

## CHANGE OF MAIL DAY.

With a view of presenting the latest intelligence from the seat of war, we shall hereafter mail the SCIENTIFIC AMERICAN on Friday instead of Tuesday. By this change the SCIENTIFIC AMERICAN will have as late war news as any other weekly paper.

It is the intention of the publishers to keep up with the times, in news and in illustrations of new inventions pertaining to warfare, and at the same time, illustrate and describe all new inventions and discoveries which may be considered important in any department of mechanics or science. The publishers trust that all subscribers whose term for which they prepaid are about expiring, will renew their subscriptions.

## THE WAR.

The 24th of May, 1861, is a date which will occupy a prominent position in the history of the United States; for on this day the government made its first step in advance to put down the disunion party that is seeking by force of arms to break up and destroy the nation. Thirteen thousand troops were sent from Washington and its vicinity across the Potomac river into Virginia. The advance was made in the latter part of the night of the 23d and 24th at three points; from Georgetown, across what is known as the chain bridge at the mouth of the Potomac Aqueduct; from Washington across the Long Bridge; and down the river by steamboat to Alexandria, which is a small town about six miles below Washington, on the right bank of the Potomac.

## THE CROSSING FROM GEORGETOWN.

The New York Sixty-ninth and Twenty-eighth regiments, with Lieutenant Drummond's cavalry and a battery passed the Chain Bridge about midnight. They took possession of Arlington Heights, where they have since thrown up intrenchments.

## THE CROSSING AT LONG BRIDGE.

The main body crossed at the Long Bridge. It consisted of about 8,000 infantry, with two companies of cavalry of the regular army, and Sherman's flying artillery. The scene is described as novel and impressive in the extreme. It was as beautiful a night as ever was seen, the air was still, the sky was cloudless and the moon at the full, and in the latitude of Washington, the latter part of May is the pleasantest season of the year. As the troops crossed, the Michigan regiment and Sherman's artillery turned down to the left for Alexandria, while most of the others turned up the river to the right, to occupy the heights opposite Washington.

## TAKING OF ALEXANDRIA.

At two o'clock in the morning, Commander Dahlgren appeared at the camp of Colonel Ellsworth's regiment of Zouaves, and informed them that it was time to move. They immediately embarked on board the steamboats *Baltimore* and *Mount Vernon*, and were carried slowly down the river to Alexandria, where they arrived at half-past five o'clock. They immediately landed, formed in double quick time, and marched up into the town, meeting with no resistance. It seems that the commander of the *Pawnee* had sent a flag of truce into the town a short time before, giving the secession forces an hour to leave. They had accordingly prepared a train of cars and steamed away as our troops entered the place. As the Michigan regiment, however, came in with the artillery, they caught 36 members of a cavalry company, dressed in very gay uniforms, with plumes in their caps. These gentlemen, when first called on to surrender, demanded time for consideration, but as the battery thundered up and wheeled into position, they concluded to surrender at discretion. They were taken to Washington, and confined in the navy yard, where their short and grum answers excited considerable mirth.

## THE DEATH OF COLONEL ELLSWORTH.

On landing, Col. Ellsworth, the commander of the Zouaves, after giving some hasty directions to destroy the railroad track, started for the telegraph office to cut the wires leading to the South. At first he was accompanied only by the military secretary of the regiment, Mr. H. J. Winser; the chaplain, Rev. E. W. Dodge, and the reporter of the *New York Tribune*;

but he stopped and called forward a single squad, with a sergeant from the first company. The party proceeded quickly through the streets, meeting a few bewildered citizens who had just risen in the early morning, and were about to turn towards the telegraph office, when the colonel caught sight of a large secession flag on the Marshall House, a second class inn, though the principal one of the village. This is the identical flag which has so long been waving in sight of the White House at Washington, and has been the subject of much comment. Some ten days previously, Senator Wade, of Ohio, looking at it through a telescope from the White House, remarked to the President that it was provoking to see it so near the capital. As Colonel Ellsworth saw it on the hotel he observed, "It must come down," and, sending back the sergeant for the entire first company, he turned towards the hotel. At the open door he met a man in his shirt and trousers, of whom he demanded what sort of flag it was that hung above the roof. The man, who seemed much alarmed, replied that he knew nothing of it; and that he was only a boarder there. Without further words, the colonel sprang up the staircase, followed by his company, six in all besides himself. When they reached the attic, Colonel Ellsworth took Mr. Winsor's knife, and, clambering up a ladder to the roof, cut down the flag and brought it down under his arm. The party then descended, private Brownell leading the way and the colonel next. As they descended the stairs to the second story, a man, who proved to be the landlord of the hotel, by the name of Jackson, rushed out of a dark passage with a double barreled gun in his hand, and, scarcely observing Brownell, presented his gun square at the breast of the colonel, who was on the stairs within two or three steps of the bottom. Brownell made a quick motion to turn the weapon aside, but the fellow's hand was firm, and he discharged the gun straight to its aim, sending the contents directly into Colonel Ellsworth's breast, who fell forward upon his face, with the dull, heavy sound of a lifeless corpse. The assassin then instantly turned upon Brownell to shoot him with the other barrel, but the Zouave was too quick for him. Though the sound of their guns seemed to those present to be simultaneous, there must have been a fraction of a second in favor of the Zouave, for the ball from his rifle struck Jackson at the bridge of the nose, passing through his head, while the contents of Jackson's gun passed just over Brownell's head and entered the panel of a door behind him. Brownell, not knowing the fatal character of his shot, instantly drove his sabre bayonet through Jackson's falling body, the force of the blow sending the body down the upper section of the second flight of stairs, where it lay upon the face with the gun firmly clasped under it. On turning over the body to remove the gun the face was exposed, displaying a wound too horrible for description, and exhibiting the features fixed in an expression of the most deadly rage and hate. The countenance of the young colonel, on the other hand, was perfectly serene, and, except for the palor that comes with death, was as natural as in sleep. The surgeon of the regiment soon arrived, and, a litter of muskets being arranged, the body was carried to the steamboat and taken to Washington.

## THE GRIEF FOR COLONEL ELLSWORTH.

Elmer E. Ellsworth, the young soldier who was thus suddenly cut off, was 24 years of age. He was born in Mechanicsville, in this State; was employed for a time in one of the large mercantile establishments in this city, and then went to Illinois, where he organized the famous company of Chicago Zouaves, who attracted so much attention on their visit to New York last summer. Mr. Ellsworth studied law for a time at Springfield, Ill., in the office of Abraham Lincoln, now President of the United States; and when the President went from Springfield to Washington, he was accompanied by his handsome student, whose graceful and manly bearing, and energetic attention to the comfort of the party, was the subject of much comment along the route. On the breaking out of the war he solicited permission to raise a regiment of zouaves among the firemen of New York, a service which he accomplished in one week. Many circumstances combined to cause very wide spread grief at the news of his death; he was extensively known among various classes and in many places; and then his youth, his accomplishments, his gallantry and the brilliancy of

his hopes were peculiarly calculated to impress all with sorrow at the suddenness of his departure. As the sad intelligence was flashed over the country, not only in his native town, but in Washington, in New York, and in many other places, flags were lowered to half mast, and all the usual signs of public mourning were manifested. The body was taken to Mechanicsville for interment, attended by magnificent funeral services on its way, both in Washington and in this city. The President of the United States and other public men formed a part of the procession that followed the body to the cars in Washington, and in New York the most prominent citizens were pall bearers, and it seemed as if all of the inhabitants turned out either to form a part of or to witness the procession. The body arrived in this city on Sunday morning, May 26th, where it was met by the parents; it lay in state in the City Hall from 11 to 1 o'clock, when it was borne through some of the principal streets to the steamboat *Francis Skiddy*, on which it moved up the North river toward its last resting place.

## BROWNELL THE AVENGER.

Among the guard of honor detailed to escort the remains of Colonel Ellsworth was the soldier who so swiftly avenged his death. He marched in the funeral procession in this city, with the captured secession flag fastened to the bayonet with which he slew the assassin of his commander. His name is Francis E. Brownell, he is from Troy, N. Y., and is about twenty years of age. Without the least swagger he walked with an air of unaffected grief, the object of the most absorbing interest to the countless thousands who watched the procession. As the word ran along the lines that Brownell was coming, every one seemed determined to get a glimpse of him, and the crowd surged in upon the lines, completely overpowering the police. The whole multitude seemed possessed with a strong and deep emotion, and all held their breath in hushed silence, fixing their eyes on the prompt avenger as he slowly passed along.

## THE REPORTED ATTACK ON THE STEAMER "BALTIMORE."

This report, in regard to the truth of which we intimated doubts in our last issue, proves to have been a heartless hoax. No such attack took place.

## FORTIFYING OPPOSITE WASHINGTON.

The troops which were sent into Virginia on the morning of Friday, May 24th, immediately commenced throwing up breastworks on the commanding positions, under the directions of the educated officers of our regular army. The work was busily prosecuted through Saturday and Sunday. The chaplain of one of the regiments, after conducting divine service on Sunday, shouldered a spade and led the way to the trenches.

A new military department has been formed by General Scott out of that portion of Virginia lying east of the Alleghanies and north of James river, exclusive of Fortress Monroe and vicinity, and Brigadier General McDowell has been appointed to its command. He is one of the most loyal, able and energetic officers of the army, and will certainly do credit to the important post of which he has just taken charge.

## REINFORCING THE ADVANCE.

Additional forces continue to be dispatched daily across the river, by the Long Bridge, while others are sent down by steamboat to Alexandria. It is said to be understood, however, that further advances upon Virginia soil will not be made by the army concentrated at Alexandria and on Arlington Heights, until the government has gathered sufficient forces to make simultaneous movements upon the secessionists from other points.

## GENERAL BUTLER'S OPERATIONS.

Major-General B. F. Butler has received the command of the military district of Eastern Virginia, embracing Fortress Monroe. The secessionists have erected batteries along the York and James rivers, which are powerfully armed with the guns taken from the Norfolk Navy Yard. Fortress Monroe is situated at the extremity of the peninsula formed by the rivers named, and Richmond, the capital of Virginia, is situated at the head of navigation on James river, 150 miles from its mouth, measured by the channel. General Butler is operating to clear the two rivers, and the strip of country between them of the secession forces, preparatory to an advance on Richmond, or as part of the plan for cutting off the communications with Norfolk, and retaking the Navy Yard at that place. On Monday, May 27th, General

Butler ordered 2,500 men, with five vessels, under convey of the *Harriet Lane*, to proceed to a point near the mouth of James river, called Newport News. He commenced work immediately by throwing up fortifications and entrenchments. The position is a most favorable one, and he will be able to hold it against all comers. The last transport was fired at by the Sewall's Point rifled cannon, but the range was too great to be effective.

General Butler has resigned his commission as Brigadier General of the Massachusetts militia, and has been appointed Major General in the United States army, commanding at Fortress Monroe and the military department of that region. If Ben has his health, he will give the secessionists a vast deal of trouble. He is a bold, shrewd operator, and is fully armed with a knowledge of war, besides being a profound lawyer. He is not to be easily caught in a trap.

MOVEMENTS IN WESTERN VIRGINIA.

Harper's Ferry is situated among the mountains on the line of the Baltimore and Ohio Railroad, 81 miles from Baltimore on the east, and 198 from Grafton on the west. At Grafton the road divides, one branch continuing due west 104 miles to Parkersburgh on the Ohio river, and the other extending northwesterly to Wheeling, also on the Ohio. The secessionists, who hold Harper's Ferry in force, have allowed trains of cars to run over the roads regularly; but on the 27th of May, learning that General McClellan, who has command of the Ohio forces, had taken up his march for Wheeling and Parkersburgh, they blew up three of the bridges on the road west of Grafton. They have also thrown down upon the track an immense mass of stone, called Ballman's Rock, 10 miles to the east of Harper's Ferry. Twenty-five locomotives belonging to the road were thus caught at Harper's Ferry.

MOVEMENTS AT THE WEST.

On the western side of the Mississippi river, opposite Cairo, is Bird's Point, where a portion of the ground is slightly elevated above the surrounding swamp. A railroad runs from this place in a southwesterly direction, 26 miles to Sikeston, making the point easily accessible from a large district in Southeastern Missouri. It has been decided by Government to occupy Bird's Point, and on the 27th of May orders were received at St. Louis for the transfer of one regiment of General Lyon's brigade to that place.

OPERATIONS OF THE SECESSIONISTS.

From numerous sources we hear of very rapid concentration of troops in Virginia, mostly at Richmond, Harper's Ferry, and the vicinity of Norfolk. At Mansassas Junction, some 20 miles southwest from Washington, disunion forces are throwing up breastworks, and at this place the opposite outposts are within a few miles of each other. We again close our summary with the anticipation of severe fighting in Virginia.

Naval Intelligence.

The Secretary of the Navy gives notice that a Board of naval engineers is now in session at the New York Navy Yard for the examination of candidates for admission into the Engineer's Corps of the Navy. Qualified engineers wishing to enter the naval service in either of the grades of First, Second, or Third-Assistant Engineer, will present themselves before this Board, by whom they will be examined in accordance with the instructions and regulations governing the admission of candidates to these grades.

Captain Lee, of the United States Navy, in command of the *Vandalia*, ordered to the East Indies, learning, at the Cape of Good Hope, of the breaking out of the secession war, decided to return home with his ship. The *Vandalia* is now at the Brooklyn Navy Yard.

The Union Vote in Virginia.

The following are a part of the election returns of Western Virginia against the ordinance of secession:

Counties.	Votes.	Counties.	Votes.
Berkshire	700	Barbours	350
Harrison	1,000	Taylor	700
Wood	1,695	Marion	350
Morgan	400	Wetsell	100
Boone	375	Mason	1,700
Louden	1,000	Gabbeil	450
Jackson	400	Kanaawha	1,200
Wirt	300	Wayne	500
Pleasants	155	Preston	500
Doddridge	550		

We shall probably not know much about the vote in Eastern Virginia, where the secessionists had it all their own way.

Grand Military Encampment.

Upon the occasion of the visit of Queen Victoria to the Emperor of France in 1855, the military display was gorgeous beyond description. The grand encampment at Boulogne numbered, if we recollect rightly, 60,000 men, and 100,000 soldiers were under arms, and took part in honoring the British Queen. When the King of Portugal visited the Emperor the same year, the grand review at Champ Mars was composed of 40,000 infantry and 8,000 cavalry. Those who witnessed the spectacle will never forget it.

Such sights as these are strange to most of our people—thus far we have been content to follow peace, which has kept the military spirit of our people in subjection. We have had no entrenched camp as at Aldershott in England and Chalons in France; but it appears now that our citizens will soon be able to view a spectacle such as has never before been presented on this continent. The Southern revolution will have the effect to make us a military nation, and a large standing army will need to be maintained, ready to obey with swift alacrity the call of the government. Our volunteers are brave and hardy men, but they need discipline and thorough training to fit them to do work assigned to an army.

It is rumored that the government contemplates the formation of three grand camps—one in Ohio, one in Pennsylvania, and one near this city. The last was commenced on the 20th ult. on Staten Island, and the work is being rapidly pushed forward. The location is the extensive plateau a mile south-easterly from Port Richmond, extending from the line of Doctor Post's house to New-Dorp Lane, and running with a gradual slope to the waters of the Lower Bay. The tract is nearly square, comprises about 10,000 acres, is well furnished with wood and water, and is in every respect well adapted to the purpose in view. On this great natural parade-ground there is ample space for the evolutions of 60,000 men, while the depth of water along shore is such that the transports necessary to convey them to any designated point can lie at anchor, and at a signal come to the wharf at any state of tide, and receive the troops on board.

Some two hundred sappers and miners, under the command of Captain P. Okell, are occupied in clearing the ground of stones, stumps, weeds and rubbish, and have made satisfactory progress in the work. A house and barn are being repaired, the former being intended for reading room, post office, and offices, and the latter for the accommodation of cavalry horses. The old fences and hedgerows on the whole tract are to be removed, and a four-foot ditch is to be dug all round the boundaries, and the bank to be mounted with artillery, so as to make the camp thoroughly entrenched and fortified. The natural slope of the ground from the railroad to the water's edge is to the southeast. Towards the railroad a thick belt of timber breaks the force of the north-easterly winds, and from this eminence, where the marquee of the commandant is to be pitched, the whole camp will be in full view, its snowy streets stretching in regular lines to the blue waters of the distant bay. When the camp is thoroughly established, the view from this point, when 10,000 men are in line at once, for review, will be really splendid. The owners of 850 acres have generously offered their land without any charge, and a handsome, commodious villa has been placed at the disposal of Colonel Williamson, U.S.A., the commandant of the camp, for his headquarters, without any expense to the government.

It is determined to call it Camp Scott, in honor of the Lieutenant-general of our army. At the time of writing, there were about 2,000 troops encamped there, and after that, 200 to 400 will arrive each day, until the corps of reserve is full. It is the intention of the government to push forward the country regiments as fast as possible, and concentrate them at Camp Scott. A fleet of transports will lie off shore, and be in readiness to take an army to sea at a few hours' notice, whenever it may be necessary to re-inforce the army, or make a demonstration on the coast.

The arrangements for cooking will be on the most ample style, so as to be ready for any emergency; but it is intended to make each soldier cook his own rations, after the manner of the French army. Every other practical improvement introduced into the French service will be adopted, and no means will be spared to render our army as effective and self-reliant as possible. The *tente d'abri*, among other things, will

be adopted. They consist of a strip of cotton cloth, 2½ feet wide and 6 feet long, smeared with caoutchouc to make them waterproof. Each man carries one of these strips and part of the pins on which they are to be stretched, and, on reaching camp ground, these pieces are attached in pairs by clasps, and the whole shelter for two men is put up in a few minutes.

The Attitude of Missouri.

Public attention has been directed with great interest to the probable attitude of this State. Governor Jackson declined to respond to the call of the government for troops to uphold the majesty of the law, and at once convened the Legislature in extraordinary session. A militia bill was passed that completely swallowed up the liberties of the people, and made the Governor a sort of military dictator. In his message he gave utterance to the idea that Missouri, owing to her geographical position and peculiar institutions, was in sympathy with the seceded States, knowing all the while that the State of Missouri was surrounded on three sides by the free States of Illinois, Iowa and Kansas, and on the south by Arkansas, with which his State had very little to do, and that between two extremes the only safe one was to be found in the Union and under the Constitution of the United States.

Three weeks' experience under secession would have sunk the State of Missouri in a slough of trouble compared with which the value of her slave property would be but a drop in the bucket; besides, whatever else is to come out of this war, the government would at all hazards hold Missouri in spite of opposition as an absolute duty to her dependencies on the west, which extend to the Pacific. Secession, under such circumstances, was evidently a suicidal policy, and, although at heart an enemy of the Federal government, Governor Jackson has settled down to the conviction that true policy required that he should keep quiet. The government of the United States has an army of 10,000 troops in St. Louis, therefore resistance to its authority is useless. General Price, commander of the State militia had an interview with General Harney, when a plan was agreed upon for the maintenance of peace and the avoidance of future conflicts between the Federal and State governments. They mutually declare a common object, that of restoring peace and good order to the people of the State, subordination to the laws of the General and State governments, and unite in recommending all persons to respect each other's rights throughout the State, and make no attempt to exercise unauthorized powers, as it is the determination of the proper authorities to suppress all unlawful proceedings, which can only disturb the public peace. General Price pledged the whole power of the State officers to maintain order among the people of the State, and General Harney declares that this object being assured, he can have no occasion, as he has no wish, to make military movements which might otherwise create excitement and jealousies, which he most earnestly desired to avoid. They therefore enjoin upon the people to attend to their civil business, and express the hope that the elements which have threatened so seriously to disturb the public peace may soon subside, and be remembered only to be deplored.

It is to be hoped that this arrangement is sincerely made on the part of the State government, but it becomes General Harney to keep the most vigilant watch over all matters there, and insist unconditionally that loyal citizens shall not be driven out of the State, as has frequently been done.

The State troops at Jefferson City, numbering about 4,000 men, were ordered to disband, by General Price. At first they refused to obey, but it is believed that they will quietly disperse and return to their homes.

CARE OF STOVES AND PIPES.—Those who have taken down their stoves and pipes, should take care that they are placed in dry situations where they will not be exposed to dampness, otherwise they may be more injured by rust than by constant use during winter. By covering stoves with a thin coating of warm linseed oil, however, rubbed on with a woolen cloth they may be set in cellars without injury. Those who have not dry places to store their stoves and pipes, we recommend to use the linseed oil for the prevention of rust.

## Steel Cannons—Composite Guns.

On page 48 of our present volume we presented an illustration of a breech-loading steel cannon, made for the Russian government by Mr. Clay, of the Mersey Steel Works, Liverpool, England. The material of which it was made is known by the name of "puddled steel." It has been proposed to manufacture light rifled field pieces of this material for our army; and as "puddled steel" of a superior quality is made at the works of Messrs. Corning & Winslow, near Troy, N. Y., we are not required to send to England for a supply. It is four times stronger than cast iron, and it is capable of being both cast and hammered, so as to give it great crushing and tensile strength. It seems to us to be the best material that can be employed for making strong light cannon.

L. G. Sturdevant, of Talledega, proposes through the *Watch Tower*, the following method of constructing built-up cannon. Make first the interior cylinder of wrought iron, then coil iron wire around it until it is sufficiently strengthened. After which immerse the gun in a bath of molten brass to braze the coils together. Excepting the method proposed of brazing the coils, this system is similar to that of Captain Blakely's, described on page 341 of our present volume. Unless the surface of iron is perfectly free from oxyd, brass solder will not adhere to it. It would be very difficult to carry out this system into practice although it possesses novelty and ingenuity.

## New Blue Color.

In a late number of *Comptes Rendus* a new color, called Paris Blue, is described. It states that 9 grammes of the bichloride of tin and 16 grammes of aniline, heated for 30 hours in a sealed tube at 180°, yield a very bright and pure blue color, which requires only to be treated with water to dye animal fibers beautiful bright tints. This blue resists acids; is deepened in tone with feeble alkalies, but becomes a purple with concentrated alkalies. This is a most important discovery, and is another addition to the remarkable series of rich colors derived from the products of coal tar. We would not be much surprised if all the colors and shades of colors—reds, blues, yellows, drabs, &c.—were yet to be produced on textile fabrics by the products obtained from our oil wells and coal mines. This new blue dye is also called azuline, and is now manufactured and sold in Paris and London in the same manner as Magenta coloring matter.

## Cotton in England.

The Manchester *Examiner*, of the 11th of May, has the following:—

The question, "Where is the cotton to come from to keep the mills at work?" is now seriously engaging the attention of the manufacturers and operatives of North Lancashire; and a petition to Parliament is now lying at the mills and manufactories in Preston and other towns for signature only by the employer and the male portion of their hands. Meetings are also to be called to further the object of the petition, which says: "Your petitioners are greatly alarmed at the prospect of a serious diminution in the future supply of cotton in this country, in consequence of the civil war now raging between the Northern and Southern States of America. That your petitioners therefore believe it to be the duty of your honorable House, in this great emergency, at once to adopt the most prompt and effective measures for rendering India capable of furnishing an ample supply of improved cotton, your petitioners believing that India possesses the capability of meeting the requirements of this country, not only as a source for the supply of cotton, but also as affording a market for the products of their industry. Your petitioners, therefore, pray your honorable House to adopt such measures as will contribute to the development of the agricultural and commercial resources of India, so as to enable that country to compete, on equal terms, with the United States of America, especially in the production of cotton."

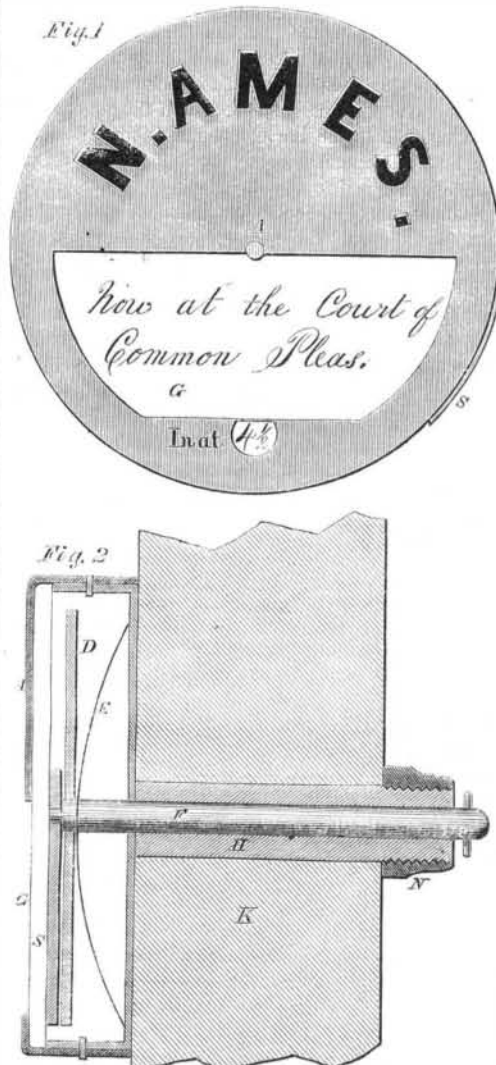
A GREAT STEAMER.—Messrs. R. Napier & Sons, of Glasgow, are now building the steamer *Scotia*, which is intended to be a consort for the *Persia*, and will, when finished, be the largest merchant steamship, next to the *Great Eastern*, in the world. Her length is 396 feet; breadth of beam, 47½ feet; depth, 33½ feet; tuns burden, 4,050. The engine will be nominally 883 horsepower, but actually a great deal more. Her hull is of iron like the *Persia*, which vessel she will exceed in capacity by 500 tuns.

RODMAN'S MAMMOTH CANNON MOUNTED.—The 15-inch gun, of which we gave an illustration on page 305 of this volume, has been mounted at Fortress Monroe ready for service, and a number of shell, weighing 315 lbs. each, have been cast at Pittsburgh and forwarded for its use.

## AMES'S PATENT INDEX DOOR-PLATE.

The accompanying engravings represent an article which every professional and business man, as well as every occupant of a house or room has often felt the need of having on his door. It is appropriately denominated by the inventor an "Index Door-Plate," which is described as follows:—

Fig. 1 is a front view, and Fig. 2 is a section through the plate and door, and fully explains the nature of the invention. A is the frame, of any suitable metal or material, on which the name is engraved, etched or stamped. G is a plate of glass; S, the removable plate for writing upon, of slate, porcelain or ivory; D, a circular card or dial attached to spindle, F, which passes through the door, K, and E is a spring for forcing the end of the spindle, F, into a



hole in the slate, so that the latter cannot be removed outside of the door without first withdrawing the spindle a little from the inside. N is a nut screwed to the end of the hollow shank H, by means of which the plate is confined to the door. For residences, if desired, the dial may be omitted, the spring and spindle only being retained for confining the slate. Or a dial only, without a slate, may be employed if required. Thus if an individual, on leaving his office, studio, place of business, room, or house, desires to have it known at what time he will return, he has only to turn, by means of spindle, F, the dial, D, so that the hour required will be seen through a hole in the slate, as shown in Fig. 1, the words "In at," being marked on the frame. Or if a person wishes to inform his callers where he has gone, where he may be found, or to leave, for any length of time, a notice or message of any kind, he can write it on the slate, S, and as the slate is protected by glass, G, and cannot be withdrawn by any one outside of the door, the writing can neither be altered, defaced, or taken away. The utility and convenience of the index door-plate is obvious to any one.

The patent was granted July 31, 1860; and for the purchase of rights, or further information address N. Ames & E. M. Montague, 17 State street, Boston, Mass.; or Harvey Brown, 21 Nassau street, New York city.

## Americans in England.

Loyal Americans resident in England are making important donations to our government at the present time. A number of gentlemen in London, have notified the Secretary of War that they are about to ship three batteries of Armstrong rifled cannon—six, twelve and twenty-four pounders—with all equipments complete, of which they beg the acceptance of government. This princely gift could not have cost the donors less than \$200,000. Other Americans, living in Manchester, have forwarded a battery of Whitworth guns—twelve-pounders—each of which bears the following inscription:—

"From loyal Americans in Europe to the United States government, 1861."

A large commercial house in this city have also offered to furnish, at their own expense, a battery of four rifled cannon—six, twelve, twenty-four and forty-two pounders.—*New York Tribune*.

## Tenacity of Metals.

Guyton Morveau has carefully determined the weight which can be supported by wires of a uniform diameter of 0.787 of an English line without fracture.

METALS.	POUNDS.
Iron.....	549.250
Copper.....	302.278
Platinum.....	274.320
Silver.....	187.137
Gold.....	150.753
Zinc.....	109.540
Tin.....	34.630
Lead.....	27.621

GALVANIZING IRON.—Sheet iron, iron castings, and other objects in iron, chains, nails, &c., are first cleansed in an acid bath, the water of which is so rendered by the addition of sulphuric and muriatic acids. They are then put into an alkaline bath, the effect being produced by the addition of a little soda to the water. After this they are taken, one at a time, and scoured with sand, emery, and water, using a piece of cork or cocoa-nut husk as a brush, and again thrown into a bath of very weak acid and water. Pure zinc when melted is covered at the time of the operation with a thick layer of muriate of ammonia (sal ammoniac) in an iron boiler or open vessel. The iron goods to be galvanized are now to be dipped into the fluid zinc, slowly raising them from the metal, so that the superfluous zinc may drain off. They are then thrown into cold water, on removal from which they are wiped dry, and the operation is finished. Thick, heavy pieces of iron require to be heated before dipping into the zinc, in order to avoid cooling it below the degree of fluidity.—*Septimus Piessé*.

CONDENSING ENGINES FOR GUNBOATS.—Several, if not all, of the gunboats built hurriedly for the British navy during the Crimean war, were fitted with high pressure engines. It seems that in every instance these engines were failures, being very liable to get out of order, thus involving great expenses for frequent repairs. This has led to the conversion of some of these engines from high pressure to condensing, and in every case, we believe, with satisfaction. A saving both of fuel and wear of machinery has been effected by the change.

SCIENCE AIDING THE UNION.—The government has arranged to use the Calcium light at Fortress Monroe, and the apparatus will be set up on the parapets in a few days. One of the reflectors of this light, which was once placed on the Latting Observatory, in New York, cast a distinct shadow at Tarrytown, thirty miles distant. By the aid of this light the garrison at Fortress Monroe will be able to detect any vessels that may attempt to pass the fortress at night, and give its artillery a distinct object on which to be effective no matter how great the surrounding darkness.

A SMALL iron steamer of 73 tuns burden, the plates of which were only one-eighth of an inch in thickness, was fired at in 1841 with Paixhan 10-inch guns, having 12-pound charges of powder, at 450 yards distance. Although 40 of the shot went through the hull of this small, thin-sided vessel, yet she was not sunk, owing to her being divided into several water-tight compartments.