Scientific American.

NEW-YORK, SEPTEMBER 29, 1855.

The Scientific American Prizes.

The fourteen splendid cash prizes which we offer to those who are most successful in obtaining subscribers for our paper, still remain open to competition, and will continue so until next New Year's Day. The first prize is for the snug sum of one hundred dollars; the second, seventy-five dollars, and so on down. In addition to these inducements, there is a liberal deduction from the regular subscription price to all who canvass for names; so that if competitors are active they may almost double the amount of their prize money.

We venture to say that few young men can better remunerate themselves in a pecuniary point of view, hour for hour of time employed, than by exertions spent in obtaining subscribers to the SCIENTIFIC AMERICAN. It is a species of work that may be taken up at any time—in the evening after the labors of the day have closed, or whenever other convenience permits. For every hour thus spent, we repeat, they are almost certain to be well repaid, besides enjoying the satisfaction of having aided in the promotion of a good work.

The present season is one of such peculiar prosperity, that nearly every one feels more liberally disposed than usual. It is therefore an excellent opportunity for our friends to promote their own interests, as well as ours, by seeking subscribers. We have no doubt that their efforts will be crowned with entire success.

A Word to Old and New Friends.

We have an idea that there are quite a number of our old friends who are just now wondering why it is that their copy of the SCIENTIFIC AMERICAN does not come to them with its accustomed regularity. Perhaps some of them are finding fault with the publishers, and are just on the point of forwarding a "blow-up" letter, in order to have the grievance corrected.

We shall take the liberty of saving them this trouble by plainly stating that the fault is their own. Their year is up; they have not renewed, and we have crossed off their names: hence their failure to receive the paper. Their only remedy is to remit the money for a new year; the welcome smile of the SCIENTIFIC shall then again greet them as regularly every week as before.

Both old and new subscribers will do well to remember that the earlier they remit their subscriptions the better. For the present, we can accommodate our patrons with numbers commencing with the first of this volume, but in a short time hence we may be unable to do so. Therefore hurry up your subscriptions. Not a single number should be lost or missed, if it can be avoided. Each copy contains something new, important, and useful—perhaps the very information that has been wanted for years. Here is a case in point, from an old Ohio friend: in writing to renew his subscription he says:—

"I commenced taking your valuable journal five years ago,—almost entirely because I wished to obtain information on woolen dyeing. For nearly that period I have opened almost every number to be disappointed, but finding so much valuable information on other subjects, I continued on, until, at length, I have found myself very bountifully supplied with the information I needed, and amply repaid for five years of suspense."

The Plague; its Origin and Disappearance.

This is the title of a remarkable article in the last number of the *Medical Examiner*, (Phila.,) by Augustus T. Stamm, who writes from his own observations in the native country of the plague.

The Plague, the Pestilence, the Typhus d'-Orient—different names for this disease—has been known to the readers of history as extending far back for thousands of years. It repeatedly visited the whole of the old world, raging with fearful destructiveness even to the frozen Steppes of Russia. It sometimes broke out in a place during hot weather and great suffering for food, and in another place during pleasant weather and prosperity; and its causes thus seemed to baffle all theory in accounting for it. In Europe it at last began to be suspected that it came from the East, as it was found to be epidemic there, when the cleaner parts of Italy, France, and England were exempt; and as its contagious power was terrible, in being introduced in the exchange of merchandise along an infected frontier, the quarantine regulations were established to prevent its introduction—measures which were found effectual when properly executed. This led to the tracing of the plague to its seat, and it became evident that Egypt was its birth place. Upon earnest inquiry, it was discovered that Cairo, and the villages surrounding the Delta near it, were generally attacked first, and suffered most, and the reason of this was found in its condition and situation. It was surrounded by neighboring hills, which prevented the winds from circulating through the streets, and carrying off injurious gases; a filthy and neglected canal ran through the city, and in its neighborhood was a large fetid marsh. Mehemet Ali, in 1840, ordered the streets to be watered and swept every morning, but the state of health did not improve. He then ordered a large portion of the surrounding elevations or hills to be carried down into the lowest fields, and the marsh to be filled up, and converted into gardens. Thousands of peasants were forced to work in carrying out these despotic but wholesome commands, until a long chain of hills were lowered, and the miasmatic fields converted into smiling olive gardens. As this work progressed, the health of Cairo improved, until in 1844—during the time Mr. Stamm was in Egypt—the plague disappeared entirely, and has never since returned. Here is a fact respecting the prevention of a disease which is worth a thousand speculative opinions. In hot climates, the neighborhood of swamps must always be subject to epidemics and the best remedy is one like that which has been carried out by Mehemet Ali, by which he removed the causes of a scourge which, upon several occasions, nearly depopulated Europe.

Engineer and Machinists Drawing Book.

A complete and reliable work on the draughting of machinery in all its details, and yet exhibiting a high style of art, is something which we have long desired to see in our country. This wish has at length been gratified by the completion of the above-named work of Blackie & Son, of Glasgow, Edinburgh, London, and No. 117 Fulton street, this city, (N. Y.) It embraces a complete course of instruction for the practical engineer, commencing with the use of the instruments, then proceeding regularly onward to the drawing of elementary forms, geometrical projection, simple machines, such as wheels, plates, beams, columns, rods, and all parts of machinery, and ending in complete compound machines, such as steam engines, &c. The plates are very numerous and fine, most of them being on steel, and as a handsome book, simply, it is worthy of a place in the library of every mechanic. It gives instruction in both linear and perspective drawing, shading, and coloring, and the plates accompanying the instructions are models of taste to copy from. The plates are large, on fine drawing paper, and are seventy-one in number. The letter press and wood cuts are also excellent, and the figures representing examples of finished shading are the finest we have ever seen in any work on the subject. We are confident that this book will form an important element in the education of our young mechanics, both as it regards improving their tastes and increasing the range of their acquisitions in correct mechanical drawing. The price of a bound volume is $10 50, in parts, unbound, $8; to be obtained at the above-named place, this city.

Iron Girders.

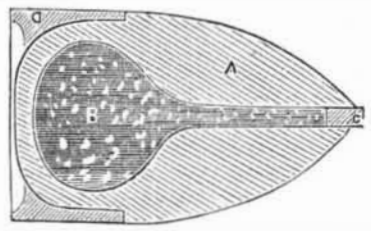
A trial of the Iron Girders took place at Trenton, N. J., on the 19th inst. The girders were 42 1-2 feet long, made by Bottom, Tiffany & Co. for a new store in Chesnut street, Phila., and were warranted to bear 50 tuns weight. They withstood the test of 52 1-2 tuns.

The United States Patent Office.

Every inventor should read and ponder the communication from Washington, signed "Inventor," relative to the Patent Office, which we publish in another column.

War Projectiles—New Shells and Cannon.

The war in Europe has created a perfect furor for new missles and machines to destroy the Russians by the Allies, and vice versa.—We have already published illustrations of the Russian infernal machines, to blow up the wooden walls of the British, and now we here publish a vertical section of a new patent explosive shell, by Bashley Britten, of London, which is intended to be used in common cannon, and do the job for the Russians in short order. This shot and shell has recently been patented, and has been described in the London *Times* and the *Mechanics Magazine*. The object of the invention is to increase the range and accuracy of the shot to be fired from cannon, by adapting the balls to be fired from rifled guns: also to provide for an explosive shot or shell, so made as to proceed always point first, and burst when it strikes, scattering destruction around. The form of the shell is conical, and it is inserted with its base towards the breech.



A is the body of the shell, which is of cast iron, with a hollow part, B, which is filled with an explosive compound such as percussion powder—the chloride of potassa and sand. It is ignited by an iron pin, *c*, placed snugly in the apex, which, when the ball strikes, ignites the powder by percussion force; or it may be ignited by a common fuse like a bomb shell. The cavity, B, renders the hind part of the shell of less weight in proportion to its size than the fore part, so that the center of gravity will be in front of its greatest diameter; this will keep the point, C, always in advance. D represents a coat or band of lead extending round the shot or shell as shown. On the ignition of the charge in the gun, the edge of the lead band, D, will be expanded, and fill the grooves of the cannon and prevent windage, and a spiral motion will be given round the long axis of the projectile.

The band of lead, D, is put on as follows:—The shell is scoured bright with dilute sulphuric acid and sand, at its butt, then washed in soft water, dipped first into a solution of salammoniac, and then into a pot of molten zinc. While the zinc is still hot, the shell is placed into a proper mold, and molten lead poured in to form the band, D. The zincing is first necessary to make the lead adhere to the iron. In a certain sense, this is the Minie ball principle applied to cast iron shot for cannon. The ball is of cast iron, with a lead band, to adapt it for the grooves of the gun, and to make cannons shoot accurately, with greater range, and at the same time obviating the grinding and rapid wearing action of the iron ball on the metal of the gun. The fitting of lead bands to cannon balls, to prevent windage, and to adapt them to grooved guns, and give greater range and accuracy, is not a new idea. Experiments with such balls were tried long ago in this country. Explosive shells of the same character are not new either. We know they were tried at West Point, and also at Fort Hamilton, ten years ago. What is new about this shot is its Minie character in forming the expanding band. This appears to us to be a good improvement, for which Mr. Britten deserves credit. Shells of this character were projected with a range of 1000 yards more than solid shot, and only two-thirds the charge of powder, and were more accurate in aim.

The London *Times* describes a recent war projectile by a Captain Disney, which has been tried at Chelsea. It is thus described:—"A shell is fitted with a bursting charge of powder contained in a metal cylinder, and filling the rest of their space with a highly combustible fluid, which, upon exposure to the air, ignites everything with which it is brought in contact. This fluid does not act upon the substance of the shell, is not in itself explosive, and being prevented from leaking by a nicely fitted brass mouth plug, enables the missile to be carried about without much risk.

Directed against ships or houses, or masses of troops, the new projectile would have all the destructive properties of the rocket, without its uncertain aim. Water only temporarily extinguishes its incandescent power, which is so great as to make even woolen materials burn with a quick flame. Capt. Disney also states, that by a similar use of another chemical fluid, he can cause blindness for several hours to all troops coming within a quarter of a mile of its operation; but this portion of his experiments was, for obvious reasons, omitted."

Such shells were described in our last volume by a correspondent, who proposed filling them with camphene, or some such combustible fluid. Capt. Disney may have discovered some highly combustible superior compounds, but we are rather skeptical respecting his new chemical fluid, which, according to the *Times*, will cause blindness for several hours, to troops a quarter of a mile distant. This assertion in relation to the gallant captain, is something like "trying to pull the wool over the eyes of recruits."

The *Pennsylvanian* states, that a new wrought iron cannon of extraordinary strength, has been invented by W. Griffin, superintendent of Reeves, Buel, & Co's. Iron Works, of Philadelphia. It is stated to weigh only 250 pounds, and yet it has been charged with 3 lbs. of powder, and rammed with five balls on the top of it. It was fired 168 times in one day. Its length is 4 feet; its bore is about 2 1-2 inches. In spite of all the new terrific war machines and projectiles which have been brought forward in England and France during the past year, Sevastopol has now withstood a siege for nearly twelve months, and the only effective means of making advances on the works, appears to have been the old plan of *sap and mine*. The last news from Europe, by the *Baltic*, gives an account of the failure of the monster *wrought* iron gun of Nasmyth. The great mass of wrought iron required to form it, maintained its heat so long, as to return to its crystalline state, and thus destroy its fibrous character. Large wrought iron guns never have succeeded, although many of them have been made, and the success of Mr. Griffin's, mentioned above, may simply be owing to its being very small. If, however, superior light field pieces can be made of wrought iron—and we think they can—such should be used in preference to all others. It would be considered an act of foolishness to use cast iron for rifle, musket, and carabine barrels; why not for light cannon?

Physical Effects of a Bombardment.

A private letter, giving an account of the recent bombardment of Sweaborg, says that the men employed on the gun boats had, as is usual, their ears padded with cotton, and few cases of deafness are reported, but all employed experienced severe pain in the chest, and in two days some of the men had not recovered their voices. The mortar boats threw 1,000 tuns of shells!

Some of our cotemporaries state that peat is now being used for fires on the Worcester and Nashau Railroad, and with great satisfaction. Parties have purchased extensive tracks of peat moss, in the belief that it will supersede wood on some of the eastern railroads.