bond of not less than $30,000 must be filed and signed by two responsible parties. The howitzers must each weigh when finished not less than 1,476 lbs.; the penal bonds for the contract with them are set at $10,000. The bonds will be forfeited if the cannon and howitzers are not delivered at the time agreed upon and specified in the contract. Proposals are open until the 27th of February.

SUCCESSFUL EXPERIMENTS WITH PROJECTILES.

From time to time we have published in the SCIENTIFIC AMERICAN reports of artillery practice, and of experiments with shot and shell. The progress of our inventors in this respect has been gratifying, and we can demonstrate to a degree which will be satisfactory to our foes, that we possess means of defense which it would be extremely impolitic for them to come in contact with. There is nothing like a strong arm to awe the insubordinate, and if we can show that we are strong in a military sense, that will be the best possible protection we could have against foreign intervention. Late experiments with the famous Stafford projectile and sub-caliber shell show that it is one of the most formidable weapons of its class. In Washington on Monday, Jan. 26, 1863, a shell weighing 86 lbs. was fired from a 150-pounder Dahlgren rifle, with a charge of 15 pounds of powder, at a range of about 50 yards, into a target representing a section of the *Warrior's* broadside. The shell exploded in the target, between the plating and timber braces, and blew the same to fragments. Also, a shot weighing 108 lbs. was fired at the same target, at the same range, and went completely through and buried itself five feet in the bank behind. The wood and iron of the target were driven before the shot, which made a very ragged hole, and flew in all directions. Previous experiments with these projectiles, proved conclusively that targets of 9-inch iron plates, backed by 21 inches of hard wood, can be readily penetrated when fired from the Dahlgren gun. Indeed the inventor of this shot thinks that the Dahlgren gun is one of the best in the country, a great many of his experiments have been conducted with it, and he is satisfied to endorse its virtues as a national arm. Experiments were also made at West Point with the Stafford projectile, at which the most favorable results were obtained. We have before us an official report of them, signed by Captain Benét, of the Ordnance Department, in which their good qualities are set forth. Angulated targets nine inches in thickness, it is said, can be penetrated with ease. In view of the facts above stated, it is gratifying to know that the Government has ordered the projectile and shell for the service.

The patents of Mr. Stafford were secured through the Agency of this office, and the claims of his last one may be found in the official list of claims on another page.

DEATH OF PROFESSOR ROBINSON.

An eminent American scholar has departed from among us. Professor Edward Robinson died in this city on the 27th ult., in the 69th year of his age. He was born in Southington, Conn., on the 10th of April, 1794, and after his preparatory studies he became a student of Hamilton College, N. Y., where he graduated with distinction in 1816. In this institution of learning he subsequently acted as tutor and devoted himself assiduously to his favorite study —philology. In 1821, he removed to Andover, Mass., and in that seat of theological learning, he became a favorite of Professor Stuart, whose Hebrew class he taught in the absence of the learned teacher. After five years' residence in Andover, where he had drank deep at the fount of Greek and Hebrew literature, he visited Europe to enjoy the advantages of travel and the benefits that could be secured in some of the German universities. In 1830, he returned and acted as professor at Andover for three years, then he removed to Boston where he devoted himself to literary pursuits, and from thence he came to New York in 1837, having received the appointment of Professor of Biblical Literature in the Union Theological Seminary. Previous to his entering upon the duties of his professorship, however, he made an extensive tour of the Holy Land, and examined critically the important places mentioned in the Bible. His profound knowledge of the Greek and Hebrew languages and his great powers of observation led to important results, which were given to the world in three volumes entitled "Biblical Researches in Palestine." His conclusions in many respects were different from those of several travelers who had preceded him, and whose works were held to be reputable by biblical scholars. The "Biblical Researches" were published in England and Germany as well as America, and they at once attracted the attention of European linguists, who were not slow in recognizing the merits of the American scholar. This work is generally recognized as standard authority by biblical students. The acuteness of research and correctness of description displayed in it gained for its author well-deserved celebrity. In 1852, he made a second tour of Palestine, and gave the results of his second travels in the Holy Land in a new edition of his "Biblical Researches." He was the author of several other very learned works which acquired for him a European reputation for scholarship enjoyed by no other person on this continent, we believe. He was a clear writer, a profound thinker, a keen observer and an ornament of the Christian faith.

SNOW.

The moisture formed in the atmosphere, which, in more genial seasons of the year, descends in showers which revivify the parched and thirsty earth, is congealed in winter into crystals of frost, and covers the world with a mantle white and pure. The uses of this provision of nature are familiar to every one. The earth, covered as with a blanket, nourishes the seeds of vegetation within her bosom so that they may spring forth green and fair at the proper season; and not only this, but the snow also prevents the soil from respiring, or breathing off those exhalations which are needful and necessary for the strength of its reproductive forces. In the country the snow falls quietly and softly and performs its wondrous office in silence; it lays long upon the sloping hillsides and the winter wheat quickens with the pains of life renewed; the stubble pushes up its sharp spears, as the snow melts away, and the blackened stumps, charred with the fires of autumn, gleam again with their feathery crowns. The evergreens, mantled with a robe even fairer than their natural one, bend beneath the weight of it and acknowledge its claims. While these scenes transpire in the country, those of the city are materially different, and snow is very often of doubtful utility there; it impedes very greatly the transaction of business; it blocks the wheels of the cars; it retards the omnibuses, and often breaks down roofs and awnings by its immense weight. It lodges on umbrellas and behind coat collars, it clogs in overshoes, and lies damp and heavy upon the garments of pedestrians and those who wander abroad; and, borne by its friend and ally, the wind, it penetrates to every crack and crevice of the cellars where the poor herd together like animals for warmth. Yet for all these unpleasant features there is a counterpoise. The removal of the snow from the sidewalks constitutes no unimportant part of the revenue of the poor persons who have no regular occupation. It has been ascertained, or, at any rate, asserted, that the expense incurred by property holders in the city in removing the snow from their sidewalks would amount to $6,000 for one heavy storm. If this statement be true, the money earned must compensate for other evils and enable them to be borne patiently by all. This winter has been remarkably open and warm so far, and we saw in the middle of January last a twig, cut from a lilac bush in western Massachusetts, whose buds were swelled almost to bursting with sap. It is to be hoped that the frost may not set in with renewed vigor, and destroy fruits, flowers and grain at one fell blow.

LANCASHIRE IMPROVING.—The steamer *Edinburgh* arrived at this port on the 29th ult., from Liverpool, bringing the gratifying intelligence that the distress in Lancashire is steadily disappearing. There is a decrease in the number relieved during the week to the extent of 7,360 persons. The funds in hand on Saturday, January 10th, amounted to £386,071—a sum sufficient for the exigencies of the next four months.

PURE AND IMPURE WATER.

At a late meeting of the London Chemical Society Dr. Woods read a paper on the character of the water which should be used for drinking and domestic purposes. He insisted that organic matter in water was injurious to health, and it was as much the duty of a physician to prevent as to cure disease. He stated that his attention was pointedly directed to this subject by the case of two French ships that had been despatched simultaneously with troops from Algiers to France, and under similar circumstances excepting the water with which they had been furnished. The water of one was obtained from a marshy place where the ague was prevalent; that of the other from an elevated position where the ague did not prevail. Soon after sailing, the troops on board of the vessel supplied with water from the marsh spring were seized with remittent fever, while not a case occurred on board of the other vessel. Dr. A. Smee, who was present, stated as his opinion that as a rule all animal excreta in water should be considered poisonous to animals of the same class, and all organic matter of a decomposable character in water was highly prejudicial to health. He believed that the best water to send to sea was that derived from deep springs in the chalk formations.

Operations of the Southern Patent Office.

One of the Richmond papers gives an abstract of the report of the Commissioner of Patents of the "Confederate States" for the past year:—

The report of the Commissioner of Patents, sent into Congress, explains the operations of this office during the past year.

The number of applicants during the year was one hundred and forty-seven; the number of caveats issued during the year was sixty-four; the number of patents issued during the year was seventy-five; the number of United States patents and assignments of United States patents in whole or in part, recorded and revived, one hundred and seventy-eight.

Amount of money received, $9,186 98; amount of money on hand January 1, 1862, $2,812 62; total, $11,999 60. Amount of expenditure, $9,391 83; balance in Treasury, $2,607 77.

The patents issued were distributed among the several States of the Confederacy as follows:—

To citizens of Virginia, 20; Mississippi, 10; Alabama, 8; Georgia, 7; Louisiana, 6; Texas, 6; South Carolina, 5; North Carolina, 5; Tennessee, 5; Arkansas, 1; Florida, 1; Kentucky, 1.

The financial condition of the Southern Patent Office is superior to our own, the Commissioner having a small balance on hand. The amount of business transacted by the Richmond Patent Office is quite insignificant, but the financial exhibit shows a respectable surplus on hand. In this respect is it superior to the Washington Office, if we may believe the assertions put forth in a pamphlet now before us, which states that Commissioner Holloway asks for an appropriation of $87,520 04, to make up a deficiency for the fiscal year ending June 1864.

TYPO-TELEGRAPHY.—Viscount de Vougy, Director General of the Electric Telegraph throughout France, has invited several members of the National Institute and some of the chief clerks of the Telegraph Department to assist at experiments about to be made with the typo-telegraph invented by the Chevalier Bonelli. The typo-telegraph of this scientific engineer can print five hundred despatches of twenty-five words within an hour! According to the system of Morse, now in use, it would require not less than twenty wires and fifty clerks to accomplish a similar work. Should the experiments prove satisfactory, it is said that the Government will concede to the Chevalier Bonelli the working of the line from Paris to Lyons ahd Marseilles.

[The above notice is copied from the London *Herald*. The invention of Chevalier Bonelli, to which refererence is made in the above extract, was secured by patent, here, through the Scientific American Patent Agency on the 6th of January, 1864.—EDS.

IRON MASTS.—The following are the dimensions and weight of the masts of the new British frigate *Prince Consort*. The mainmast is 116 feet long by 37 inches in circumference, and weighs 18 tuns 14 cwt.; the foremast is 110 feet long by 36 inches in circumference, and weighs 17 tuns 10 cwt.; the mizzenmast is 83 feet long by 24 inches in circumference, and weighs 5 tuns 14 cwt.; the bowsprit is 43 feet long by 36 inches in circumference, and weighs 4 tuns 10 cwt.

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