

mandie, the *Couronne*, the *Gloire*, the *Magenta* and *Solferino*, are some of the names which dignify these children of the sea. They had a trial trip recently and Neptune was so indignant at the affront put upon him by the presence of such craft, that he tossed them, battered them, beat and bruised them so sorely that they were glad to find refuge in Brest—a French naval station. They were totally unfit for sea-going purposes, as indeed all vessels of that class are.

The iron clad navy of this country is composed at present of monitor vessels of varying tonnage. There will be launched within a few days one of the new ocean monitors—the *Dictator*; and there is every reason to assert that she will be a success as regards sea-going qualities; speed she will certainly possess. It is not too much to assert that no iron-clad ship can hope to weather a gale as easily as a wooden vessel; the lack of buoyancy or "life," so to speak, and the unwieldiness which attaches in a degree to all of them, militates against obtaining the best qualities of wooden vessels. But it is not unreasonable to declare that with the absence of the extensive overhang forward and aft, the projecting side-armor and favorable models, the two ships, *Puritan* and *Dictator*, will carry the flag of the Union in triumph over every obstacle, national and physical. Their well-known qualities for offense and defense—the turrets, heavy armor, guns, and comparatively light draft—render them most formidable adversaries; while the depth to which they are submerged, or, rather, the small portion visible above water, leaves nothing to be attacked that is vulnerable.

So far the monitors have been comparatively uninjured. They have been raised out of the water by torpedoes and have gone on with their duty unharmed; they have resisted showers of shot and shell which would have sunk the whole English and French fleets, if exposed at the same range, and in a few hours have resumed their duty. The Parrott guns have carried further than five miles; they sent tidings of their prowess unto the governments of all Europe belligerently disposed toward us. What is the consequence? Napoleon is complacent; it is said he has seized the French rams building for the rebels: Palmerston and Russell are benignant; they detain the rebel iron-clads. Why? The nation which makes Parrott guns and builds "iron-clads that are iron-clads" is not one to be despised, but to be placated, to be flattered, to be friendly with; consequently we are to have no foreign war, and the rebellion is to be crushed.

THE UTILITY OF INVENTORS TO MANKIND.

When Fulton first moved away from the dock with the *Clermont*, the skeptical crowd who watched his success doubted the evidence of their own eyes, but at length broke out in unrestrained applause at his triumph; which in that age of the arts and sciences was great indeed. From that day until the present time the efforts of mankind have been put forth to accomplish the hard work of the world by sinews that never tire. Apt indeed are the automatons which now clothe the naked, feed the hungry, shelter the houseless, and whirl the traveler at a giddy speed over plains or seas. All the steam engines have been perfected only by patient effort, mental and bodily; all the looms run themselves, so to speak, only by reason of the intelligent and untiring exertions made by practical men; and cheap clothing, cheap traveling, cheap food, cheap everything, in fact, results from the introduction of useful machines.

Inventors have been, and are still busy; let them be still more active. Fame writes the names of successful ones high up on her scroll, and the cause of humanity, of mercy, of all virtues and qualities, is aided and countenanced by the art of invention. As witness the safety-lamp of Sir Humphrey Davy, and the circulation of the blood by Jenner; for this latter, although more properly a discovery, was yet the result of patient thought and investigation. In more modern times the name of Morse, as connected with the telegraph; of Parrott, associated with his rifled ordnance, of Timby as the originator, and Ericsson as the practical developer of the system of iron-clad batteries, will all be gratefully remembered by posterity as men who by their talent, energy, and patriotism, achieved great results for the nation.

With such a record before him, let no aspiring young man waste time and money on perpetual motions or other whirligigs, which are to the art of useful invention what the philosopher's stone is to chemistry—the shadowy and illusive thing that evades every attempt to grasp it, and ends only in sorrow and inexpressible misery to all concerned. Take hold of realities, oh! ye who aspire to wealth and honor! Grasp not the wind, but seize upon some arduous task now performed by manual labor, and reduce it to the sphere of machinery. Wrestle with possibilities, not intangible things; and fame and fortune, which now seem afar off, shall come at your nod and beck, as the slaves of old obeyed the rubbing of Aladdin's ring.

VINEGAR AND ITS ADULTERATIONS.

Cider vinegar has always been preferred by our people on account of its wholesome properties; and at one period a sufficient quantity of it was manufactured to supply the public demand. This is not now the case, as most of the vinegar which is at present consumed in cities is made from high wines (whiskies) and molasses. Vinegar may be made by several different processes and from a great number of substances. It is made from apple juice by the slow process of fermentation, but from high wines or liquids containing alcohol it is manufactured by a quick process, consisting of exposing warm high wines mixed with water to the atmosphere, while passing in thin streamlets over a very extended surface of beech-wood shavings. By this mode of operating, the alcohol combines chemically with a certain quantity of oxygen and forms acetic acid-vinegar. This is the system which is now most extensively followed in vinegar manufactories. Any substance which contains sugar may be converted, by fermentation, into alcohol and finally into acetic acid. At present, when high wines and substances containing sugar, such as molasses, are so high in price, possibly the vinegar which is made from these may be adulterated by sulphuric acid, before it reaches the purchaser. It is well known that when the price of any article becomes high, adulteration is practiced to a much larger extent with it, because the addition of a small quantity of a cheap foreign substance largely increases the profits. As a small quantity of sulphuric acid added to vinegar permits the use of a large quantity of water, this acid has been frequently and extensively used for adulteration. It has been asserted by manufacturers of vinegar that as the acetic acid made from weak wines, beer, malt, and molasses, was liable to putrid fermentation and decomposition, some sulphuric acid was necessary to counteract this tendency and prevent it from becoming turbid and vapid. The least quantity employed for this purpose was about one gallon to one thousand gallons of vinegar. But when the manufacture of vinegar is properly conducted there is no necessity for adding any sulphuric acid. The mode of detecting such acid in vinegar is described by Dr. Muspratt as follows:—"If the vinegar be suspected to contain a considerable quantity of sulphuric acid, make a solution of sugar and heat it to 200° Fah.; if a drop of the suspected vinegar is added to this, it will carbonize the sugar, causing a blackish spot to appear at the point where the vinegar came into contact with the saccharine solution. This happens when the vinegar contains one three-hundredth of its weight of sulphuric acid; when it contains from six-hundredths to eight-hundredths of its weight of this acid, it produces a greenish spot in the solution." But the principal test for this acid in vinegar is the use of a soluble salt of baryta, such as the chloride. When this is added to vinegar containing sulphuric acid, insoluble sulphate is produced, which falls down in a heavy white powder. Moderate quantities of good vinegar are beneficial in assisting digestion, but sulphuric acid does not favor digestion, and when taken in considerable quantities it injures the coating of the stomach. In every sense then, sulphuric acid is an injurious adulteration of vinegar and should not be permitted. Hydrochloric and nitric acids have also been employed for adulteration, but to such a limited extent that they do not invite public attention.

Vinegar made from pure alcohol and water does not possess the flavor of wine or cider vinegar, and

is therefore inferior to them for table use; but a little acetic ether added to it renders it agreeable. Raw spirits containing some fusel oil produce a more pleasantly flavored vinegar than refined spirits; hence a few drops of fusel oil added to rectified spirits, in making the wash for vinegar, improves its aroma. A little oil of cloves, or butyric ether added in the same manner improves its flavor. A very small quantity of cider vinegar gives a large quantity of whisky vinegar a pleasant flavor. An infusion of chicory is sometimes added to high wine vinegar, to give it the color of cider vinegar. Fancy or aromatic vinegars are sometimes used for the toilet, for fumigation and table use. A good aromatic vinegar is made by macerating cloves, rosemary, sage, nutmegs, caraway, peppermint, cinnamon and calamus, each one ounce, in two gallons of strong vinegar, adding a little tincture of camphor. In fact any of the essential oils, such as those of cloves, bergamot, lavender, &c., added to vinegar render it aromatic.

Uniform of Naval Engineers.

The following list will, if borne in mind, enable our readers to tell the rank of their engineering friends at a glance;—

CHIEF OF BUREAU OF STEAM ENGINEERING.—Center device, cross oak leaf, one inch long, embroidered in gold, with star seven eighths of an inch in diameter embroidered on the same, in silver.

FLEET ENGINEERS AND CHIEF ENGINEERS AFTER FIFTEEN YEARS.—Spread eagle, two inches between the tips of the wings, standing on oak leaves spread one inch and a quarter, all embroidered in silver in center of strap.

CHIEF ENGINEERS AFTER FIRST FIVE YEARS.—Center device, cross-spread oak leaf, with leaf at each end five-eighths of an inch in length, stalk of leaf placed three-eighths of an inch from end of strap; all embroidered in silver.

CHIEF ENGINEERS FIRST FIVE YEARS.—Same as chief engineer after first five years, except leaves at the end to be embroidered in gold.

FIRST ASSISTANT ENGINEERS.—Same as chief engineers, except that instead of the leaves there shall be one gold embroidered bar at each end, two-tenths of an inch wide, half an inch long, and placed four-tenths of an inch from the end of strap.

SECOND ASSISTANT ENGINEERS.—Same as first assistant, but no bars.

Our Sons Need Good Reading.

"I wish that my son had more of a taste for useful reading and study." Such is the father's frequent thought and observation. To interest their children in things that are beneficial, thus to save them from bad company and pernicious habits, is the constant aim of every true parent. One excellent means to this end consists in making the *SCIENTIFIC AMERICAN* a regular visitor at your dwelling. Let it be in sight on your book-case or table, and notice how quickly it attracts the young. Its pages are full of the most interesting, varied and useful information, the study of which insensibly excites the mind with a desire for more; and this desire, once fairly kindled, endures through life, expanding and ennobling the intellect. January 1, 1864, commences a new volume of the *SCIENTIFIC AMERICAN*: subscribe for your son, if not for yourself.

English Cutlery for the Rebels.

A large amount of cutlery in the shape of pocket knives and small wares of a similar nature has been, and possibly still is, manufactured in England for the rebel firm of Courtney & Tennant, of Charleston. Some of it was found on board the *Bermuda*, said vessel having been captured while attempting to run the blockade; one specimen is thus spoken of:—"On the large blade is an excellent likeness of Jeff. Davis, above which is the inscription, 'The Right Man in the Right Place,' and below, 'Jeff Davis Our First President.' The knife might have cost three shillings in England, but in the South it would have sold readily for as many dollars; a fact which goes to show in a small way the enormous profits to be made by running the blockade."

[In view of recent events some persons might be disposed to question the correctness of the inscription on the blade—the makers probably meant "the right man in a tight place."]