret upon a small vessel, the sides of which should rise very little above the water. This plan has been very extensively discussed in England by societies and in the mechanical papers.

Capt. Ericsson's battery is a modification of this turret device. It is an iron vessel 174 feet long, 41 feet 4 inches wide and 11 feet six inches deep. The deck is flat and the sides are perpendicular to the depth of 5 feet, at which point there is a horizontal projection inward all around the vessel, and the sides then incline downward at an angle of 51° to the vertical line, meeting a narrow and perfectly flat bottom. In the middle of the deck is the circular turret. This is 20 feet in diameter and 9 feet high, formed of 8 one-inch plates of wrought iron bolted together. The turret is to contain two very heavy guns—either 11 or 12-inch bore—and will revolve for the purpose of pointing the cannon.

The successful operation of the devices for supporting and turning the turret appears to us more doubtful than that of any other portion of this battery. When not in action the turret rests with its edge upon the deck of the vessel, but when it is to be turned, its weight is principally transferred to a central shaft 10 inches in diameter, standing in a massive cup which is bolted to an iron bulkhead extending across the vessel. The cup rests upon a large metal wedge, and is raised by driving with a heavy sledge against the wedge, which is then held in place by a screw extending forward from its thinner end. This raising of the cup also raises the shaft so that the latter will support the principal portion of the weight of the turret, the lower edge of the turret resting lightly upon the deck. The turret weighs 140 tuns, and while it is thus hung upon a central shaft, it must be constantly turned to point the cannon, and it is subjected to the concussions not only of its own heavy guns, but also to the battering of the enemy's artillery, to receive which it is being expressly constructed. Several parts must be made sufficiently strong to withstand the strain of this great weight and jar; the cup, the fastenings of the cup to the bulkhead, the bulkhead, the fastenings of the bulkhead to the sides of the vessel, the shaft, and the supports of the turret upon the shaft. If the constructors succeed in securing all these connections so that they will withstand the immeasurable shattering force to which they will be subjected, it will furnish an extraordinary proof of the thoroughness with which our mechanicians do their work.

The plan of placing an iron turret upon a low vessel has such manifest advantages that we trust it will not be hopelessly abandoned even if some of the details devised by Capt. Ericsson should fail, for if the attention of our inventors is directed to the subject, any little mechanical difficulties of this sort would doubtless soon be overcome by simple and efficient arrangements.

Perhaps Capt. Ericsson himself may modify these plans for turning the turret. Whatever may be the success of these details, the grand features of this invention it seems to us belong to that class which incorporate themselves permanently into the arts. The projecting upper portion of the hull, by which the lower portion, as well as the rudder and propeller, are so perfectly protected with so shallow a depth of iron plates, will probably be adopted henceforth in all small iron-plated vessels.

PROGRESS OF COLOR-CHEMISTRY.

The arts are divided by some writers into two general classes—the useful and the ornamental; but distinctions of this character are not always correctly made. Thus the art of coloring as applied to textile fabrics has been classed among the ornamental as contradistinguished from the useful; but this is certainly an erroneous classification. The Creator of the world has not garnished the fields and forests with brilliant colors for the simple purpose of exciting pleasing emotions in man, but also for the purpose of enabling him to distinguish between different objects. The art of coloring, therefore, embraces both the useful and the ornamental.

As applied simply to printing and dyeing, it has been ranged under qualitative chemistry, but in the present day it is vastly more expansive. Latterly, color-chemists have directed their chief efforts to synthetical chemistry in the manufacture of new artificial coloring compounds. By the old modes of operation, infusions of flowers, roots and woods were chiefly used to color cloth, but of late the mineral world has been the favorite field of the chemist, and from radical colorless substances compounds are now produced which impart hues to the products of the loom, rivaling in brilliancy the colors of the flowers. As usual, France has attained the highest distinction in the manufacture of such colors, conspicuous for which are MM. Renard frères and Franc, of Lyons. We have exposed sample of their aniline red, crimson, purple and lilac colors—printed and dyed cotton, silk and wool—to solar light, for the past two months without injury to their permanency. They surpass in brilliancy those obtained from cochineal and orchil, and they appear to be more durable than the latter and as fast as the former.

A new aniline color, called *Bleu de Paris*, has lately come into use for coloring silk and fine wool. It is made by heating sixteen parts by weight of aniline with nine parts of bichloride of tin, in a sealed tube, exposed for thirty hours to 180° of Centigrade. Aniline purples, reds and lilacs, mauves, solferinos, fuchsine, have been described in former volumes of the Scientific American, and may now be passed over.

A green color, called emeraldine is obtained by mixing a hydrochloric acid solution of aniline with chlorate of potassa, but it is dull and not suitable for dyeing lively tints. Some new chemical combination may render it as brilliant as the gem after which it has been named. A new beautiful yellow product for dyeing silk is obtained by submitting dinitraniline to the action of sulphide of ammonium. Picric acid, which colors a most delicate primrose shade on silk, used to be obtained from that expensive substance, indigo, but it can now be manufactured from carbolic acid, by first boiling it in strong nitric acid, then diluting it in boiling water. A solution of picric acid and the sulphate of copper form a beautiful yellowish green.

Almost every color that can be named is now obtained from products of coal tar. The progress in this branch of chemistry during the past year has been very gratifying to the chemist, but the manufacturer, printer and dyer consider that these artificial colors are still too high in price.

Much attention should now be devoted to improve the processes of their manufacture so as to reduce their expense and thereby obtain cheaper chemical products.

The Importations of Saltpeter.—Notwithstanding the war a smaller amount of saltpeter was received in this country in 1861 than during the previous year. In 1861, 59,758 bags were received at Boston, and 20,-190 at other ports—a total of 79,847 bags. In 1860, 66,332 bags were received in Boston, and 16,168 at other ports—a total of 82,500 bags. This does not include, however, the amount received upon government account.