

any fire or spark, the arrangement being such that the current is unbroken during the change from both directions to one. This feature is of great practical importance in the operation of magneto machines, for the spark cannot occur upon the pole changer without rapidly consuming the metals of which the pole changer or conductors are made, nor can such brake with fire occur without great loss of electric current.

The key board, so readily arranged, will be found by those who operate the machines for any purpose whatever, exceedingly convenient, any amount of volume or intensity within the range of the machine may readily be obtained, adapted to any given solution for metallic deposition, for chemical research, magnetism, &c.

The rings upon which the helices are mounted are so arranged that they may be readily removed, and the several spools replaced by other spools wound with any gage of wire desired for any purpose for which the machines may be required.

At the establishment at College Point, Long Island, where these machines are being manufactured, several of them are kept in constant operation, and for a long period are said to have produced results never before attained by either magneto machines or galvanic batteries. Copper in large quantities is constantly being deposited in electrotyping for maps, medallions, &c. Electroplating is also done on a very extensive scale.

Any information in regard to the machines may be had by inquiring of or addressing Conrad Poppenhusen or G. W. Schramm, No. 44 Cliff street, or of the inventor, G. W. Beardslee, at College Point, Queens county, Long Island. The machines are manufactured by these parties and sold at prices ranging from \$5 to \$500 apiece.

NOTES ON MILITARY AND NAVAL AFFAIRS

THE SITUATION.

No event of marked importance has transpired during the past week. Messrs. Slidell, Mason, McFarland and Eustis, have been received in Fort Warren with demonstrations of joy, and it is announced as the purpose of the government to put them under strict prison discipline, such as is now enforced upon Colonel Corcoran and other prisoners of war at present in the "Confederate States" jails.

Reinforcements have been sent to Port Royal, and other expeditions, under command of Generals Butler and Burnside, are about to depart for some unknown point on the southern coast, when other blows will be struck at the very heart of the enemy. Those terrible shells from the fleet are terrific in their effect, and it is alleged that the inhabitants of the southern seaboard have lost faith in the capabilities of their earthworks to resist the Federal navy, and are fleeing into the interior. The new naval expedition will be under command of Commodore Porter who inherits a good deal of pluck and capacity for fight. Our people have great faith in the navy. In addition to reinforcements south, troops are continually pouring into Washington and Kentucky, and it is the understood purpose of General McClellan to carry on a vigorous campaign during the winter. General Halleck is actively engaged in re-organizing the Western department with a view to a probable movement down the Mississippi. He has issued an order forbidding fugitive slaves from entering into any of the camps, on the ground that they act as spies, and convey valuable information to the enemy. Some of the newspapers are vexed at this order, but we see great force in it. A General is held to a strict accountability by these same newspapers for every blunder made in his department, and it is no more than fair that he should be allowed to adopt all such measures as will insure him against blunders and accidents and defeat. We think some of our newspapers had better attend to their own business a little more and let others alone. They have already damaged the cause of the country immensely by their imprudence, and it is high time that they should begin to behave themselves and show more wisdom and far less reckless zeal. These journals are watching all the time to see what's doing with the negro, not being willing to let his case work itself out in the process of time. Our commanding officers must be heartily supported by the people, or else the cause of the country will suffer defeat. We

amuse ourselves over a petty quarrel between Jeff. Davis and one of his Generals, but are seemingly oblivious to the fact that we are continually in trouble with our commanding generals. These bickerings are disgraceful, and for ourselves we are heartily ashamed and tired of them.

A FIGHT AT FORT PICKENS.

As we go to press, accounts by southern papers are received of a fight at Fort Pickens, near Pensacola, Florida. The Norfolk *Day Book* says that dispatches from Richmond state that a cannonade took place on Saturday, Nov. 23d, between Fort Pickens and the frigates Niagara and Colorado on one side, and the rebel batteries of General Bragg on the other. The accounts are very confused and contradictory, and little can be known in regard to the affair until the arrival of more reliable intelligence.

Fort Pickens is a very strong position on the western extremity or point of Santa Rosa Island, on the eastern side of the mouth of the harbor, and is only approachable by land on one side. Owing to the openness of the country, which is but a barren bed of sand, a party attacking from that source would be very much exposed. When last heard from Capt. Brown, the commandant, had only 1,700 men, exclusive of the force on the blockading fleet, and it was thought that he would not commence hostilities before the arrival of reinforcements. It is possible, however, that these may have been forwarded in that portion of the naval expedition which continued beyond Port Royal. By our next issue we shall doubtless have the details of the affair.

MISCELLANEOUS.

The chaplains of the army are discussing whether they shall wear a uniform or not, which would denote their true character without connecting them with the officers whose avocation is bloodshed. It was suggested that a black sash be the distinguishing feature of the uniform, but the color met with universal disfavor, so blue was substituted, and a committee appointed to consider the matter.

Ex-Commodore Tatnall, who commanded the pop-gun fleet of the Confederates at Port Royal, owns a large amount of property at Sackett's Harbor, N. Y. Measures have been taken to confiscate his house and furniture there, which is estimated to be worth \$15,000.

Col. Billy Wilson, in command of the Zouaves on Santa Rosa Island, complains that, while he is showing his scalp as usual on the Island the Confederates are exhibiting it in New Orleans. It troubles Billy to know how they got it without his knowledge.

The following figures show the amount of commissary stores consumed in one month by the United States army of 500,000 men:—11,250,000 pounds of pork, or 18,750,000 pounds of fresh beef; 105,880 barrels of flour; 87,500 bushels of beans, or 1,500,000 pounds of rice; 1,600,000 pounds of coffee; 2,250,000 pounds of sugar; 150,000 gallons of vinegar; 225,000 pounds of candles; 600,000 pounds of soap; 9,384 bushels of salt, and 6,600,000 pounds of potatoes. It is said that the Union forces—regulars and volunteers—now in the pay of the government number 650,000, which would increase the consumption of the above articles three-twelfths.

The stone fleet has just sailed from New London, Conn. Twelve or fifteen vessels, all bound South, were laden with stones. The craft were old whalers. The fleet is to be joined outside by a like one from New Bedford, which will make the whole number of the vessels about thirty. Six thousand dollars each have been paid by the government for some of the best of these vessels. In the bottom of each ship a hole was bored, into which was fitted a lead pipe five inches in diameter, with a valve so fixed that, though perfectly safe even for a long voyage, it can be very quickly removed. It is calculated that the ship will be filled and sunk to the bottom in twenty minutes after the removal of this valve. To provide against accidental jamming of the valves, each vessel is furnished with two augurs of the proper size.

The provisional State government of North Carolina, the establishment of which has been in contemplation for months past, was formally instituted at Hatteras inlet, on the 18th inst., by a convention of delegates and proxies representing, it is said, forty-five counties (more than half) of the State. The convention then adjourned, subject to the call of the

President. Governor Taylor has issued a proclamation ordering a congressional election in the second district on the 27th ult.

Salt, an article of prime necessity, is getting very scarce throughout the South. We have the authority of a Southern paper for saying that it is advancing in price at the rate of \$1 per day per sack. Professor Thomassey is at work in Charleston trying to make salt, and assures the *Mercury* that it is no joke to make salt, but hopes to have a supply ready about Christmas.

A Virginia paper says:—"Eggs are selling out in Iowa at one cent per dozen—here they sell for twenty-five cents. There corn can be readily bought at fifteen cents per bushel—here it is worth seventy-five to eighty cents; there apples sell for twenty-five cents per barrel—here money can hardly buy a bushel; there flour is worth four dollars a barrel—here it is worth from seven to eight or nine dollars; there salt is selling for one dollar and a half per sack—here at fifteen dollars. But these are only a few of the effects of the war and the blockade."

In the engagement at Port Royal, three of the principal officers in the Union forces were South Carolinians. Charles Steedman, of the Bienville; Percival Drayton, of the Pawnee, who was fighting against his own brother, Gen. Drayton, and John P. Bankhead, of the Pembina. This does not look as if the South were united in this attempt to destroy the Union.

Several persons suspected of intending to burn the New Jersey railroad bridge over Elizabeth Creek, N. J., have been arrested. This is the second time that suspicious characters have been found prowling about the bridge at night, and both times have been periods when soldiers were about crossing along the line of the road.

By looking at your maps of Virginia you will notice that the counties of Accomack and Northampton are tacked on to the lower extremity of Maryland, forming a sort of handle to that State. There were armed bands of secessionists in those counties who were terrifying the Union men to such an extent as to require notice. Gen. Lockwood, of Delaware, at the head of 5,000 Union troops has repossessed those counties without bloodshed, the secessionists laying down their arms on his approach. Several cannon were captured, and an earthwork mounting several guns was found deserted.

Our readers will recollect that some time ago a correspondent wrote a letter to the *SCIENTIFIC AMERICAN*, describing the effects of a few nights' snooze under a blanket made of certain newspapers. Soldiers will find the use of paper, between their garments, very serviceable in protecting the body in cold weather. It is warmer than cloth, owing to its close texture.

Kentucky has now furnished to the government her full quota of the half million of men called for the national defence, and proposes to raise as many more for State service until the Confederate armies are driven from her soil. The situation of affairs in this State is represented as being very hopeful. The Union forces under General Buell are rapidly increasing, and it is believed that active aggressive movements will soon be made against the enemy—who has really but a small foothold in the State—where he is strongly entrenched.

The War Department is now receiving muskets, rifles and equipments in abundance by every steamer. The supply is fully equal to the immediate demand, and with those to arrive will be sufficient to equip the entire army and have a residue.

An army correspondent gives the following account of the medicine given the volunteers:—"Our doctors give us the same medicine for all complaints. Headache, blue pill; bellyache, blue pill; rheumatism, blue pill; yellow jaundice, blue pill; cold, blue pill; diarrhea, blue pill; and so on. We are decidedly the blue pill regiment, and of the opinion it don't take much to make a doctor."

Charles Frederick Havelock of England, brother to the brave General Havelock of East Indian fame, has been appointed on the staff of General McClellan in rank of Colonel, and is detailed to the position of Inspector of Cavalry.

It has been officially ascertained that the government has now in the field, in camp and in process of formation, six hundred thousand volunteers, and the enlistment for the regular service is more numerous than heretofore.

It is reported from Richmond that the Confederate government is once more on wheels. Jeff. Davis and his Cabinet of conspirators, were at last accounts on their way to Nashville, Tennessee. In his recent message to the Confederate Congress he urges the importance of building forty miles of railroad to connect an internal route to the South, fearing evidently that the Federal troops may seize the Atlantic and south-western lines, thus cutting off all retreat by railroad from Richmond.

It is reported, with how much truth we know not, that out of 1,000 troops stationed at Toronto, Canada, more than 600 have deserted, the majority of whom found their way across the border to join the Union volunteers. It is believed that nearly 2,000 regular English troops are now enrolled in the ranks of our army.

Mittens for soldiers can be made out of cloth of cast-off clothing. With the aid of the sewing machine they can thus be supplied in great abundance. We remember well that our good mother used to make such mittens for us, and they were warm and comfortable. They should be well lined either with heavy cotton drilling or cotton flannel.

Captain Dahlgren and his Scientific Skill.

The *Evening Post* of this city pays a very high and deserved tribute to Capt. John A. Dahlgren, Commander of the United States Navy Yard at Washington. It says:—

The names of Dupont and his brave and loyal subordinates will be shouted through the land and proclaimed in votes of Congress as they deserve; and the name of Dahlgren, to whose science and skill the success of courage and loyalty was in a great measure owing, should receive honorable mention too.

It is now thirty-five years since Paixhan made his first experiments in the use of shell guns, and to the perfection to which they have been carried, and to which the efficacy of our fire at Port Royal was due, no man has contributed so largely as Commander Dahlgren of the United States Navy. The most profound study, the most careful experiments, continued almost to this very day, have made the Dahlgren-Paixhan as nearly perfect as the laws of matter permit a smooth-bore gun to be; and the untiring energy, scientific knowledge and mechanical nicety which the Commander of the Washington Navy Yard has expended in this work, no man but an ordnance constructor can fully appreciate.

This problem was scarcely solved ere the rebellion made need for its results. Captain Dahlgren has since bent all his energies to the solution of the new problem of rifled guns, and with such success that, already, with his muzzle-loading gun and an expanding ball, he has attained nine-tenths of the accuracy of the Armstrong gun (the standard in this respect), with a rapidity of loading many times greater and with none of its structural objections. To this end new experiments had to be made, new tests and trials of the strength of materials and proportions of guns, and if at this moment our national foundries are turning out hundreds of rifled navy guns of first-rate construction, it is because the genius and accumulated knowledge of Dahlgren has buoyed out the channel to success and saved the country from the long and costly experience of improving our artillery under fire. If our gunnery answers to the demand for excellence, it is as much because Dahlgren has studied as because Dupont has disciplined.

But Dahlgren is as gallant as learned, and the warrior in him chafes as much at being kept out of the smoke of battle, as in the youngest hot blood in the navy. We happen to know that he is as anxious to be ordered to active service as any one of his fellow sailors, and in view of the chances of his peers afloat, is indifferent to his proper fame, earnestly desiring and urging to be ordered to active service.

Yet who is willing that he should put his life at the hazard of a cannonade, or that a chance ball should not only silence the voice of a brave captain, but still the brain of one of our ablest and most valuable mechanics—one whose knowledge quadruples the strength of our navy arm? But honor is the soul of the service, and it is the duty of the press and the people to look to it that he who silently prepares the material without which such achievements as the capture of Port Royal would be impossible, does not suffer from neglect, but gets a share of the honor, and of promotion in its proper course.

A SHAKY WAR VESSEL.—The *London Times* of Nov. 8th, states that the British steam frigate *Emerald*, of 51 guns, which was sent out to Halifax on the previous month, had put back in a sinking condition. She had been thoroughly caulked before departing, but this seemed to be of little benefit as her seams opened when she got into a rough sea, and she leaked like a sieve. The beams and knees of the lower deck parted, the pumps were broken, the discharge pipe of the engine split, and she became disabled for several days. What a miserable ship of war!

HEMP-FLAX rope machinery is manufactured by Messrs. Todd and Rafferty, at Paterson, N. J., as will be perceived by reference to their advertisement in this paper. This firm have had large experience in this business, and are reliable and excellent manufacturers.

Is the Blockade Effectual?

Considerable irritation has been shown by a portion of the English press in reference to the blockade of the southern ports. They have gone so far as to insist that the blockade was ineffectual, and therefore, according to the law of nations, not to be respected. Now the truth is that the blockade is so effectual that all trade and commerce with the southern ports is almost entirely cut off, and almost every article of necessity is to be obtained only at exorbitant prices, and as for the export of cotton from the southern ports, not a bale has yet escaped the blockade so far as we have authentic advices. If our English contemporaries desire satisfactory testimony on this subject, let them peruse the following quotation from a recent number of the *New Orleans Crescent*. It says:—

The heretofore magic word 'cotton' is scarcely lisped now-a-days on the flags. Some parties—would-be operators—hope that the blockade may be broken or raised, but hoping will not effect it. It is manifest that Great Britain will adhere to the opinion she assumed months ago—a strict neutrality. There has been much talk and a great many comments on what has been termed running the blockade.

Reports—and they will prove to be simply reports—say that 516 vessels have run the blockade since the 16th of May last. This is a very wild estimate, even if it is supported by returns or statements in the departments at Richmond. The blockade was enforced off the mouths of the Mississippi river on the 25th of May, at which time there were forty-sail of vessels in this port outward bound which were permitted to go to sea. The blockade commenced off Mobile and Pensacola about the same time. Vessels were allowed to leave these ports till the 8th of June.

So far as New Orleans is to be considered, the last arrivals via the *Malize*, were on the 29th of May last. There have been some arrivals and departure of schooners from the bayous on the Gulf. There have been some coasting vessels on the coast of Carolina evading the blockade; but all these will not count up 516. On the other hand, the Hessian steamer *South Carolina*, has captured seventeen schooners in attempting to run the gauntlet between New Orleans and Texas ports. There have been only three or four vessels from Europe—one the *Bermuda*—that have successfully run the blockade.

Some few West India traders have met with success on the Carolina coast. It is misleading foreign governments to make assertions of this character, that the blockade is easily avoided, when not a vessel has entered the port of New Orleans via the river for over five months; and only one via the Lakes from a foreign port. Great Britain and France recognize the closing of our ports whether it is effectual or ineffectual. It is, however, thought the steamer *Nashville*, has got out of the port of Charleston, and gone somewhere. It is also evident that the steamers *Theodore*, or *Gordon*, made a successful trip from that port to Cuba and back.

We trust that in view of such testimony as this, that we shall hear no more complaints from England of an ineffectual blockade.

Experiments with Ammunition.

The *Philadelphia Press* thus describes some interesting experiments with ammunition made at the Bridesburg Arsenal, near that city:—

A new fuse-driving machine has been placed in the apartment hitherto appropriated exclusively for the manufacture of percussion caps. It arrived at the arsenal but a few days since from the Washington navy yard. It is somewhat novel in character, and has been quite recently devised.

Substantially, it consists of a vertical screw steadied and directed by a shoulder through which it passes. At its upper end it fits into a horizontal brass disk, about two feet in diameter. Four "spokes" or handles are disposed around the rim of the disk at equidistant points. About eighteen inches below the lower extremity of the screw a revolvable bed-plate is placed. Upon this two vertical brass cylinders are placed, which receive the paper fuse covers.

The mode of operation is then as follows, two persons being required to the machine:—One of the operators places himself immediately opposite the bed-plate, and placing a paper fuse cover within one of the cylinders, pours into it a "charge," consisting of two or three scruples of powder. His assistant then causes the brass disk to revolve by means of the handles, and the screw descending upon a movable steel punch, the latter rams the charge.

When the proper pressure is reached (and it may readily be regulated to the required number of pounds), a signal bell is struck, and the revolution of the disk checked by a spring. A second charge is then inserted, and the process repeated. The greatest pressure attainable on the machine at any one time is 426 pounds.

The fuses now being made at the arsenal (which are intended for the Phoenixville rifled-cannon projectiles) will burn precisely eleven seconds. One of them was yesterday tested for the first time.

Being screwed firmly in the jaws of a vise a bar of iron heated to a cherry red was applied to it. Instantly a flame shot up to a height of three inches, assuming a whitish-yellow hue, except around its base and lower edges, where the color alternated from blue to violet. It burned with all the violence of a flame produced by an oxyhydrogen blowpipe, and was accompanied by a very perceptible hissing sound. As the combustion progressed, this sound became more and more audible, and its termination was marked by a sort of sibilant puff and the ascension of an unpleasantly odorous column of smoke. The cover of the fuse, strange to say, was not destroyed.

These fumes are composed simply of meal-powder and sulphur. The former ingredient will burn precisely two seconds to the inch, while a composition of one part of sulphur and two of meal-powder burns just five seconds to the inch. To increase the time of combustion, as when long ranges are desired, a greater proportion of sulphur must be added. We learn that sixty thousand fuses are to be made at the arsenal.

It has been shrewdly surmised that the delay of our army to make a forward movement in Virginia has rather been occasioned by the lack of artillery than by any indisposition to incur the attendant risk of any such movement. As is well known, the Phoenix Iron Company is now engaged in filling a contract with the government for three hundred 8-inch guns. Immediately upon their completion, our army will be in a condition to make an aggressive move with every prospect of success.

The projectiles to be used with these guns are oblong shells, the casting of which in sufficient quantities will, perhaps, require months. The first installment will be received at the arsenal in the early part of next week.

Export of Grain to Europe.

In 1860, from the 1st of January to the 1st of November, the exports of grain were as follows:—

Wheat, bushels.....	9,112,308
Corn.....	2,356,012
Oats.....	102,134
Rye.....	450
Barley.....	8,280

Total, bushels..... 11,579,132
The exports of this year in the same period of time have been:—

Wheat, bushels.....	20,415,081
Corn.....	9,935,474
Oats.....	148,419
Rye.....	604,937
Barley.....	1,000

Total, bushels..... 31,102,861
These exports of wheat have been more than double those in 1860, and over two hundred times those of 1859. The proportion of corn has been one bushel in 1859 to fifty-seven in 1861, and one bushel in 1860 to four in 1861.

The Smithsonian Institution

We have received from Hon. S. S. Cox, of Ohio, the annual report of the Board of Regents of the Smithsonian Institution, showing the operations, expenditures, and condition of the Institution for the year 1860. The whole amount of Smithson's bequest deposited in the Treasury of the United States, is \$515,169, from which an annual income, at six per cent, is derived of \$30,910.14. The expenditures have been kept below the receipts and a surplus fund of \$141,100 has been accumulated. This is invested principally in Indiana, Virginia and Tennessee stocks and has yielded an annual income of \$7,716. The principal portion of this is expended for publications, researches, lectures, library, museum, and gallery—of art.

PATENT OFFICE REPORTS BURNED.—One of the government binderies at Washington was burned on the 25th ult., destroying 40,000 volumes of the second volume of Patent Office Reports, composed solely of engravings. Quite a number of Maj. Delafeld's valuable military report, together with several thousand dollars worth of bindery materials, were destroyed. The loss to the government will be about twenty thousand dollars, though it is estimated much higher just now.

A LARGE steamer has lately been built at Liverpool, England, with the steam jet applied to the chimney as it is in locomotives, for the purpose of increasing the draft. It has been partially successful.