

# Scientific American

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

VOL. V.—NO. 5.

NEW YORK, AUGUST 3, 1861.

NEW SERIES.

### Improved Camp Chest.

The two accompanying engravings are pictures of the same thing, though one represents it as a table spread with a cloth, set with dishes, and supplied with seats for three persons, while in the other it appears as a moderate-sized box or chest. Though this chest is only 31 inches in length, 14 in width, and 10 in depth, and weighs but 40 lbs., it contains the following articles: 3 web-seat camp stools, made of the best hickory, and folded together; hatchet, saw, carving knife and fork, 3 flasks, that will, in the aggregate, hold one gallon; tea caddy, coffee caddy, wash bowl, dipper, 8 plates, 4 knives and forks, 4 each of table and tea-spoons, tea and coffee pot combined, with a strainer; frying-pan, pot for boiling, 3 drinking cups, sugar and milk bowl, cruet stand for pepper, salt, mustard and vinegar, with mustard spoon and cork screw combined; 1 apparatus for boiling tea or coffee, and fuel for 20 meals; 2 table cloths, and 2 towels.

The principal novelty of this invention consists in the arrangement for securing the legs to the box in such manner that they will fold snugly inside to close the box, and will support it firmly when it is used as a table. The legs, *a*, Fig. 2, are attached to the inside of the box by the hinges, *b*, so that when the box is opened, the legs can be turned down to support it as a table. The latch, *c*, upon the side of each leg, can be turned down into the notch, *d*, thus holding the leg very firmly in its place.

This camp chest is not intended for soldiers, merely, but will be found quite as well adapted to the use of hunters, fishers, picnic parties, and excursionists generally.

We are informed that it has been examined by President Lincoln, ex-President Fillmore, Gen. Mansfield, Gen. Meigs and other competent authorities, who have given it their fullest endorsements.

Mr. Parr, who seems to be fertile in getting up convenient things, has also invented a canteen case, which, like the camp chest, has a cruet stand for pepper, salt, vinegar and mustard; mustard spoon and corkscrew combined, knife and fork, spoon, tea caddy, drinking cup, apparatus for boiling tea and coffee, with fuel sufficient for 20 meals. This light, convenient and useful article is inclosed in a leathern case, nicely finished, and is designed to be suspended from the shoulder by a leather strap in the same manner as the cartridge box.

Altogether, these arrangements of Mr. Parr are unique and useful, and as such we can recommend them to the soldiers of our army.

The patent for this invention was granted June 25, 1861; and further information in relation to it may be obtained by addressing the inventor, George Parr, at Buffalo, N. Y.

### Resistance of Cast-Iron to Internal Pressure.

The following are some extracts condensed from a

first blush, appear to be irrational. The general opinion is, that the thicker the iron the greater its resistance to pressure when the bore remained the same size. This he believed not to be the case, and Mr. Joseph Bramah had long ago the same opinion. At the time that one of the press cylinders employed in raising the tubes of the Britannia Bridge had burst asunder, a workman, once in the employment of Messrs. Bramah, thus wrote to the *Mechanics' Magazine* (Sept. 29th, 1849):—"At Bramah's we never

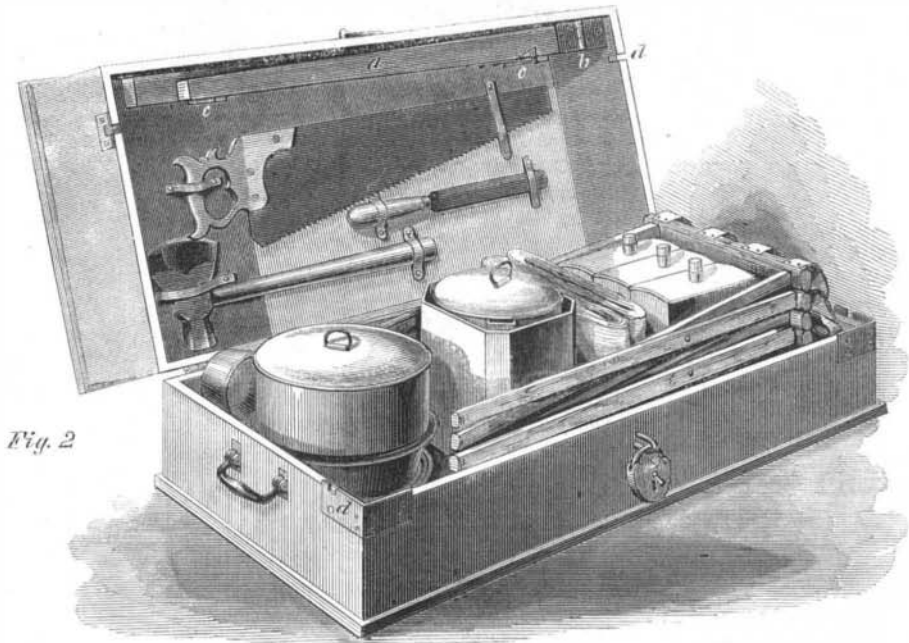
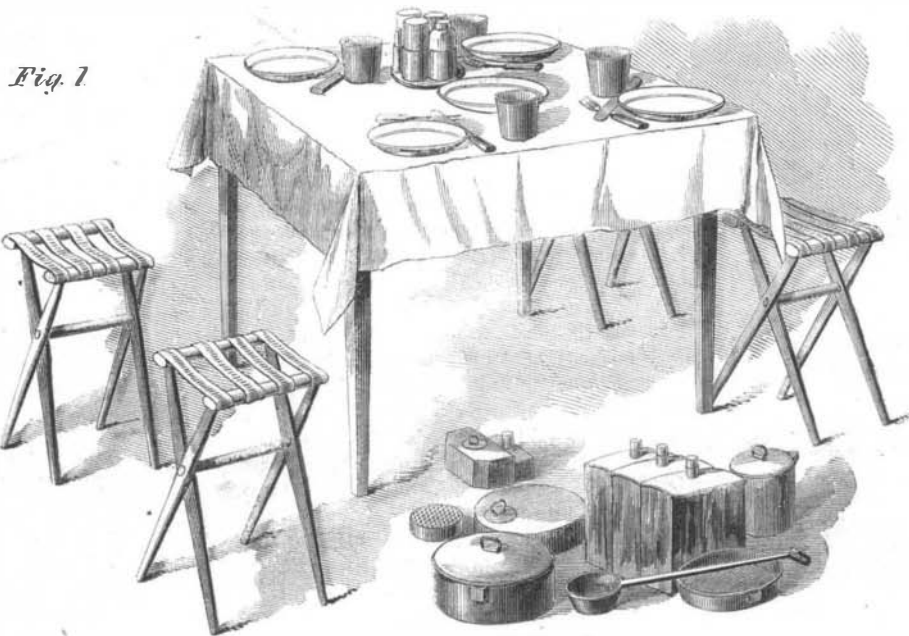
found presses in constant work stand more than three tons (6,720 lbs.) on the square inch, and the greatest pains were taken to obtain the most approved kinds of iron—mixed qualities—to cast cylinders from. I have seen press cylinders stand 7,000 lbs. and even 8000 lbs. on the square inch under proof for a short time; but we never could trust them to work with so much, and cast iron then was far superior to that of the present day. Increasing the thickness of the metal in press cylinders was seldom successful. I have known metal seven inches thick stand as well as that of 10½ inches, for presses with rams 10 inches diameter. The thicker the metal, the greater appeared to be the difficulty in getting it equal and homogeneous throughout."

The experience of Mr. Briggs was of a similar character. He considered that many cast iron cylinders were cast too thick under the supposition that they were strong in proportion to their thickness. There is a limit to the strength of all cast iron cylinders, as it relates to their thickness, and efforts should be made to obtain thinner castings, as they were more uniform in strength, more dense, and better calculated to sustain pressure.

The general conclusions arrived at by Mr. Briggs were as follows:—Three tons per circular inch he considered to be the burst-

ing pressure of press cylinders. The maximum thickness of metal, when all due care had been exercised in its composition, should not be more than the radius of the bore of the cylinder. Two tons per circular inch was a safe pressure to work up to, and this he should pronounce to be his own standard.

It appears to us that puddled cast steel is far su-



PARR'S CAMP CHEST.

paper, lately read upon this question, by Mr. John Briggs before the English Association of Foremen Engineers.

There is a limit to the pressure which should be put internally to cast iron, and there was a limit also to the thickness of metal to be used for cylinders of hydraulic presses. Such a statement might, at the

perior to cast iron for hydraulic presses and all cylinders subjected to great internal pressure—not excepting cannon.

## THE WAR.

### THE GRAND ADVANCE.

We briefly mentioned, in our last, that the long-anticipated advance of the grand central army which has been entrenched south of Washington had at last commenced. This column was under the command of Brigadier General Irvine McDowell, of the regular army. The main body of the secessionists is strongly entrenched at Manassas Junction, twenty-seven miles south-west from Alexandria and about thirty from Washington. A letter from one of the secessionists in the entrenchments, written on the 7th of July, represents the works extending for fourteen miles, and very thoroughly constructed under the direction of the educated engineers who have deserted the United States service to fight against the government. If his statements are correct, these intrenchments are quite as formidable as the famous lines of Torres Vedras, north of Lisbon in Portugal, behind which the Duke of Wellington bade defiance to the ablest of Napoleon's marshals.

Our army consisted of sixty regiments and constituted by far the most formidable military force that has ever been mustered on this continent; unless, indeed, the secession force directly opposed to it may be greater. It was organized in five divisions, arranged in the usual order of right and left wings and the center.

The long-expected order to move forward was telegraphed from Gen. McDowell's headquarters, at Arlington Heights, to all the division and brigade commanders of the grand army, at two o'clock in the afternoon of Tuesday, July 15th, and was communicated to the different corps during the brigade parade held in the course of the evening. The order was received by all the troops with the most enthusiastic demonstrations of satisfaction. The regimental commanders were instructed to hold their commands ready to move at 2 P. M., the next day, provided with cooked rations for three days. Accordingly, the greatest activity prevailed on the morning of the 16th, throughout the encampments, from the northernmost post, near the Chain Bridge, to the southernmost, near Alexandria. Tents were taken down and tied up, wagons loaded, arms put in order, ammunition dealt out, rations cooked, &c.

At noon everything was in readiness, and precisely at two o'clock the fifty thousand men composing the grand army about entering upon the great work of sweeping secession out of the Old Dominion, were moving from their different positions toward their respective destinations.

The army moved southwesterly by four roads, its east and west portions being some eight miles apart at the start, but concentrating towards Centerville, three miles from Manassas Junction. Gen. McDowell went forward at the head of the second division forming the center. This division had in advance one regiment deployed as skirmishers, their lines extending from half a mile to two miles on each side of the road to guard against an ambush. Then followed one regiment of infantry, then a company of flying artillery, consisting of six rifled cannon, each drawn by four horses, and each gun followed by an ammunition wagon, also drawn by four horses. Then came two regiments of infantry, completing this brigade. Another brigade, somewhat similarly organized, followed in this division, with a long line of baggage wagons in the rear. The whole line occupied some miles of the road, and was several hours in passing a given point. As the column moved up and down the hills of the broken country through which the march lay, the rumble of the artillery, the long lines of bayonets glistening in the sun, and the perpetual tramp of the soldiers, are said to have produced a scene singularly impressive. Some of the inhabitants fled on the approach of the army, many gazed on sullenly, and a few continued quietly cultivating their fields as the troops marched by.

The other three divisions moved along their respective roads in about the same order, while one division was left in the rear as a reserve.

As the army moved towards the southwest, the enemy's pickets fell back before them on their main lines.

On the 17th our troops entered the village of Fairfax Court House, eighteen miles from Alexandria and nine from Manassas Junction.

### THE FIRST FIGHT AT BULL'S RUN.

On the 18th the first division arrived at Bull's Run, a small stream running through a valley three and a half miles from Manassas Junction, and here a brisk skirmish took place.

At eleven o'clock General Tyler proceeded to make a reconnoissance in force with Captain Ayres' (late Sherman's) battery, four companies of cavalry and Col. Richardson's brigade. Advancing up the road to Bull's Run for about two miles, the column came to an opening, after passing through a long stretch of timber, when sight was caught of a strong body of the enemy. General Tyler immediately ordered Captain Ayres' battery to advance and open on them, which they did from a commanding elevation. Eight shells had been thrown, when suddenly a volley was fired upon us from a hidden battery, about a mile down the road. Some of the enemy's grapeshot struck among the cavalry, that had in the meantime been drawn up in a body on a hill, killing two horses and wounding two of the troopers. Two more shots were then fired by the rebels, to which our rifled pieces responded with about fifty shot and shell, directed wherever a trace of the enemy was visible. Two of Parrott's rifled twenty pounders then came up, and immediately joined in the action. The Parrott's gun is made of rimmed wrought iron, with rifle bore. With a single pound of powder they throw a shell of twenty pounds two and a half miles. The enemy having retreated into the woods, our batteries stopped firing, and the Second Michigan was ordered to deploy as skirmishers on the left of the road, and advance into the woods. They gallantly moved on, and, having entered the timber, they had hardly been out of sight five minutes when a most lively exchange of musket shots took place for a few minutes. Suddenly a succession of whole volleys, evidently discharged by large bodies of men, were fired. The remainder of Colonel Richardson's brigade was then ordered ahead. The three regiments advanced towards the woods, and drew up in battle array in front and on the right of the timber. Meantime the exchange of musket shots continued in the liveliest style in the woods. Companies G and H, of the First Massachusetts Regiment, and some companies of the Twelfth New York Volunteers, were then also ordered into the timber; and at the same time the cavalry and two howitzers advanced to the edge of the woods, the firing in the timber being kept up in the interval. Our howitzers then threw some grapeshot into the timber, when at once a terrific series of volleys of musketry were poured out from the woods upon the troops outside. At the same time a battery commenced playing upon us from an elevation in the rear. Shot of every description flew about our troops for some minutes like hail; but they being fortunately, nearly all aimed too high, hardly any one was struck outside the woods. A retreat was now ordered, when infantry, cavalry and artillery fell back behind our battery on the hill. The Twelfth New York, and a portion of the First Massachusetts broke ranks, and scattered in different directions, in their hasty retreat for some distance through the woods, in the rear of the battery. The remainder of the brigade formed behind the battery. At this juncture Colonel Sherman's Third Brigade, headed by the Sixty-ninth New York Regiment, appeared. Our battery again opened, and kept up a raking fire for nearly an hour which was vigorously replied to by the enemy. Their balls and shells struck the houses in front of which the battery was stationed several times, and raked the woods in the rear for nearly a mile. Some of their shot were picked up and proved to be from Hotchkiss rifled cannon. After a cannonade of about an hour a retreat was ordered, and our entire force fell back to Centerville.

### THE BATTLE OF BULL'S RUN.

After the skirmish of the 18th, our forces were advanced ready for an attack on the secession batteries at Bull's Run, and this took place on the 21st. All through this beautiful summer Sabbath the hostile thousands of these brave young Americans, scattered over some five miles of one of the loveliest regions in the world, were sending shot, shell, grape, canister, shrapnell and musket bullets into each other's bodies, the fight finally resulting in one of the most

disgraceful panics and flights on the part of the Union forces that is recorded in the annals of war.

From the accounts received up to the time of going to press, we are unable to form any clear picture in our minds of the details of the battle, and shall not therefore make the attempt to convey any to our readers. The leading events, however, are known, and can be briefly stated. Our forces started upon their march at 2½ o'clock in the morning, and advanced to the valley of Bull's Run, which they reached at about 6. Across the valley the enemy could be seen drawn up in line of battle. On our side the firing was commenced by a large rifled cannon, and soon became general along the whole line of nearly five miles. The infantry advanced and attacked the enemy's batteries, carrying all but two of them in the course of the day. In the rear of the infantry, the engineers were busy in constructing bridges across the stream for the passage of the artillery, when, near sunset, an order was given to retreat. At this instant a panic arose among the teamsters in the rear, which was soon communicated to a portion of the volunteers.

The contagion spread, and in less than ten minutes a part of our army was flying in the utmost disorder. Everything was abandoned. The wounded were deserted in the hospitals, and the only thought was of individual safety. Guns were thrown aside, and blankets and knapsacks were lost and trampled upon. Some of the artillery shared the panic; the guns were cut loose, and the gunners used the horses to escape the more swiftly. Those on foot begged piteously to be allowed to share the horses of those who rode. Many strove to clamber into wagons, and were pushed back by the bayonets of those who occupied them.

A large portion of the army, however, maintained its order with a heroism and coolness worthy of veterans. The First Ohio regiment, under Col. McCook, recently Teacher of Infantry Tactics at West Point, made the last stand in the field, and the retreat was covered by the Rhode Island troops and Colonel Blenker's German regiment, from New York, in admirable order.

A considerable portion of our artillery was temporarily abandoned, but nearly all was afterward recovered.

During the eleven hours' fighting under the broiling sun, the New York city troops were particularly distinguished, though all our forces fought with a desperate and steady valor that has never been surpassed. Mr. Russell, the correspondent of the *London Times*, says that our infantry charges eclipsed even the famous British charges at the battles of Alma and Inkerman. As nearly as we can make out from the present accounts, the teamsters and straggling skirmishers ran away, spreading frightful stories of defeat, while the great mass of the army fell back in good order upon its positions. All that courage could do to retrieve the blunders of their leaders was performed by our soldiers.

Our troops fell back to the positions which they occupied before the battle, where they are being rapidly reinforced.

Very false accounts of this battle were telegraphed over the country on Monday and Tuesday, representing it as a complete rout and dispersion of the whole army, causing considerable gloom, but nerving the spirit of the people with additional resolution and firmness. By Tuesday night, 60,000 additional volunteers had been accepted by government among those which had been previously offered and declined. General McClellan has been ordered to Washington, it is supposed to take the command of the army there, while Gen. Banks supersedes Gen. Patterson. The effect of the engagement will be to cause the war to assume larger proportions, and to be more protracted.

### RETAKE OF ONE OF THE VESSELS CAPTURED BY THE JEFF. DAVIS.

The schooner *S. J. Waring*, mentioned in our last among the vessels which had been captured by the privateer, *Jeff. Davis*, arrived in this port on Sunday, July 21st, having been retaken by the black steward, with the assistance of one of the seamen.

When the *S. J. Waring* was taken by the *Jeff. Davis*, her captain and mate were taken off, but the colored steward, two of the seamen and a passenger were left on board. The steward having discovered, by a con-