

Scientific American

A WEEKLY JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

VOL. V.—NO. 23.

NEW YORK, DECEMBER 7, 1861.

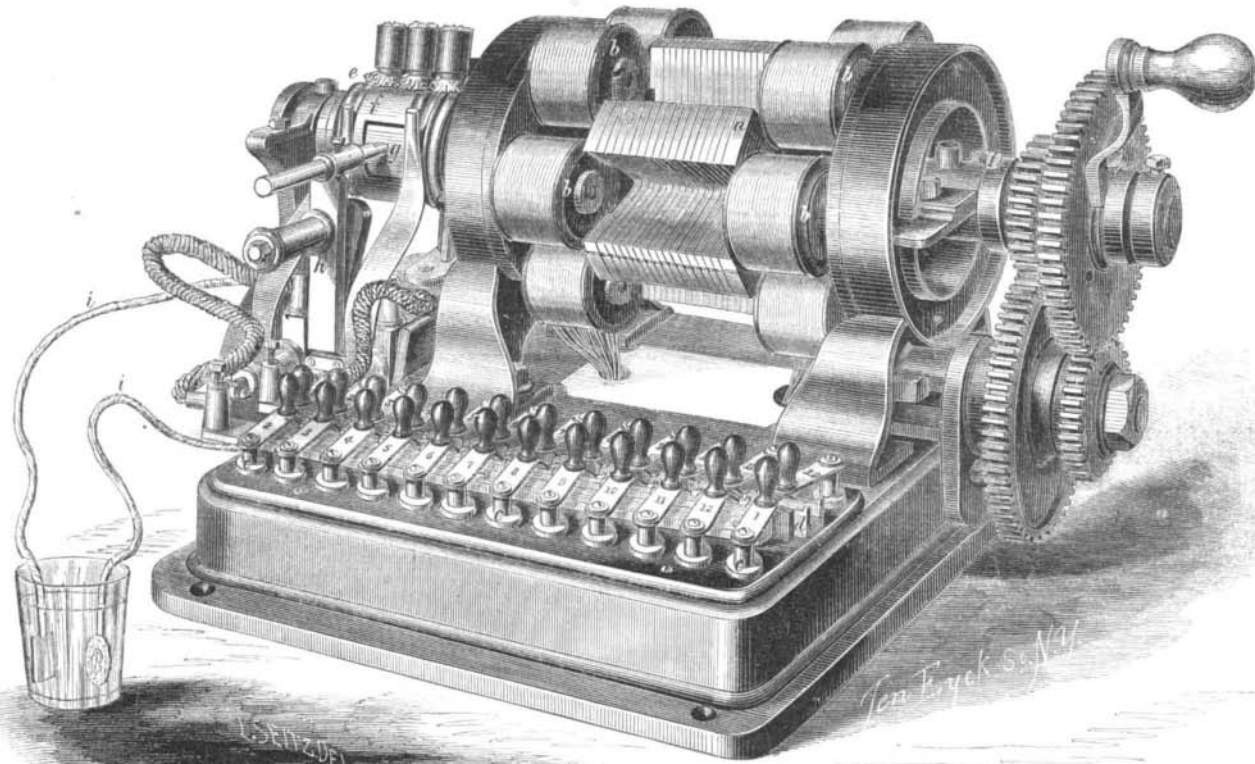
NEW SERIES.

Improved Magneto-Electric Battery.

The magneto-electric battery, represented in the illustration, is, in many important particulars, entirely new. Hitherto magneto-electric machines have been organized either with straight bar or the horse-shoe magnet. Persons well acquainted with the construction of that form of magnets are aware of the difficulty of obtaining an exact uniformity of strength

north and south, thus making the disk into a series of horse-shoe magnets joined at their middle parts into a common center. Several of these disks are then placed upon a revolving shaft to form the compound radiating magnet, *a*. Opposite the ends of the arms are placed the soft iron cores of the several helices, *b b b*; the machine represented in the engraving having six at each end of the magnet. The wires

The superior compactness of the radiating magnets as compared with all other forms for the purposes for which they are used in these organizations is a decided improvement in many particulars; more magnetism, and consequently more electricity is induced in the same space than by any other form of construction. The magnets are also manufactured with greater cheapness and facility.



BEARDSLEE'S NEW MAGNETO-ELECTRIC BATTERY.

and power in any two or more magnets. This difficulty arises from various causes, in the manufacture of the metal of which the magnets are made, in the working of the metal to form the magnets, and in their unequal temper, &c. It is a well known fact that for the purpose of generating a large and uniform current of electricity in magneto organizations, it is of absolute necessity that all the poles of the permanent magnets should be of equal power of magnetism, otherwise the impulses will be of unequal force, and induced at irregular intervals.

Another important feature in magneto organizations is that the permanency of the magnets should be unchanged by use or time. Magnets heretofore manufactured of steel have always lost in time or by use a portion of their magnetism. This deterioration arises from causes as yet unexplained, but the fact is well known to all who have made magnets a subject of investigation.

The permanency of the magnets in this machine is secured by a certain treatment of iron, which is a secret with the discoverer. The uniformity in the strength of the poles is obtained by the peculiar manner in which the magnets are formed. From a circular disk of iron V-shaped pieces are cut so as to leave arms radiating from the center like spokes from a wheel. These arms are then magnetized alternately

from these helices are carried down through the bottom plate of the machine, and each is connected with one of the keys, *c c*. These keys turn upon pivots and are so arranged in relation to insulated brass bars, *d*, placed between them, that by giving the keys a slight turn the helical wires may be joined to pass the current in succession through any two or more of the helices, or to unite the several currents from all; thus regulating the intensity and quantity of the electricity at will, to adapt the current to any purpose for which it may be needed.

From the bars, *d*, the current is conducted to the pole changer, *e*; an exceedingly ingenious piece of mechanism. It consists of two iron cylinders, *f* and *g*, with rectangular notches cut in them, as shown, and insulated from each other by gutta percha. One of the bars, *d*, is brought in metallic connection with the cylinder, *g*, and the other with the cylinder, *f*, and as the cylinders revolve they are brought alternately in contact with the standard, *h*, and a corresponding standard upon the opposite side of the machine. These standards are connected with the wires, *i i*, which lead the electricity to the electrotyping bath, or wherever it may be required. The cylinders, *f* and *g*, revolve with the magnet, and are so arranged as to reverse the current at the proper time to send a current through the wires, *i i*, always in the same direction.

These machines have now been in constant operation for a long period, producing currents of electricity with no cost except that of the power required for the simple revolution of the magnetic wheel in air. With the currents thus generated all the known results of galvanic electricity have been produced—light, heat, the reduction of metals and their alloys, telegraph operations, decomposition of water, and all medicinal and chemical effects. The batteries in common use for the various purposes for which they are employed are not only expensive in their consumption of metal and acid, injurious from the deleterious gases which they evolve, and troublesome to keep in order, but they are constantly changing, deteriorating from the moment they are put in action until they exhaust themselves by saturation.

The radiating magnetic machines have none of the above-named difficulties, but, the inventor says, that they are always constant, the current being unchanged by any cause whatever. For deposition of metals, for chemical research, for the operations of the telegraph, for every purpose for which electric currents are now used in the arts and sciences these machines are believed to be superior to the ever perishing and changing galvanic battery.

The improved pole changer transmits all the impulses in the same direction without the occurrence of

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.