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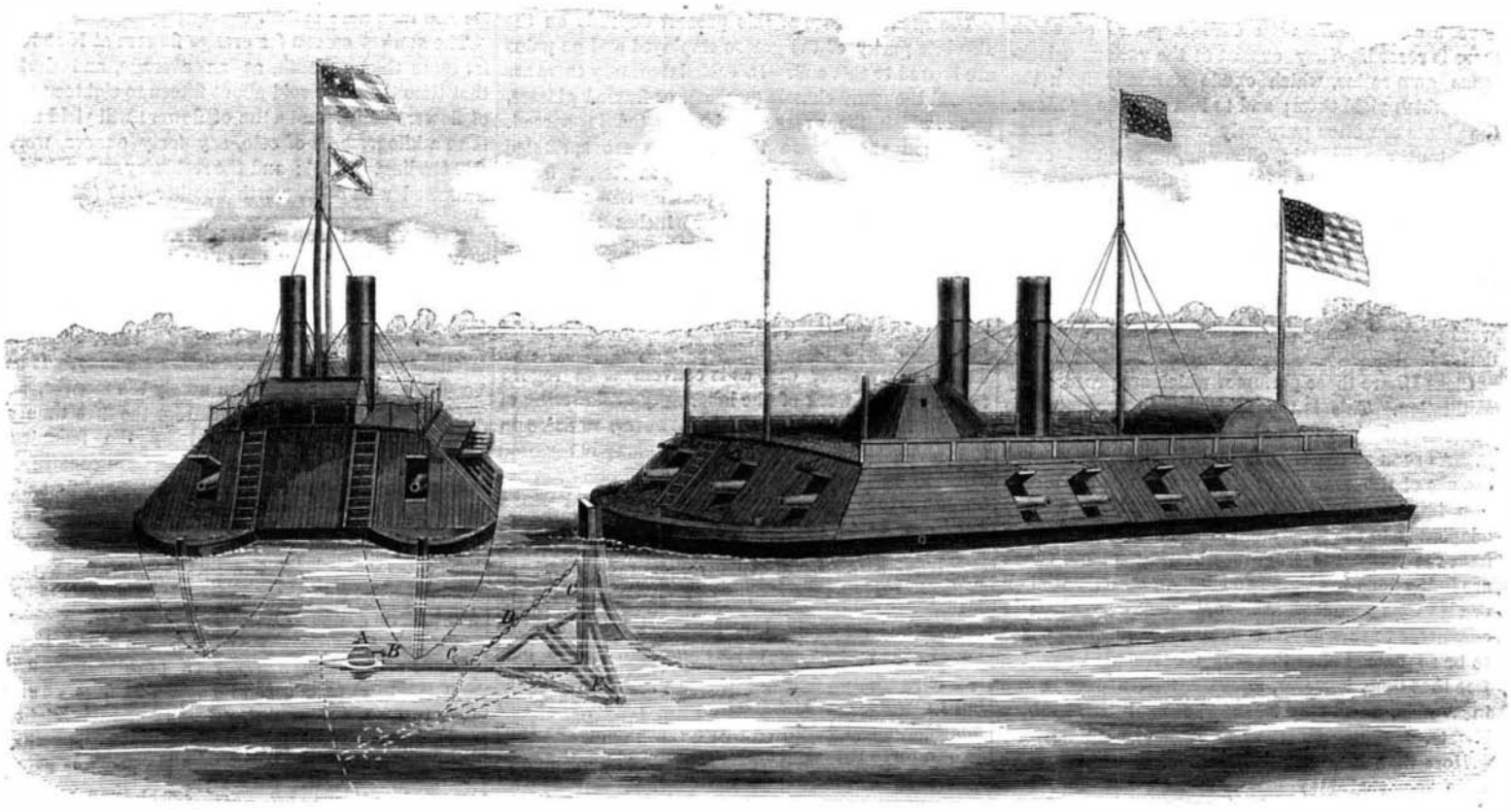
THE DESTRUCTION OF THE REBEL RAM "ALBEMARLE."

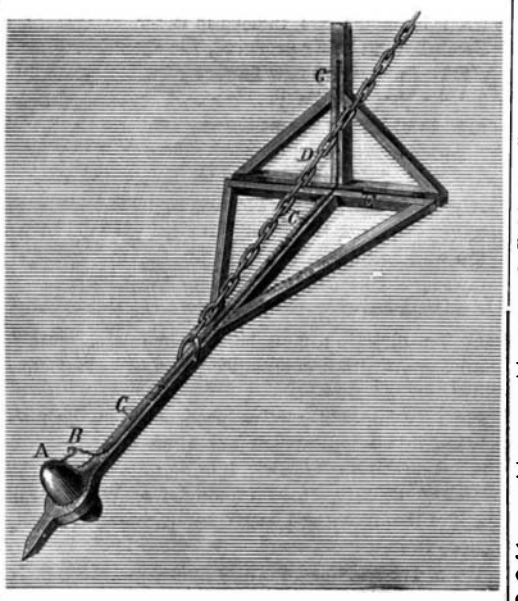
The appended article is forwarded by the inventors of the plan here illustrated:—

The ingenuity and daring of the gallant Lieut. Cushing, in the exploit which destroyed the rebel ram *Albemarle*, and rid the federal navy of its principal annoyance and the nation of a formidable and constant menace, has caused universal rejoicing among our own people and excited the admiration of the world. The writer of this article would not confess himself second to any in rejoicing at the deliverance, or in admiration of the brave and heroic conduct of the deliverer. Nor does due honor to him demand that the just meed of praise, or at least of recognition, be withheld from any other who may deserve it at the hands of his countrymen.

The reader will perhaps be surprised to learn that the plan adopted or invented by the adventurous Cushing for the destruction of the *Albemarle*, was one of the but recently "rejected proposals" of the Navy Department. Yet such is the fact. As early as August 9th, 1862, drawings and a description of a "Portable Submarine Battery," for the destruction of rebel gunboats and ships, combining the essense of Cushing's plan with some advantages, obvious on casual inspection, were submitted to the Navy Department by Lieut.-Colonel Geo. V. Rutherford, at that time Assistant Quartermaster-General of the State of Illinois, now a Colonel in the Quartermaster's Department at Washington. The Department decided that "the present state of naval warfare precluded the possibility of adopting this style of invention." How their decision has been approved by the results of Cushing's bold experiment the country knows, rejoicingly, and recognizes in it another instance of that hasty official judgement which frowns upon invention as impertinent innovation, and which would keep the world forever running in the ruts of old fogyism, but for the persistence and courage of genius which overrides all obstacles, and often by a single daring action refutes the learned objections and doubts of erudite officials and fossilized philosophers.

Hereto are appended copies of the correspondence of the inventor with the Navy Department, comprising an intelligent description of the "Battery," and the manner of its disposal by the "Permanent Commission." It is hardly necessary to add that the "ramming" "state of naval warfare," inaugurated from the first, seems to especially call for the "adoption of this style of invention," and that it was, indeed, that alone which suggested the contrivance.





QUARTERMASTER-GENERAL'S DEPARTMENT, SPRINGFIELD, Ill., August 9th, 1862.

SIR:—I respectfully submit to your consideration a plan for destroying the rebel gunboats or ships of war. The diagram explains itself, showing the manner in which a bomb or torpedo is to be carried under and brought up against the bottom of the hull of the vessel, where it may be discharged either by a galvanic wire and battery, or friction-primer and lanyard, properly protected from the water, by tube and air-tight casings, A being the torpedo; B the friction primer; C the supporting frame; D the elevating chain, and E the hinge or joint, which enables it to be raised or lowered. In order to appreciate its practicability it has only to be borne in mind that powder, exploded under water, has no downward, scarcely any lateral, but mainly a vertical expansion; indicating that a shell so exploded would be unattended with danger to the attacking vessel, unless from the falling fragments from the blown-up gunboat, which by proper experiment and precaution can be guarded against. I am impelled by no other motive than a desire to serve my country and the advice of scientific friends, in obtruding this upon your attention. I have only to add that I hold myself in readiness to superintend any experiment that it may be thought desirable to test the merits and efficacy of this machine. Very respectfully, your obedient servant,

GEO. V. RUTHERFORD,
Asst. Q. M. General, State of Illinois.

Hon. GIDEON WELLES, Secretary of the Navy, Washington, D. C.:

NAVY DEPARTMENT, August 19, 1862.

Lieut.-Col. G. V. RUTHERFORD, A. Q. M. General, SPRINGFIELD, Ill.:

COLONEL:—Your communication with drawings of your "Portable Submarine Battery," has been received. The appropriation made by Congress for experiments having been expended the Department has no authority to incur any expense in testing the merits of your machine. Very respectfully,

GIDEON WELLES, Secretary of Navy

NAVY DEPARTMENT, PERMANENT COMMISSION, March 31st, 1864.

SIR:—We have the honor to report that the commission has had under consideration and examination a plan of Mr. G. V. Rutheford for destroying gunboats or ships of war. The present state of naval warfare precludes the possibility of adopting this style of invention. Very respectfully, your obedient servants,

C. H. DAVIS,
Chief of the Bureau of Navigation.
A. D. BACHE,
Supt. U. S. Coast Survey.
JOSEPH HENRY,
Secretary Smithsonian Institute.

Hon. GIDEON WELLES, Sec. of Navy.

LECTURE ON PERFUMES.

We have received from Septimus Piesse, Ph. D., F. C. S., a copy of a lecture on perfumes, delivered by him before the Royal Horticultural Society, and we select from it the following extracts:—

THE THREE CLASSES OF PERFUMES.

Perfumes that are derived from plants may be, for the purpose of description, conveniently divided into three classes. Class I. are the most ancient, and have been in use from the earliest period of which there is record. They consist of the various odoriferous gum-resins, which exude naturally from the trees which yield them; and to increase the produce, the plants are often purposely wounded. The most important are benzoin, olibanum, myrrh and camphor. No less than 5,000 cwt. of these together are annually imported into Great Britain. Gum-resins form the chief ingredients in incense, and in pastilles. These odorous bodies are principally consumed in certain religious ceremonies, and from the early custom of burning incense upon the holy altar, our word perfume, from *per fumus* (by smoke), has been derived.

Class II. are those perfumes which are procured by distillation. This is the first step to separate the odorous principle from the material which contains it. As soon as the Greeks and the Romans learned the use of the alembic or still, which was an invention imported by them from Egypt, they quickly adapted it to the separation of the odorous principle from the numerous fragrance-bearing plants which are indigenous to Greece and Italy. An essential oil or otto thus produced from orange-flowers bears in commerce to this day the name of Neroly, supposed to be so named after the Emperor Nero. Long before that time, however, fragrant waters were in use in Arabia, as all may learn who read the Arabian Nights.

More than 200,000 pounds-weight of various ottos were imported into Britain in 1860, and valued at £180,000; to this must be added at least one-third as much again distilled in England. Of the imported articles enumerated, oils of lemon and bergamot, from the Two Sicilies, reached 128,809 pounds, valued at £57,054.

We now pass to class III. These are the purfumes proper, such as are used for perfuming handkerchiefs. It will have been observed, that hitherto I have not spoken of the fragrance from any flower, but only of those odors which are derived from either the leaves, the wood, the fruit, the root, or the seed of the plant. What we have now to say refers more particularly to the perfumes derived from flowers.

PROCESS OF ENFLEURAGE.

Contrary to the general belief nearly all the perfumes are not made by distillation, but by the processes of enfleurage or inflowering and by maceration or infusion.

The odors of flowers do not, as a general rule, exist in them as a store or in a gland, but they are developed as an exhalation. While the flower breathes it yields fragrance, but kill the flower, and fragrance ceases. It has not been ascertained when the discovery was made of condensing, as it were, the breath of the flower during life; what we know is, that if a living flower be placed near to butter, grease, animal fat, or oil, these bodies absorb the odor given off by the blossom, and in turn themselves become fragrant. If we spread fresh unsalted batter upon the inside of two dessert plates, and then fill one of the plates with gathered fragrant blossoms of clematis, covering them over with the second greased plate, we shall find that after twenty-four hours the grease has become fragrant. The blossoms, though separated from the parent stem, do not die for some time, but live and exhale odor, which is absorbed by the fat. To remove the odor from the fat, the fat must be scraped off the plates and put into alcohol; the odor then leaves the grease and enters into the spirit, which thus becomes "scent," and the grease again becomes odorless.

The flower farmers of the Var follow precisely this method on a very large scale, with but a little practical variation, with the following flowers: rose, orange, acacia, violet, jasmin, tuberose and jonquil. The process is termed, as said before, enfleurage or inflowering. In the valley of the Var there are acres of jasmin, of tuberose, of violets, and the other flowers named; in due season the air is laden with fragrance, the flower harvest is at hand. Women and children gather the blossoms which they place in little panniers like fishermen's baskets hung over the shoulders. They are then carried to the laboratory of flowers and weighed. In the laboratory, the harvest of flowers has been anticipated. During the previous winter great quantities of grease, lard, and beef suet have been collected, melted, washed and clarified.

The great success of this process depends on the absolute purity of the grease employed and no pains are spared to this end. In each laboratory there are several thousand chassis (sashes), or framed glasses, upon which the grease to be scented is spread, and upon this grease the blossoms are sprinkled or laid. The *chasse en verre* is, in fact, a frame with a glass in it, as near as possible like a window sash, only that the frame is two inches thicker, so that when one chasse is placed on another there is a space of four inches between every two glasses, thus allowing room for blossoms. Every chasse, or sash, is about two feet long by eighteen inches broad, as here seen. The flower blossoms are changed every day, or every other day, as is convenient in regard to the general work of the laboratory or flowering of the plants. The same grease, however, remains in the chasse so long as the particular plant being used yields blossoms. Each time the fresh flowers are put on, the grease is "worked"—that is serrated with a knife—so as to offer a fresh surface of grease to absorb odor. The grease being inflowered in this way for three weeks or more—in fact, so long as the plants produce blossoms—is at last scraped off the chasse, melted, strained and poured into tin canisters, and is now fit for exportation. We have here specimens of fat thus inflowered, jasmin fat, orange fat, tuberose fat, violet fat, rose fat, etc. In every moderate-sized laboratory there are employed from two to three thousand sashes.

PROCESS OF MACERATION.

Fat or oil is perfumed with these same flowers by the process of maceration; that is, infusion of the flowers in oil or melted fat. For this end, purified fat is melted in a *bain marie*, or warm bath, and the fresh blossoms are infused in it for several hours. Fresh flowers being procured, the spent blossoms are strained away and new flowers added repeatedly, so long as they can be procured. The *bain marie* is used in order to prevent the grease becoming too hot from exposure to the naked fire; so long as the grease is fluid, it is warm enough. Oil does not require to be warmed, but improved results are obtained when it is slightly heated. We have upon the wall here a sketch showing the water bath for melting the fat or warming the oil.

Jasmin and tuberose produce best perfumed grease by enfleurage, but rose, orange, and acacia give more satisfactory products by maceration; while violet and jonquil grease is best obtained by the joint processes—enfleurage followed by maceration.

EXTRACTING THE ODOR FROM THE FAT.

In order now to obtain the perfume of these flowers in the form used for scenting handkerchiefs, we have to infuse the scented fat or oil, made by any of the above methods, in strong alcohol, that is rectified spirits of wine.

In extracting the odor from solid fat it has to be chopped up fine as suet is chopped, or melted, and then put into the spirit, and left to infuse for about a month. In the case of scented oil it has to be repeatedly agitated with the spirit. The result is, that the spirit extracts all the odor from the fatty body, becoming itself "perfume," while the grease again becomes odorless; thus is procured the essence of jasmin, essence of orange flowers, essence of violets, and others already named—rose, tuberose, acacia and jonquil. Several specimens are here shown.

It is remarkable that these flowers yield perfumes which, either separate or mixed in various proportions, are the types of nearly all flower odors; thus, when jasmin and orange flowers are blended, the scent produced is like sweet pea; when jasmin and tuberose are mixed the perfume is that of the hyacinth. We will practically exemplify this thus; all the various bouquets and nosegays, such as "frangipanni," "white roses," "sweet daphne," are made upon this principle.

THE FLOWER HARVEST OF CANNES.

The commercial importance of this branch of perfumes may be indicated by the quantity of flowers annually grown in the district of Cannes. Flower harvest: orange blossoms, 1,475,000 lbs.; roses, 530,000 lbs.; jasmin, 100,000 lbs.; violets, 75,000 lbs.; acacia, 45,000 lbs.; geranium, 30,000 lbs.; tuberose, 24,000 lbs.; jonquil, 5,000 lbs. The quantity produced at Nice I have been unable to ascertain; with violets and orange there are more, but with Cassie less than here stated.

The market season for orange flowers at Nice lasts for more than a month, as an average, and during that time there are sold about fifteen to eighteen tuns of flowers daily! and a tun of flowers will yield more than a kilogramme of otto, say forty ounces, worth £20 sterling, ($100); and the residuary water, highly saturated with odor, worth another £10 ($50) note.

The Twenty-inch Navy Gun.

We have already alluded to this gun on page 280 of the present volume. We now give some account of its trials with heavy charges. The great gun is nearly four feet shorter, but has the same bore, and is intended to possess the same relative capacity, It has been in course of completion nearly ten months, and was placed in position for trial for the first time on Thursday. It was suspended by the trunnions, breech and muzzle, the sling having been constructed for the special purpose. It was charged first with sixty pounds of powder, and subsequently two successive charges of the same amount of powder, the last accompanied by a solid shot weighing 1,080 pounds. The gun at each discharge vibrated about one-half its length in its slings.

On Friday the heavier charges were tried. Eighty pounds of the usual heavy rock powder were used, and the 1,080 pound solid shot was sent down to keep it there. Notwithstanding the great weight of the gun, the size of the charge, and the magnitude of the solid shot, the loading of the monster cannon was accompliseed in a briefer space than would require us to write the account. Three 80-pound charges were fired, and, as an old salt remarked, that they were "beautiful to hear." To a sensitive tympanum the shock of this gun is pleasant in comparison with that produced by a 9-inch Dahlgren.

A charge of 100 pounds was next introduced, the solid shot sent home, the percussion arranged, when Mr. James Knapp pulled the lanyard. The ball struck the stony bank, and tuns of rock fell into the cavern, already existing from similar ponderous blows.

This time the gun recoiled about two-thirds of its length in the sling, and the concussion scarcely differed from that experienced with the 80-pound charges. A second charge of 100 pounds was fired, and immediately after the recoil, a wrought-iron bolt, three inches in thickness, suddenly snapped, and the breech-band broke, letting the enormous mass to the ground, crushing as if they were made of timber, the T-rails beneath.

This sudden accident brought the test to a conclusion. Captain Yard, United States Navy, who superintended the test, expressed himself highly gratified with it. The gun had done its duty so far as the preliminary examination was concerned, and the accident that brought it to a termination before the final charge was fired—but one remaining to complete it—was regretted by all present.

THE striped bug, says Dr. Trimble, so destructive in melon and cucumber beds, may be effectually got rid of by cooping a hen with a brood of small chickens near the vines. The little chicks will hunt and destroy the bugs, without injury to the plants.