Correspondence.

The Properties of Guns and Projectiles.

[ME]SSRS. EDITORS :—At a time like the present, when the ingenuity of man is taxed to its utmost capacity in the contest between armor clads and artillery ; when the strife for the mastery is still undecided, it will be permitted in an individual who is a believer in great guns, to record his testimony and experience in their favor, and if necessary, to demonstrate by trial the great superiority of guns over anything which has, as yet, been constructed or projected to baffle their power. General Haupt, of Washington, in a series of interrogatories recently published, furnishes an excellent opportunity to the friends of the two antagonistic arrangements to give their views on the subject ; I will therefore give my views and also answer some of the questions propounded.

To his query, "Have you given any attention to the subject of ordnance in connection with iron armor for ships of war ?" I can say :—"I have ; during the last twelve months that subject has had much of my time and attention, experimentally and otherwise."

"What is your opinion of the propriety of placing 15-inch cast-iron guns in the turrets of the *Monitors* ?"—"For the perforation and actual demolition of iron and stone structures, the charge for a smooth-bore should not be less than one pound of powder to three pounds of shot, and for a rifle gun not less than one pound of powder to four pounds of shot. The 15-inch guns will not bear such charges, and are consequently unfit to do that kind of work. They are, undoubtedly, good shell guns, but time will show that they are wholly unfit to throw solid shot."

"Can a high velocity be given to a projectile without a heavy charge of powder in proportion to its weight ?"—"Certainly not ; after reducing the windage and friction of the shot in the barrel to a minimum, the work remaining must be performed by the powder."

"Does a large diameter of projectile with a given velocity reduce the power of penetration, and in what ratio ?"—"The resistance to penetration is directly as the diameters of the projectiles ; a shot 7½ inches in diameter meets with half the resistance that one of 15 inches experiences."

"What should be the ratio between the powers of penetration of a projectile 15 inches in diameter, moving with a given velocity, and a projectile of equal weight and half the diameter, moving with double the velocity ?"—"Conceding it to be true that the penetration of projectiles is directly as their weight, while it is as the square of their velocity, the ratio is as eight to one in favor of the smaller diameter."

"Is it probable you could, with equal safety to the gun, impress upon a projectile from a 7½-inch bore, nearly double the velocity that could be given a projectile from a 15 inch bore ?"—"It is possible to more than double it, as the 15-inch gun is now used ; inasmuch as a solid shot weighing 75 lbs. can be fired from a 7½-inch rifled bore with safety to the gun, with a charge of 25 lbs. of powder ; while the lightest solid shot used in the 15-inch gun is of cast-iron, spherical, and weighs about 425 lbs., and the maximum charge for the 15-inch gun is, I believe, 50 lbs. of powder."

If in the case of the large shot, an initial velocity of 1,050 feet is attained, per second, in the other it will not be much less than 2,500 feet. The power of demolition will be as great in the small shot as in the large ; while that of perforation will be as two to one in favor of the former. During the earlier part of my investigations of this subject, it occurred to me, that guns of a large diameter of bore might be made more effective by placing shot of a less diameter in a wooden sabot made to fit the bore, in this way a shot 10 inches or of any other desirable diameter, might be fired from a 15-inch gun with a charge of 75 lbs. of powder or more, with perfect safety to the gun. This plan will not answer, for the reason that it would be impossible to give accurate direction to the shot, save for very short distances.

Rifled cannon must, in all cases where solid shot are used, take the place of the smooth-bores. It is a great mistake to suppose that a much higher velocity can be attained from the latter than from rifled guns. If the proper proportion of powder and shot are used, the difference in velocity will be trifling, while the advantage in accuracy will be largely in favor of the rifled gun. The charge for a 100 pound Parrot gun is 10 lbs. of powder, the caliber being $6\frac{4}{10}$ inches, the same as the 32-pounder smooth-bore. The 100 lbs. shot is equal in weight to more than three solid spherical shot for the same gun. If, in this case, the shot were reduced to 50 lbs. and the charge of powder increased to 15 lbs., greater range and greater power of penetration and demolition would be attained than it is possible to give the heavier shot, with the necessarily light charge of powder. These opinions are based upon research and experiments carefully made. M. RITNER, C. E.

New York, Dec. 30, 1862.

Wintering Bees.

MESSRS. EDITORS :—To winter bees successfully in our cold Northern climate is a question of great moment with every apiarist. There seem to be almost as many ways recommended as there are bee-keepers. Having had several years experience in this business in Northern Vermont, I have arrived at this conclusion, that bees should have for their welfare in winter a *dark, cool, dry, still* place, where the temperature is as even as possible, and about five degrees above the freezing point, or 35 degrees Farenheit. In this temperature the bees will remain very still and quiet, and will require but little honey to what they would if kept in a warmer place.

In the first of my experience, I was advised to put my bees into a tight dark room in the house. I did so, and the consequence was I lost many of my bees before spring. During the warm days in the winter the bees would become very lively and crawl out of the hives upon the floor, and if there was a ray of light they were sure to find it, and would there perish ; if shut into the hives, they would create such a heat in trying to get out that they would melt their comb and become drowned in their own sweats. This I found was owing principally to the outside temperature being so changeable and the want of proper ventilation.

Wintering bees out of doors, as practiced by a large proportion of amateur bee-keepers, is always attended with bad results, as nearly one-half of the stocks are frequently lost, and those that are not are so reduced in number that they will not swarm in the coming season, there not being bees enough to permit of it, consequently are worth but little to their owners. When bees stand out of doors, every warm day during the winter they are inclined to fly from the hive, and thousands of them get chilled and are lost, and where there was a peck of bees in the hive in the Fall, by spring there may be but a handful left. In the Middle or Southern States, bees can be allowed to stand out of doors during the winter with safety. In my more recent observations and experiments, especially in the Northern States, I have found no place to winter bees in equal to a *dark, dry cellar.*

If the hives are rightly arranged, and the cellar ventilated by opening either a door or window in the night time, occasionally, there will be no loss of bees only what die of old age, and the comb will look nearly as white as in the Fall previous. Bees, when kept in a cellar of this kind, will not make a discharge to soil the comb during the whole winter, and will consume but a very few pounds of honey—say about a pound to a thousand bees ; for ordinary swarms it would require from ten to twenty pounds of honey. At this low temperature the bees will remain very quiet and still, and if the cellar is kept perfectly dark they will remain so during the whole winter, and will hardly know when spring approaches, which will not be the case when kept in a room above ground or out of doors. Bees frequently receive more injury in being confined in the hive on the approach of spring than they will if allowed to fly out.

The time to put bees into winter quarters depends somewhat upon the severity of the weather—usually the last of November or the first of December ; if the weather is not too cold, they may safely remain until near January. They generally suffer more in the latter part than in the beginning of winter.

As to the position of the hives when placed in the cellar, if straw or the old-fashioned board hive is used, it should be turned bottom-side up with the bottom boards removed. Their animal heat will then drive all the dampness and mold out of the hive. The only disadvantage in turning a hive bottom-side up, is, all the dead bees and particles of comb will drop among the combs in the bottom of the hive. But if there is honey enough there will be no trouble resulting from it, as when the hive is carried out-of-doors, and placed right-side up, the bees will readily clear it out. If movable-comb hives are used, the cap, boxes, &c., should be removed and the hive allowed to remain right-side up, with the entrance closed.

The time to remove bees from the cellar depends in a great measure upon the forwardness of the spring, and care should be taken that the weather is warm enough, that the bees can safely fly from the hive and return again, always observing to never set but a part of the hives out on the same day, and always place them as near as practicable on the same stand that they occupied the year previous, to avoid confusion and robbery.

After the bees have all made their excursion, as they always will do on the first day, and discharge themselves, thousands of bees might then be saved by setting them back into the cellar again for three or four weeks, and at the same time supply each hive with a substitute for bee bread, which is rye meal (or common flour will answer), as bee bread or pollen is the first thing the bees will visit the fields for in early spring ; by supplying them with this useful article the lives of a large number of bees will be saved, which if allowed to stand out would be lost.

Burying bees in the ground is a practice that some inexperienced bee-keepers have resorted to, and not unfrequently with fearful loss. The object aimed at seems to be the low, even temperature that our cellar affords. In a light, loose, sandy soil, if the bees are properly buried, there are instances where they have lived through it. I have frequently heard it remarked by those who advocate this process that the hives were as heavy in the spring as they were in the Fall before ; should the bees all perish as I have repeatedly seen, this theory might prove true. I have yet to learn if bees can be wintered in any place without consuming some honey. It is true, if bees are kept in a damp place and should they survive the the dampness, the amount of honey they will consume will be small, the weight of which would be balanced by the dampness and mold which the combs will take up, so that the hive would be nearly as heavy in the spring as it was in the Fall previous. K. P. KIDDER.

Burlington, Vt., Dec. 31, 1862.

Pulpit Lights.

MESSRS. EDITORS :—A convenient method of lighting the desks of pulpits, so as to illuminate the manuscript without offending the eyes of the preacher or the congregation, has long been a desideratum. By the usual arrangement of candelabra on the front of the desk, which seems to be in most churches the only way of arranging them, provided their elevation be sufficient, which is not always the case, the reader may be protected from the glare of light across his face, or that reflected from the paper on the desk, but the auditory are always annoyed by the effect of the rays which, diverging from the gas jets, cross and interrupt their vision. It is said that in some churches in Holland this is obviated by placing concealed lamps upon the huge canopy sounding boards which surmount their pulpits, and passing their lights through slits therein, which direct their rays down upon the desk. There is to be seen in the new St. Paul's church, Albany, N. Y., a novel mode of accomplishing this object, which seems to the writer so admirably arranged that it should be made known extensively as a matter of general interest :—The pulpit being an octagon in form, its desk is small, not much larger than a large folio bible, and is like an ordinary writing desk in shape, having a raised back of about four inches high, and sides starting from the ends of this back, sloping down to the front edge of the desk. Along the angle formed by the junction of the desk and this back a small pipe is laid, pierced on its upper surface with six small holes for gas jets. Behind and over this pipe, rising up nearly to the top of the back, is a metal reflector whose upper part curves over and forward, forming a hood to intercept the light from the eyes of the reader, a small slit being made along its upper edge to pass off the heated air from the gas. By this arrangement the light is reflected from the jets in lines slightly downward, so as to illuminate the bible or manuscript page brilliantly, the rays reflected from the surface of the paper passing off at a very slight upward angle, so as to permit a very bright illumination of the page, without the inconvenient and injurious effect of the direct return of the light from the page to the reader's eyes. The gas tube of the desk is connected with the tubing of the church by a flexible joint, so as to allow the desk to be raised and lowered a few inches. This ingenious and beautiful arrangement was introduced by the architect of the church, Mr. William Hodgins. D.

Albany, N. Y., Dec. 30, 1862.

The "Scientific American" as an Advertising Medium.

There are comparatively few, even of our own readers, who fully appreciate the value of the Scientific American as an advertising medium. Doubtless one reason for this arises from the fact that we have never made advertising a particular feature of the paper. We cannot forbear, however, to publish the following letters from two of our oldest patrons. These letters speak for themselves:

Gentlemen :— * * * * * Let me say for the Scientific American (and you are at liberty to use my name publicly or otherwise), it is the only newspaper I ever advertised in, that does not require the exercise of faith. It always, *invariably pays me;* and that, too, within a fortnight; and I know it. Faith in this matter of advertising has ruined many a man. I am glad to know that your paper gives me something substantial and tangible—that it does not demand faith.

Henry Carey Baird.

Philadelphia, Dec. 20, 1862.

Gentlemen :—It gives me pleasure to state to you that, having noticed in your columns your intention to advance the price of the Scientific American, on and after Saturday the third day of January next, from $2 to $3 per year, if the price were even put at twice that sum, I for one should not discontinue subscribing for the same. I do not think that there is a journal in this or any other country that is so useful and beneficial to inventors and mechanics as the Scientific American. I have found its columns replete with matter in every way interesting and useful; and as a medium for bringing useful inventions before the public, I do unhesitatingly say that the Scientific American is equalled by no paper extant. Having advertised in 100 other papers at the same time that I have in yours, and with much more lengthy advertisements, I will give you the results, not for your especial benefit, but for those who may have improvements which they wish to disseminate throughout the land. The experiment to which I refer was continued only about four months; but during that time I received about three thousand communications from various parties residing in every State of the Union and its territories, from all parts of the Canadas, from England, France, Germany, Sweden, and even from Syria! Of this large number not over fifty of the communications were received from parties who apparently had read my advertisement in the columns of any of the other 100 papers; and of this fifty, many of them may have been from parties whose attention had been called to my advertisement in the Scientific American, inasmuch as many of them did not state in what paper they had noticed it. Even if the demand for my knitting machines did not fully come up with the supply, I should not have discontinued advertising in your journal; for funds thus spent have been to me like seed corn planted in well-tilled ground—it has yielded by a hundred fold a golden harvest. It hardly seems that Aladdin's lamp could have been more magical in its effect than the luminous columns of the Scientific American.

J. B. Aiken.

Franklin, N. H., Dec. 22, 1862.

Great Men from Humble Life.

From the barber-shop rose Sir Richard Arkwright, the inventor of the spinning jenny and the founder of the cotton manufacture of Great Britain; Lord Tenterden, one of the most distinguished of English Lord Chief Justices; and Turner, the very greatest among landscape painters. No one knows to a certainty what Shakspeare was; but it is unquestionable that he sprang from a very humble rank. The common rank of day laborers has given us Brindley, the engineer; Cook, the navigator; and Burns, the poet. Masons and bricklayers can boast of Ben Johnson, who worked at the building of Lincoln's Inn, with a trowel in his hand and a book in his pocket; Edwards and Telford, the engineers; Hugh Miller, the geologist, and Allen Cunningham, the writer and sculptor; whilst among distinguished carpenters we find the names of Inigo Jones, the architect; Harrison, the chronometer maker; John Hunter, the physiologist; Romney and Opie, painters; Prof. Lee, the Orientalist, and John Gibson, the sculptor. From the weaver class have sprung Simpson, the mathematician; Bacon, the sculptor; the two Milners, Adam Walker, John Foster, Wilson, the ornithologist; Dr. Livingstone, the missionary traveler; and Tannahill, the poet. Shoemakers have given us Sturgeon, the electrician; Samuel Drow, the essayist; Gifford, the editor of the *Quarterly Review*; Bloomfield, the poet, and William Carey, the missionary; whilst Morrison, another laborious missionary, was a maker of shoe-lasts. Within the last year a profound naturalist has been discovered in the person of a shoemaker at Banff, named Thomas Edwards, who, while maintaining himself by his trade, has devoted his leisure to the study of natural science in all its branches; his researches in connection with the smaller crustacea having been rewarded by the discovery of a new species to which the name of Praniza Edcardsii has been given by naturalists.

Nor have the tailors been altogether undistinguished, Jackson, the painter, having worked at that trade until he reached manhood. But what is, perhaps, more remarkable, one of the most gallant of British seaman, Admiral Hobson, who broke the boom at Vigo in 1702, originally belonged to this calling. Cardinal Wolsey, De Foe, Akenside, and Kirk White, were the sons of butchers; Bunyan was a tinker, and Joseph Lancaster a basket-maker. Among the great names identified with the invention of the steam engine are those of Newcomen, Watt, and Stephenson; the first a blacksmith, the second a maker of mathematical instruments, and the third an engine fireman. Dr. Hutton, the geologist, and Bewick, the father of wood engraving, were coal miners. Dodsley was a footman, and Holcroft a groom. Buffin, the navigator, was a common seaman, and Sir Cloudesly Shovel a cabin-boy. Herschel played the oboe in a military band. Chantrey was a journeyman carver; Etty, a journeyman printer; and Sir Thomas Lawrence, the son of a tavern-keeper.

Michael Faraday, the son of a poor blacksmith, was in early life apprenticed to a book-binder, and worked at that trade until he reached his twenty-second year; he now occupies the very first rank as a philosopher, excelling even his master, Sir Humphrey Davy, in the art of lucidly expounding the most difficult and abstruse points in natural science. Not long ago, Sir Robert Murchison discovered at Thurso, in the far north of Scotland, a profound geologist, in the person of a baker there named Robert Dick. When Sir Robert called up at the bake-house, in which he baked and earned his bread, Dick delineated to him by means of flour upon a board, the geographical features and geological phenomena of his native county, pointing out the imperfections in the existing maps, which he had ascertained by traveling over the country in his leisure hours. On further inquiry, Sir Robert ascertained that the humble individual before him was not only a capital baker and geologist, but a first-rate botanist, "I found," said the Director-General of the Geographical Society, "to my great humiliation, that this baker knew infinitely more of botanical science, ay, ten times more than I did; and that there were only some twenty or thirty specimens of flowers which he had not collected. Some he had obtained as presents, some he had purchased; but the greater portion had been accumulated by his industry, in his native county of Caithness, and the specimens were all arranged in the most beautiful order, with their scientific names affixed."—*Self-Help, by Samuel Smiles.*

[Had Mr. Smiles extended his remarks to the great men of other countries beside England he could have swelled his comments to volumes, because he could have included nearly all the greatest men of America. The object of Mr. Smiles is the presentation of examples to mechanics and men in humble circumstances of life, to aim high and strive for true honor and distinction in any walk of life to which they may aspire. The loftiest positions in literature, science, and art have been attained by men who have worked as tradesmen; and what has been achieved in past times may be accomplished again. At the present time, several of the living poets and literary men in great Britain and America were working tradesmen a few years ago. Gerald Massey was a factory spinner, John C. Prince a weaver, and A. Smith, author of "Life's Drama," a pattern-drawer. —Eds.

Robert Stephenson and Electricity.

On another occasion he played a series of tricks of a somewhat different character. Like his father, he was very fond of reducing his scientific reading to practice; and after studying Franklin's description of the lightning experiment, he proceeded to expend his store of Saturday pennies in purchasing about half a mile of copper wire at a brazier's shop in Newcastle. Having prepared his kite, he sent it up in the field opposite his father's door, and bringing the wire, insulated by means of a few feet of silk cord, over the backs of some of Farmer Wigham's cows, he soon had them skipping about the field in all directions with their tails up. One day he had his kite flying at the cottage-door as his father's galloway was hanging by the bridle to the paling, waiting for the master to mount. Bringing the end of the wire just over the pony's crupper, so smart an electric shock was given it, that the brute was almost knocked down. At this juncture the father issued from the door, riding-whip in hand, and was witness to the scientific trick just played off upon his galloway. "Ah! you mischievous scoundrel!" cried he to the boy, who ran off. He inwardly chuckled with pride, nevertheless, at Robert's successful experiment.—*Lives of the Engineers.*

Balloon Barometer.

The barometer which was employed in testing the pressure of the atmosphere during the recent high balloon ascent in England, for scientific purposes, was made as follows:—A good tube, six feet in length, was selected, the mercury was boiled throughout its whole length; a cistern was blown at its lower end, which was furnished with a stop-cock. These exactly equal portions of mercury were allowed to fall from the tube into the cistern, which was thus graduated. Then three feet of the tube was taken, and a scale applied to it, and which scale was then graduated from the lines on the cylinder. By this means a standard barometer was made of great accuracy, having also the advantages of being light and having the power of locking in the mercury in the tube when necessary.

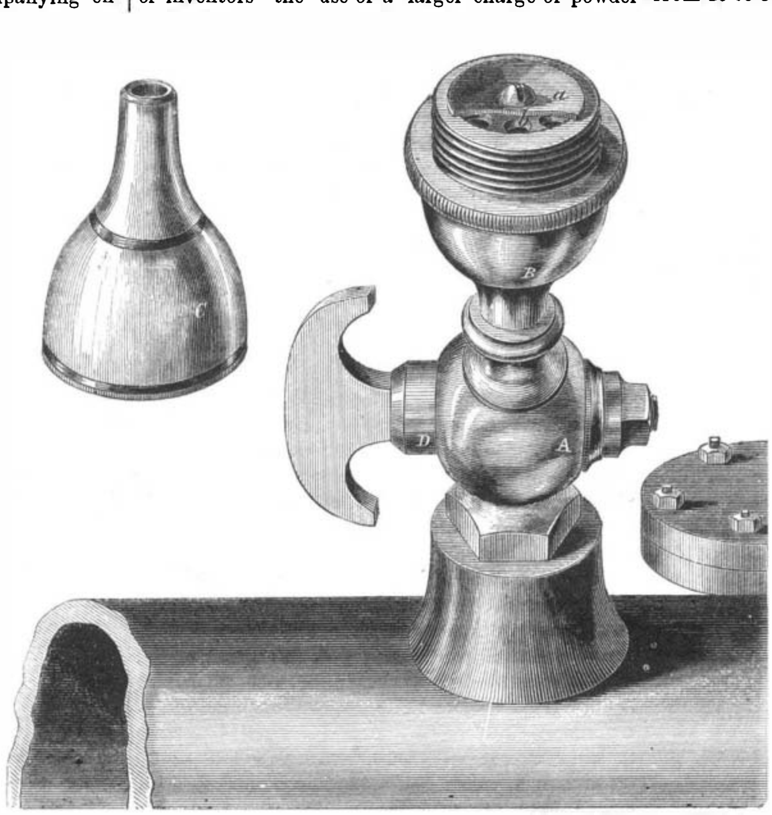
Under Fire.

A French soldier, who first smelt gunpowder at the battle of Solferino, thus describes his sensations:—"How each shot electrifies you! It is like a whip on a racer's legs. The balls whistle past you, turn up the earth around, kill one, wound another, and you hardly notice them. You grow intoxicated, the smell of gunpowder mounts to your brain. The eye becomes bloodshot, and the look is fixed upon the enemy. There is something of all the passions in that terrible passion excited in a soldier by the sight of blood and the tumult of battle."

Vegetable Oils of Australia.—In Australia there are vast forests of trees which yield several varieties of essential oils. There is one large tree—the *Eucalyptus Amygdalina*—the leaves and twigs of which yield three pints of essential oil to each 100 pounds. Thirty-five different kinds of essential oils have been distilled from the trees of the Australian forests, and about 12,000,000 acres are covered with such trees. Some of them are aromatic and yield delightful perfumes. They are also solvents for various resins which are employed in making varnishes.

Improved Air Valve.

In working pumps, their operation is sometimes impeded by a portion of air which enters with the water or becomes separated from it; this is an evil of no small magnitude, as it prevents the formation of the necessary vacuum. The accompanying engraving is a representation of a simple but efficient invention for removing the difficulty alluded to. It is simply an ordinary brass cock, A, provided with a hemispherical top, in the upper face of which a series of small holes, *b*, are perforated; these holes are closed by an india-rubber valve, *a*—a portion of which is removed to disclosed the apertures beneath. The cap, C, screws over the top of B, and protects the valve, while it also gives the invention a much neater appearance than it would otherwise have. The operation of the air cock is very simple. When the pump refuses to work, from the difficulty previously specified, the confined element—whether vapor or air—is readily discharged by turning the plug, D; the valve, *a*, then opens upward and permits it to escape; this operation can be repeated as often as desired until the cause of the trouble is removed. This appurtenance can be attached to any pump in a few moments, and will be found very useful; it can also be used as an oil cup by simply removing the valve.

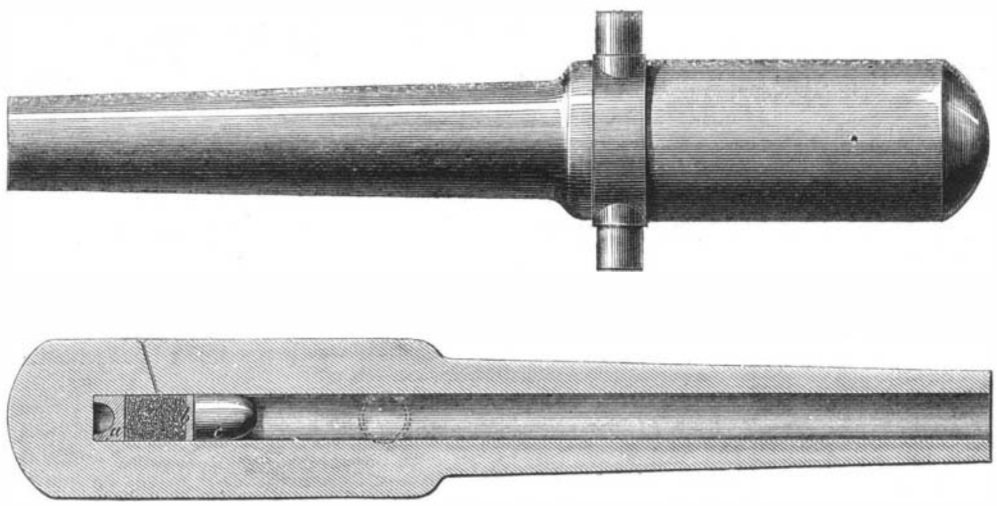


SHAW'S AIR VALVE FOR PUMPS.

Patented August 9, 1862, by Thomas Shaw. For further information address Philip S. Justice & Co. 54 Cliff street, New York city, or 21 North Fifth street, Philadelphia, Pa.

Elastic Breech Cannon and Sabot.

Numerous patents have recently been taken, both in this country and Europe, for devices to lessen the strain and liability of explosion in ordnance by the use of vulcanized india-rubber or gutta-percha applied in the breech to confine the air, against which the exploded powder will act, whereby the sides of the bore are relieved from the immense strain of the ignited charge. The objects of these inventions are to lessen the danger of explosion and enable the gun to give a greatly-increased velocity to the shot by using a larger charge of powder than is allowed or deemed safe in the old kind of guns. One of these inventions is that patented by Horace H. Day, the celebrated india-rubber manufacturer, of this city; another is that patented by Mitchell Ritner, of Vincennes, Ind., and a third is that patented by Col. J. W. Bird, of Trenton, N. J. Numerous experiments have been made with these devices, and we are informed that they were very satisfactory. Col. Bird's invention is a solid wad, made of india-rubber combined with fibrous substances; it is cut in disks to fit the bore of the gun, and is placed between the powder and the shot, and serves to rotate the latter. The elastic property of the rubber acting against the shot, it is claimed, gives it a perfect rotation, and at the same time it fills the space in the gun and prevents "windage." Much of the strain due to all wedge-shaped leaden rings, is avoided in Col. Bird's wad and projectile, and the inventor claims an increased power of at least one-tenth. The invention of Mr. Ritner is to confine air in sabots of vulcanized rubber, to be placed between the powder and shot, so that the sudden concussion against the projectile is lessened by the yielding property of rubber and confined air, and enabling the artillerist to use a larger charge of powder, as previously stated. The object claimed to be gained is that which has long baffled the world of inventors—the use of a larger charge of powder without increasing the strain upon the gun. We here illustrate the last patent—that of Mr. Day. The tendency of the sudden blow imparted to the base of the missile, by the explosion of the powder, was to "upset" the base of the projectile by expansion, rendering it, if not immovable, at least dangerous to the gun. To overcome this, the inventor placed the hollow sabot between the powder and the shot. Mr. Day uses the india-rubber cushion, *a*, having a conical recess at its base. The charge is inserted upon the top of this, and another thinner disk, *b*, of the same substance, is placed on top of it; the projectile, *c*, is then put in, and the weapon is fired in the usual manner. The cushion, *a*, is not destroyed by the explosion; and it is said one of them will last nearly as long as the piece itself; the thin wad, which obviates all liability of "windage," is of course fired out with the charge. The effect of the elastic cushion is to impart a gradual movement at the moment of explosion, which starts the bolt gently from its seat; the gases then follow it up and expel it with as much force as the powder is capable of exerting. The sabot has been tried (the inventor says) in a 100-pounder gun, and the strain at the breech was ascertained to be 48,000 lbs., while with the same gun and the same charge, namely, 10 lbs., without the use of this invention, it was found to be 69,000 lbs. The cushion has also been worked in a rifled 50-pounder with a charge of 8 lbs., from which the charge has been increased to 12 lbs., without any apparent evil effect on the gun; using shot of various sizes and weight, from 40 to 50 lbs. Two of the holes made in the target so long laying in Wall street, this city, were made by shot in connection with this elastic breech, fired with a 10-lb. charge from a rifled 50-lb gun.



DAY'S ELASTIC BREECH CANNON AND INDIA-RUBBER SABOT.

This invention is readily adapted to any gun, and may be used in connection with all kinds of shot; it was patented by Mr. Horace H. Day, Dec. 2, 1862, and further information can be had by addressing him at New York city

The Value of a Caveat.

The importance of securing the patentable features of new inventions by caveats is aptly illustrated in the case of Mr. T. R. Timby, the owner of the broad patent from the United States for a revolving tower for land and water fortifications. Mr. Timby filed his caveat some twenty years since, he being then but nineteen years of age; he now receives a royalty on every turreted vessel built for the United States service. Had it not been for the protection afforded him by these papers, Mr. Timby might indeed have reaped the barren honor of the invention, but the pecuniary benefit of the device would have escaped him. From the day of the discovery, 1841, down to the present time, Mr. Timby has been engaged in perfecting his invention, and has spent large sums of money in so doing.

Modern Discoveries.

Bayard Taylor, the celebrated traveler, thus sums up the result of modern discoveries:—"Within the last twenty-five years, all the principal features of the geography of our own vast interior regions have been accurately determined; the great fields of Central Asia have been traveled in various directions from Bokhara and Oxus to the Chinese wall; the half-known river systems of South America have been explored and surveyed; the icy continent around the Southern pole has been discovered; the Northwest passage—the *ignis fatuus* of nearly two centuries has been at last found; the Dead Sea is stripped of its fabulous terrors; the source of the Niger is no longer a myth, and the sublime secret of the Nile is almost wrested from its keeping; the Mountains of the Moon, sought for 2,000 years, have been beheld by a Caucassian eye; an English steamer has ascended the Chadda to the frontiers of Bornou; Leichard and Stuart have penetrated the wilderness of Australia; the Russians have descended from Irkoutsk to the mouth of the Amoor; the antiquated walls of Chinese prejudice have been cracked and are fast tumbling down, and the canvas screens that surround Japan have been cut by the sharp edge of American enterprise. Such are the principal results of modern exploration. What quarter of a century, since the form of the earth and the boundaries of its land and water were known, can exhibit such a list of achievements?"

The first double hyacinth was obtained in the year 1710.