

The iron-clad gunboat built at Mystic, Conn., and described on page 131 of our current volume is now lying at the dock at Green Point. We examined her a few days ago, and were much pleased with the beauty of her model, and with her general appearance. Her armor will doubtless prove effective against any ordinary shells, and probably also against solid shot, except those fired from very heavy cannon. As the sides rise from the water's edge they slope inward, but not at a very sharp angle, probably sufficient, however, to deflect shot at short range; the case in which it would have the most force. The vessel is rigged as a brigantine, and as the standing rigging is of wire rope, it presents a very light appearance. We have little doubt that she will prove a very efficient and serviceable vessel of war.

Cannon Manufacture at Pittsburgh.

During the year past the following ordnance, chiefly of a heavy caliber, as we learn from the *Dispatch*, has been manufactured for the government at the Fort Pitt Works, Messrs. Knapp, Rudd & Co., Pittsburgh, Pa.

FOR ARMY.		
Description.	No.	Weight.
Twelve-inch rifled columbiad...	1	52,005
Eight-inch howitzers.....	10	25,832
Seven-inch rifled colvmbiad....	1	9,711
Eight-inch columbiads.....	51	438,600
Nine-inch heavy martars.....	80	514,500
Four-and-a-half-inch rifled siege guns.....	20	71,000
Ten-inch columbiads.....	10	161,000
Ten-inch siege mortars.....	44	82,720
Eight-inch siege mortars.....	12	11,280
Total.....	179	1,366,648
FOR NAVY.		
Eleven-inch Dahlgren shell guns	3	57,300
Nine-inch Dahlgren shell guns..	62	567,300
Thirteen-inch heavy mortars....	14	240,100
150-pounder rifle blocks.....	9	158,400
80-pounder rifle blocks.....	19	241,300
50-pounder rifle blocks.....	36	306,000
38-pounder rifle blocks.....	47	244,400
Total navy ordnance.....	190	1,814,890
Add army ordnance, as above..	179	1,366,648
Total of all ordnance.....	369	3,181,538
PROJECTILES, ETC.		
Nine-inch navy shells.....	1,820	125,580
Eleven-inch navy shells.....	829	106,941
Ten-inch navy shells.....	1,054	106,454
32-pounder navy shells.....	1,027	22,504
Total navy shells.....	4,730	361,569
Eight-inch mortar shells.....	1,000	40,000
Ten-inch columbiad shells.....	1,000	101,670
Nine-inch shells.....	1,600	110,400
Thirteen-inch mortar shells....	6,000	1,890,000
42-pounder rifled shells.....	700	34,300
24-pounder shot.....	3,000	69,000
12-pounder shells.....	600	3,600
12-pounder spherical case shot..	1,600	9,600
24-pounder spherical case shot..	800	14,400
12-pounder shot.....	1,200	13,200
6-pounder spherical case shot..	1,000	6,004
Total.....	23,000	2,301,170
Eight-inch mortar beds.....	6	4,800
Ten-inch mortar.....	10	18,000
Total.....	16	22,800
Add weight of guns.....		3,181,538
Total.....		5,505,508
Add navy shells.....		361,569
Total weight.....		5,867,077
Or 2,938 tons of iron, nearly.		

The extraordinary demand did not begin until the middle of April, 1861, and since that time the capacity of the works has been constantly increasing. The additions now making to the buildings will give a capacity many times greater than that comprehended in the above statement.

TREASURY NOTES BY THE CART LOAD.—Some curious experimental philosopher, it seems, has taken the trouble to measure bodily a certain portion—less than one-third—of the huge mass of government credit which our city banks in the last summer and autumn so loyally agreed to shoulder. Twenty-one millions of the amount in treasury notes at 7.30 interest, have just been delivered to the banks by Mr. Cisco, the sub-treasurer. They are found to consist of 72,829 separate obligations, in various denominations, from \$50 to \$5,000. By careful measurement they are ascertained to form a column of notes, piled singly, twenty-seven feet high, and moreover made a large load for the cart.

MIDDINGS cotton are selling at 24 and 25 cents per lb. The market is dull and there has been a decline from the prices which prevailed a month ago.

FULMINATING SUBSTANCES.

In a variety of chemical combinations, it happens that one or more of the principles assume the elastic state with such rapidity, that the stroke against the displaced air produces a loud noise. This is called fulmination, or more commonly detonation.

Simple fulminating powder is made by triturating in a warm mortar, three parts by weight of niter, two of carbonate of potash, and one of flowers of sulphur. These substances should be triturated separately, then mixed. Its effects, when fused in a ladle, and then set on fire, are very great. The whole of the melted fluid explodes with an intolerable noise, and the ladle is commonly disfigured, as if it had received a strong blow downward.

If a solution of gold be precipitated by ammonia, the product will be fulminating gold. Less than a grain of this, held over the flame of a candle, explodes with a very sharp and loud noise. This precipitate, separated by filtration, and washed, must be dried without heat, as it is liable to explode with no great increase of temperature; and it must not be put into a bottle closed with a glass stopple, as the friction of this would expose the operator to the same danger.

Fulminating silver may be made by precipitating a solution of nitrate of silver by lime water, drying the precipitate by exposure to the air for two or three days, and pouring on it liquid ammonia. When it is thus converted in a black powder, the liquid must be poured off, and the powder left to dry in the air. It detonates with the gentlest heat, or even with slightest friction, so that it must not be removed from the vessel in which it is made. If a drop of water fall upon it the percussion will cause it to explode.

Brugnatelli made a fulminating silver by powdering a hundred grains of nitrate of silver, putting the powder into a glass, and pouring on it, first, an ounce of alcohol, then as much concentrated nitrous acid. The mixture grows hot and boils. By degrees the liquor becomes milky and opaque, and is filled with small white clouds. When all the grey powder has taken this form, distilled water must be added immediately to suspend ebullition, and prevent the matter from being redissolved. The white precipitate is then collected on a filter, and dried. The force of this powder greatly exceeds that of fulminating mercury. It detonates in a tremendous manner on being scarcely touched with a glass tube, the extremity of which has been dipped in concentrated sulphuric acid. A single grain placed on a lighted coal makes a deafening report.

A hundred grains of mercury are dissolved with heat in an ounce and a half by measure of nitric acid. The solution, when cold, is poured on two ounce measures of alcohol, and heat applied till an effervescence is excited. As soon as the precipitate is thrown down, it must be collected on a filter, that the acid may react on it; then washed and dried by a very gentle heat. It detonates with a very little heat or friction.

Three parts of chlorate of potash, and one of sulphur, triturated in a metal mortar, cause several successive detonations, like the crack of a whip, reports of a pistol, or the fire of musketry, according to the rapidity and force of the pressure employed. A few grains, struck with a hammer on an anvil, explode with a noise like that of a musket, and torrents of purple light appear round it. Thrown into concentrated sulphuric acid, it takes fire, and burns with a white flame, but without noise.

Six parts of the chlorate of potash, one of sulphur and one of charcoal, detonate by the same means, but more strongly, and with a redder flame.

Sugar gum, or charcoal mixed with the chlorate, and fixed or volatile oils, alcohol, or ether, made into a paste with it, detonate very strongly by the stroke, but not by trituration.

The chloride of azote is the most wonderful fulminating substance known. It is an oily looking liquid, and a small globule of it no larger than a grain of mustard seed, to which heat was applied in a glass, shivered it to fragments. A small globule thrown among olive oil in a tumbler, produced a most violent explosion, and broke the glass in pieces. A small grain of it when touched with a piece of phosphorus on the end of a penknife, shattered the blade to pieces in an instant. The iodide of azote is also a powerful fulminating substance, and detonates with the smallest shock.

A detonating powder can be made with 1 part by weight of the chlorate of potash, 1 of yellow prussiate of potash, and 1 of dry white sugar, carefully mixed together in a mortar, with a wooden spatula. Each substance should be reduced to powder by itself, otherwise it would be dangerous to pound them together. If to this powder 1 part of sulphur is added, a good percussive powder for guns is obtained.

The fulminating composition for percussion caps, consists of fulminating mercury 3 parts, chlorate of potash 5, sulphur 1, powdered glass 1.

Another kind consists of chlorate of potash 6 parts, sulphur 3, powdered glass 1, and pounded charcoal 1: these parts mean weight, such as one ounce for the unit. The chlorate of potash is exceedingly dangerous when rubbed with sulphur. These fulminating powders are affected by the force applied, and the rapidity of its action.

The British Wool Trade.

The London *Shipping Gazette* publishes some interesting statistics respecting the wool trade. The imports of colonial and foreign wool into England in 1861 prove that the progress of sheep farming in the British colonies has made rapid strides of late years. Although there was a slight falling off in the arrivals of wool last year from Hobart Town, Launceston, South Australia and India, the total supply from British possessions amounted to 329,417 bales, against 308,078 bales in 1860, being an increase of 21,339 bales. The total exports of English, Irish, and Scotch wool last year were upwards of 17,000,000 lbs., against 11,500,000 lbs. in 1860, and the increase in the shipments of foreign and colonial qualities was about 6,000,000 lbs. France stands first as the great consumer of British native wools; and Germany, as well as Belgium, has imported largely. About 30,000 bales of inferior wool have been exported to the United States.

A Splendid Work of Art.

The leading incidents of the present war are soon to be represented to the public by means of probably the most beautiful and effective panorama ever exhibited in this country. On the occasion of a recent visit to the national metropolis we entered the studio of Stanley, the well-known delineator of Indian life, and found that gentleman and Conant, of St. Louis, and Hillyard, of New York, and Lamb, now of Washington, and other eminent artists earnestly engaged on this great work, confident in their belief that it would be received with unprecedented popular applause, a belief in which we most heartily and hopefully concur. Art, which can honor every subject it commemorates, is itself honored when devoted to promoting the *amor patriæ* of the American people in this hour of anxiety and depression.

MOTION OF ELECTRICITY.—The mode by which the rate of motion of electricity was obtained by Prof. Wheatstone, is so curious that it deserves to be described. He caused the electricity from the common machine to pass through a long coil of insulated wire, in which were two or more breaks across which sparks must necessarily pass. A mirror was made to revolve with immense rapidity before this coil. The reflection of the sparks was thus thrown occasionally, when the mirror was in the right position, upon a canopy above, graduated in divisions. The reflection of one of the sparks was found always to lag behind the other, on account of the time occupied by the electricity in passing through the intervening portion of the coil, the effect of which was multiplied by the revolving mirror. The length of the coil between the breaks and the rate of revolution of the mirror being known, and the distance of the reflected sparks from each other being observed, the rate of motion of the electricity was easily calculated.

TOO LARGE A CONTRACT.—Jefferson Davis, in his inaugural message, says "events have demonstrated that the government had attempted more than it had power successfully to achieve." Instead of seizing Washington, sacking Philadelphia, and carrying the Confederate flag over the roof of old Fanueil Hall itself, he acknowledges, and facts demonstrate, that he cannot hold his own. He evidently feels that he has taken too large a job.

A 10-INCH round shot weighs 136 pounds.