

the trip from New York to Boston, by the outside route, was 29 hours and 30 minutes, and those who are qualified to judge of the vessel pronounced her working admirable.

A meeting of the guests took place in the main saloon, after the trip, at which complimentary resolutions were adopted, and cheers given for Captain Fletcher. Among the guests were, W. H. Webb, Esq., Howard Potter, Esq., Wm. E. Everett, Esq., and Captain Ezra Nye. Mr. Sewall, the inventor of the condenser used, was also present. The cost of the vessel and machinery was not made public, but cannot be less than half a million of dollars. The guests will long have reason to remember the pleasant trip made by the *Constitution* and the bounteous hospitality of her proprietors.

INDEX OF WAR AND NAVAL INVENTIONS.

We are frequently asked to furnish descriptions of the various kinds of war implements which have been invented, and such as are now in practical use by the government. Nearly all the inventions which have been made and introduced into the War and Navy Departments have been published in the *SCIENTIFIC AMERICAN*, and for the convenience of inquirers we append herewith an accurately prepared list of subjects illustrated since the commencement of the present volume, (July 1st). In the former volume we illustrated a large number of war subjects, many of which have been introduced into the service.

Besides the illustrations presented, we have furnished a very extensive summary of useful information concerning the art of warfare, such as cannot be found in any other publication.

We have here a list of engravings comprising cannon, rifles, projectiles, war vessels, camp utensils and military equipments generally; in fact, all that is needed to prepare our soldiers and sailors to arm and equip in defence of our Union and the glorious flag.

This index does not include descriptions of many improvements which have been published in these columns, but only those which are accompanied with engravings to illustrate the inventions more fully.

- 1.—Privateer *Savannah*, in one figure, on page 4.
- 2.—Sigourney's Rifle Projectile, three figures, p. 5.
- 3.—Smith & Wesson's Breech-Loading Rifle, four figures, p. 8.
- 4.—Cochrane's Rifle Cannon Shell and Shot, two figures, p. 24.
- 5.—Bathe's Shields for Ships, two figures, p. 32.
- 6.—Hirchbuhl's Vent-Stopper for Cannon—Cannon and Gunner—one figure, p. 33.
- 7.—Rodman's Cannon Powder, one figure, p. 53.
- 8.—Gun Lock—Hillier's—with Pistol, two figures, p. 56.
- 9.—Electric Cartridges for blasting, six figures, p. 64.
- 10.—Parr's Camp Chest, showing table, dishes and tools, two figures, p. 65.
- 11.—Chinese Cannon—regular antique breech loader, one figure, p. 80.
- 12.—Map of Bull Run Battle-Field, one figure, p. 82.
- 13.—Chinese Jingall—small cannon—one figure, p. 87.
- 14.—Shrapnell Shell and Fuse, two figures, p. 88.
- 15.—Submarine Infernal Machine, found in the Potomac river, one figure—ship and machine, p. 101.
- 16.—Sawyer's Projectile, used at Fortress Monroe, two figures, p. 112.
- 17.—Machine for Rifling Cannon, showing the operation, in one figure, p. 113.
- 18.—Chariot Shield for Soldiers, with companies of soldiers marching behind the shield, two figures, p. 128.
- 19.—Stevens's Marine Battery and Iron-Clad Frigate, the parent of iron-clad war ships, three figures, p. 129.
- 20.—Target of a Crack Rifle Shooter, one figure, p. 132.
- 21.—Schubarth's Breech-Loading Rifle, showing cartridge lock, four figures, p. 136.
- 22.—Babcock's Spiral-Formed Cannon, five figures, p. 160.
- 23.—Spanish Rifled Cannon and Shot, in two figures p. 166.
- 24.—Slinging and Working Guns on Ships—Scott Russell's plan—in three figures, p. 168.

- 25.—Gault's Expanding Projectile, four blades expanded and "clear the way," three figures, p. 168.
- 26.—Russell's mode of building Iron War Ships, in eight figures, p. 176.
- 27.—Inside view of a new Gun Boat, one which has since done good service at Port Royal, one figure, p. 192.
- 28.—Army Spy Glass for measuring distances, two figures, p. 200.
- 29.—Jones's Angulated Iron War Ship, one figure, p. 225.
- 30.—Spear Projectile—Brown's—one figure, p. 225.
- 31.—Howe's Army Scale for weighing, two figures, p. 232.
- 32.—Canteen—Montgomery's—three figures, p. 240.
- 33.—Henry's British Prize Rifle, three figures, p. 244.
- 34.—Winslow's Semi-Steel Cannon, shot, shell and target, six figures, p. 273.
- 35.—Winslow's Bomb-Proof Armor for War Ships, four figures, p. 276 and 277.
- 36.—Rockwell's Combination Union Army Camp and Chest, tables, box, stove, &c., three figures, p. 280.
- 37.—Ball's Army Chest and Stove, Table and Box, three figures, p. 296.
- 38.—Ashold's Camp Stool, three figures, p. 296.
- 39.—War Steamer *Merrimac*, sunk at Norfolk, raised, and now covered with iron plates, and made into a Marine Ram, in one figure, full view, p. 304.
- 40.—Chinese Long Musket, one figure, p. 344.

TO OUR EDITORIAL BROTHERS.

We send a copy of this week's issue of the *SCIENTIFIC AMERICAN* to every newspaper published in the United States accessible to us through the mail facilities of Uncle Sam, and we take this occasion to thank our brethren of the press for their uniform courtesy toward us ever since we commenced the publication of this journal. Your friendly aid, thus cordially extended, has aided us materially. We acknowledge it with gratitude, and still further appeal to you to speak a good word to your readers in our behalf. To all such journals as publish our prospectus in their columns we shall send the *SCIENTIFIC AMERICAN* one year without an exchange.

Paging Account Books by Machinery.

John McAdams, of this city, is the man who has made the paging of account books by machinery a practical art. Ten years ago he invented his first machine, and he has been engaged since in making improvements upon it. After eight years' use, he happened one night to think of the plan for carrying down the leaves as they are successively paged, by means of a little revolving finger; and this slight modification very largely increased the capacity of his machine. On another page will be found an illustration of his machine, embracing the latest improvements. It is a beautiful piece of mechanism. We have seen it in operation, and can say that it works in a rapid and perfectly successful manner, paging the books with the greatest neatness and regularity.

COAL OIL, PAINTS, &c.—Our readers will find in our advertising columns the advertisement of Messrs. Reynolds, Devoe & Pratt, who are extensive importers and dealers in paints, oils, varnishes, colors, &c. We take much pleasure in speaking of these gentlemen as being in every way reliable and upright merchants of long standing, and who are probably the most extensive dealers in their line of business in the United States. They have issued a comprehensive catalogue of their goods with prices attached, as far as it is practicable to do so.

THE CALIFORNIA TELEGRAPH TARIFF.—The rates fixed from St. Louis are as follows:

First 10 words	\$4 25
Next 90 words (each)	36
Next 400 words (each)	24
Next 500 words (each)	18
After 1,000 (each)	12

These rates are in conformity to the act of Congress. From New York, Boston, and other Eastern cities, the usual rates to St. Louis are added.

THE second British great iron-clad frigate, *Black Prince*, lately made a trial trip, when she attained a speed of 17 knots per hour in smooth water.

NOTES ON FOREIGN INVENTIONS.

*Rolling Iron*.—J. G. N. Alleyne, England, has obtained a patent for applying two steam engines to operate the rolls in a rolling mill—the one set for operating the rolls in one direction, and the other for moving them in the contrary direction. In rolling iron into plates, or bars, or T and angle iron, it is necessary that the rolls should be moved with great rapidity to accomplish the work while the iron is hot. When the rolls are rotated in one direction, one engine is thrown off and the other thrown on for the reverse motion, so that each engine is alternately getting up speed and accumulating work in the fly wheel for the next rolling operation. The arrangement also obviates the necessity of toothed gearing for the rolls, an important advantage.

*Fixing Varnish on Glass*.—R. A. Brooman, of London, has applied for a patent to prevent lac and other varnish from cracking off when applied to glass, by simply applying paste made of rye flour to the glass first, then before it is quite dry laying on the varnish, which is afterward dried in a warm apartment.

*Reproducing and Varying Drawings*.—M. M. A. Huray and H. Leile, of Paris, have patented an instrument denominated a goniometroscope, by the aid of which patterns of flowers, lace and other small objects can be multiplied and reflected at any given angle, from a triangle upward. The instrument consists of wood, opening like a book. The two sides forming the case are hinged at the back, so that when required they will stand on end, the back being in a vertical position. The sides are each covered on the inside with a thin sheet of copper plated with silver, and burnished. These serve as reflectors, and the reflection is intended to be made in the very center of the pattern. A protractor—a half circle marked off in degrees—is secured at the top of one side of the case, at a short distance from the hinged back. By this the different angles can be readily found, the protractor being held firmly by a small holder, having a regulating screw on the other side of the case. Through each side of the case, near the opening part, there passes a vertical needle, having a head upon it. A screw is cut upon this needle, and it takes it into a thread in the hole of the case through which it passes. This needle is a little longer than the case, and by turning its head it can be made to enter the pattern and thus steady the instrument. When the angle is to be changed, or the instrument closed, the points of the needles are withdrawn into the case, by turning their heads. By placing a pattern or design to be copied for sewed muslin work, or for printing so as to enlarge it, the pattern is placed on the table between the leaves of this case, and it is reflected from its polished reflectors upon a piece of prepared paper set in proper relative position to receive it above. It is a convenient instrument for those engaged in enlarging intricate designs for manufacturing purposes.

*Opening and Closing Port Holes*.—C. Burn, London, has taken out a patent for opening and closing port holes of ships and forts in a rapid and easy manner, to prevent the entrance of missiles from an enemy and yet permit the quick firing of cannon from within. The port hole is covered with two doors, arranged like the upper and lower sash of a window, and then hung and balanced nearly in the same manner as a window sash, with a chain and weight. These two iron doors are set, the one to move in a recess in the ship's side (or in the wall of a fort), above the port hole, and the lower one into a like recess below the port hole. These doors are made of very thick iron, so thick that shot or shell can not penetrate it, and they are operated inside. Being balanced by counterweights, they can be opened and closed with ease and with great rapidity. Whenever a gun is discharged the port is at once closed, and when the gun is again loaded the port is at once opened and the gun discharged. The upper door is hung on chains, which pass over two pulleys on the lower door, to which they are fastened, and by this means the weight of one door balances the other, and they move simultaneously. The face of these port hole doors is angular, to deflect the shot.

COLONEL GOWEN, our enterprising countryman, has now succeeded in raising eight war steamers, one fifty-gun frigate, three corvettes, twelve gun brigs and several smaller craft, in the harbor of Sebastopol. All these have been raised entire and floated.