HISTORY AND INDEX OF ARTICLES ON IMPLEMENTS OF WAR, RIFLES, SHOOTING, AND EXPERIMENTS IN GUNNERY, PUBLISHED IN THE "SCIENTIFIC AMERICAN."

It frequently happens that many useful improvements are invented which do not come in use for years afterward; and, indeed, not until some great event, or some change in business, furnishes a field for their operation, and a demand for their introduction. This is the case, we believe, with many inventions relating to the art of war which have been illustrated and described in the columns of the SCIENTIFIC AMERICAN. Several of these have been forgotten in the peaceful and tranquil times in which we have hitherto lived, and during the urgent demand which nowrings through the land for the most effective war implements, many persons may be cogitating upon subjects new to them but old to us: while others who would gladly avail themselves of all the information which they can obtain on the subject, may be ignorant of the best source where to seek it.

In order to meet a want felt at this time, we give the following historical sketch and index of war and shooting inventions as they have appeared in successive volumes of the SCIENTIFIC AMERICAN:—

A cannon operated by two men, to project bullets in a perfect stream, by compressed air; illustrated and described in Vol. I. (old series), on the 14th of May, 1846.

Fitzgerald's wrought iron cannon, formed by a series of concentric flat rings, bolted longitudinally together by long rods: illustrated on page 220, Vol. II., April 3, 1847.

Expanding bullets; page 20, Vol. III., October 9, 1847. When discharged from a cannon it branches out into hugeknives, and cleaves everything before it. It is more terrible than the chariots of old Philistia.

Nichols' electric gun: page 172, Vol. III., February 19, 1848. A self-charger with gun-cotton, ignited by electricity. An ingenious and destructive war engine.

Gun-cotton engine; engraving on page 180, Vol. III., February 26, 1848.

Hubbell's patent breech-loading musket: page 108, Vol. IV., December 23, 1848. This fire-arm was used by several of our regiments during the Mexican war.

Prussian breech-loading rifle, called "Zünd Nadel," page 124, Vol. V., January 5, 1850. This was the breech-loading rifle used by the Prussian army during the Holstein war.

Sharpe's breech-loading rifle; page 193, Vol. V., March 9, 1850. This rifle has a vertical sliding breech, operated by a toggle-joint lever.

Sharpe's rifle, with Maynard's primer: page 196, Vol. VI., March 8, 1851.

Rifle shooting, illustrated with several designs of several bullets: page 173, Vol. VII., February 14, 1852. This article contains an interesting account of rifle practice in the French army.

Rifled cannon at Woolwich, England.: page 196, Vol. VII., March 6, 1852.

An article on rifle shooting, illustrated with two targets, by John Chapman, Esq., author of the "American Rifleman." At 110 yards distance the ten shots fired were placed within a circle of 11 inch in diameter: at 220 yards distance, the ten shots were placed within a circle of 23 inches diameter. A Wesson rifle, with globe sights, was used. Page 203, Vol. VII., March 13, 1852.

Marston's breech-loading rifle and pistol; illustrated on page 129, Vol. VIII., January 8, 1853. These fire-arms load at an opening in the side, with a cartridge. A ramrod on a toggle-jointed lever forces in the charge, which has a leather sabot upon its end.

Beverly's breech-loading, self-priming rifle; page 188, Vol. IX., February 25, 1854. The charge chamber swings up on a pivot joint, and the cartridge is placed in it, separate from the barrel. A string of percussion caps follows behind the charge chamber.

Measuring inaccessible distances by firing cannon, by Ab. Alcock: illustrated on page 224, Vol. IX., March 25, 1854.

Perry's breech-loading rifle: page 4, Vol. X., September 16, 1854. The chamber of this rifle swings on a joint.

The Lancaster gun, with elliptical, spiral grooves; represented on page 168, Vol. X., February 3, 1855. It was used in the Crimean war.

Extracting bullets from wounds, by an air pump; described on page 186, Vol. X., February 24, 1855. This invention deserves the attention of army surgeons at the present time.

Newton's breech-loading pistol; illustrated on page 220, Vol. X., March 24, 1855. Loads with cartridges forced in by a breech pin.

Newton rifle bullets; engraving on page 245, Vol. X., April 14, 1855. A lead band is shownon an iron conical bullet, for cannon. It is also mentioned that L. Houghton, of Philadelphia, obtained a patent on the 4th of April, 1855, for an expanding belt for rifled guns.

Perry's breech-loading rifle, improved; page 304, Vol. X., June 2, 1855. The breech of this rifle is perfectly gas-tight to prevent leakage.

Russian infernal machine, to blow up British frigates at Cronstadt; illustrated on page 368, Vol. X., July 28, 1855. These machines were to be discharged by the wires of a galvanic battery.

Whitney's repeating pistol; engraving on page 404, Vol. X., September 18, 1855. Several charge chambers may be kept loaded for this pistol, and 100 shots fired rapidly in succession.

Russian infernal torpedo; illustrated on page 8, Vol. XI., September 15, 1855.

New explosive shell; engraving on page 21, Vol. XI., September 29, 1855. This shell has an expanding lead band on its bottom, to adapt it for rifled cannon.

English breech-loading cannon, with spiral shot for smooth bores; engraving on page 400, Vol. XI., August 23, 1856.

Newberry's breech-loading rifle: illustrated on page 92, Vol. XII., November 29, 1856. This is a self-primer which cocks the hammer automatically.

Great centrifugal war engine of Reynolds: described on page 147, Vol. XII., January 17, 1857., by one of the gentlemen who made experiments with it.

Account of trials at West Point and Washington with breech-loading rifles; pages 6, 14, 49, 113, 390, 401, 406, Vol. XIII.

Captain Norton's gossamer cartridge; illustrated on page 382, Vol. XIII., August 7, 1858.

Newberry's revolver pistol; illustrated on page 80, Vol. XIV., November 13, 1858.

The above are all included in the old series of the SCIENTIFIC AMERICAN.

English breech-loading cannon, represented to be Armstrong's gun; illustrated on page 16, Vol. I. (new series), July 2, 1859.

Shull's breech-loading rifle; illustrated on page 100, Vol. I., September 3, 1859. It has a pricker for opening its cartridge.

Gun-cotton, how to make it; page 84, Vol. II., February 4, 1860.

Captain Brown's breech-loading cannon; illustrated on page 240, Vol. III., October 6, 1860. This cannon has lately been brought before the authorities of Rhode Island, by the inventor, who resides at Warren, R. I.

Clay's breech-loading steel cannon: engraving on page 48, Vol IV., January 19, 1861. This is a more simple breech-loading cannon than Armstrong's. Two 100-pounders of this character have lately been ordered of Mr. Clay by the British government.

Spiking cannon; illustrated on page 43, present volume, January 19, 1861.

La Gloire, the French iron-cased frigate; on page 97, present volume, February 16, 1861.

The broken and dismounted Armstrong gun; illustrated on page 232, present volume, April 13, 1861.

Path of conical bullets; illustrated on page 234, present volume, April 13, 1861.

Army rifle exercise, and forms of bullets used for different rifles; illustrated on page 292, present volume, May 11, 1861.

Hotchkiss' expanding cannon bullet; illustrated on page 293, present volume, May 11, 1861. with target showing the shooting with it.

Explosive rifle bullets; engraving on page 301, May 11, 1861.

Rodman's monster cannon, illustrated on pages 305 and 306, May 18, 1861.

We have in hand a number of other subjects pertaining to war, which will be illustrated in these columns from week to week.

Among the number of seemingly excellent inventions in ordnance, we shall illustrate, in our next issue, an engraving of G. B. Brayton's breech-loading cannon.

History of Our Flag.

The flag, during the confederation, was endorsed by the Congress of that body, by a resolution adopted on the 14th of June, 1777, in the following words:—

RESOLVED, That the flag of the thirteen United States be thirteen stripes, alternate red and white: that the union be thirteen stars, white in a blue field, representing a new constellation.

This flag continued in use under the Constitution until the 4th day of July, 1818, having passed with unsullied honor through the war with Great Britain, from June, 1812, to its close by the ratification of the treaty of Ghent, in February, 1815.

In the year 1818, the number of States in the Union amounted to twenty, and on the 4th of April, 1818, the Congress of the United States passed a law in the following words:—

Be it enacted, &c.—

SECTION 1, That from and after the fourth day of July next the flag of the United States be thirteen *horizontal* stripes, alternate red and white: that the union be twenty stars, white on a blue field.

SECTION 2, That on the admission of every new State into the Union, one star be added to the union of the flag, and that such addition shall take effect on the fourth day of July next succeeding such admission.

So stands the law at this day, and is unalterable but by law.

On the fourth of July, when the Congress of the United States next assembles, the State of Kansas will, according to law, appear as a new star in the Flag of our Union.

Armstrong Guns at the West Point Foundry.

We have been shown a complete set of working drawings of the Armstrong gun, which were procured in England by the Russian government, and sent to the West Point Foundry, at Cold Spring, in this State, where a sample gun was made and forwarded to Russia. The gun was tried here before it was sent away, and operated so satisfactorily that the owners of the West Point Foundry are commencing the manufacture of these famous weapons for the supply of our army. It is suggested that the destruction of outlying rifle men, mentioned by the *Mechanics' Magazine* as having occurred in China, was the fault of the shot and not of the gun; while the ease with which the cannon was broken in pieces by shot from an ordinary nine-pounder showed merely that the piece was made too light. For obvious reasons, we are not at liberty to explain the process of making the gun, but will remark that it is entirely different from that published in the English papers.

PATENT OFFICE APPOINTMENTS.—We are happy to learn that Dr. Thomas Antisell has been promoted to the position of Chief Examiner in the Chemical Department. Dr. Antisell has performed the duties of this position for a long time, and it is creditable to Commissioner Holloway that he has recognized the services of an accomplished officer, one of the most respected and faithful men in the Office. John J Coombs, of the District of Columbia, has been appointed Chief Examiner in the Patent Office.

SHOULDER ARMS! The scene in front of our office is animated in the extreme, and furnishes a daily index of the military spirit of our people. In all the open space about the barracks, squads of volunteers are constantly drilling in the presence of a large crowd of spectators, and it is gratifying to see the spirit with which the soldiers enter upon their preparations to take the field. So far as we know the men they are true, and will not be found wanting when the hour of trial shall call them to duty.

THE first use of artillery was, according to some historians, by the Moors at Algesiras in Spain. The Venitians are said to have been the first to use cannon at sea, in 1377, against the Genoese.

WITH military authorities, the meaning of the right bank of a river is the bank at the right hand in looking *down* the stream.

"A stand of arms," properly speaking, is a complete set of arms for one soldier, which would include the bayonet, musket, and its appurtenances.

THE Bank of Paris has exchanged thirty millions of gold with Russia for an equal amount of silver.

Colt's Armory—The Colonel on the Side of the Government.

Some suspicion having been cast upon the loyalty of Colonel Colt, growing out of the fact that he has heretofore made many arms for the South, it is due to him to state that, although decidedly opposed to the election of Mr. Lincoln, yet as soon as he heard of the insult to the flag at Fort Sumter, and saw the proclamation of the President calling for troops to put down treason, he at once tendered the use of his armory to the government at Washington, offering to the President the complete control of its entire production, to be used in arming troops to defend the constitution and preserve the Union.

And, beside this (as stated in our last number), he presented to the State of Connecticut over $50,000 worth of his recently improved breech-loading rifles, sufficient to arm a regiment of 1,000 men, and tendered his personal services, together with one full company of mechanics from his armory, skilled in the use of this weapon, to drill and instruct the soldiers in their use. This patriotic offer has been accepted by Governor Buckingham.

The rifle is a terrible weapon; each one carries five charges in the cylinder, and at the commencement of an engagement this regiment of 1,000 men can, in a few seconds, pour in a most destructive fire of 5,000 Minié balls, and afterward load and fire faster, and with more accuracy, than can be done with any muzzle-loading rifle ever used in war. This corps is to be called the First Connecticut Regiment of Colt's Revolving Rifles.

As our readers are aware, Colt's armory is situated at Hartford, Conn., and is no doubt the most complete and extensive establishment of the kind in the country.

The perfection of his machinery for making the various parts of his different arms is almost beyond the power of the imagination to conceive. So perfect is it in the performance of the uses to which it is applied, that it seems to be endowed with the power of reason. He is now running his machinery day and night, and creating daily hundreds of the most terrific engines of destruction ever invented.

His improved revolver, which received such high commendation from a board of army officers in May last, is certainly one of the most terrible and efficient weapons for defensive or offensive war ever used by man.

Unused to Arms.—The Savannah *News* says "not one in a thousand of the filthy multitude who are shrieking for war in New York has ever seen a gun, except in a shop window." We advise the editor not to believe that story, and we presume he does not, for it is not true. New York city not only boasts of some of the finest drilled military companies to be found in the world, but her numerous companies of target shooters, now "shrieking for war," are thorough adepts in the art of plugging the bull's eye, and can stand as much of rough and tumble as any other set of men. The bravery of the Southern men is not denied, and they will make a great mistake if they suppose that Northern men can't stand fire. History and experience teach a different lesson.

General Butler and a Baltimore Committee.—A committee of Union men from Baltimore visited the Maryland Legislature lately, to protest against the public safety bill there pending. On their return they stopped at the Relay House and called on General Butler, and had a pleasant interview. The General said that like them he was opposed to Mr. Lincoln and the Republican party in politics, but that had nothing to do with the present crisis. The Union must be maintained, and the government upheld until any soldier in the country could walk anywhere in any state with perfect safety under the protection of the American flag. This would first be done, and afterward politics could be discussed.

Mr. James Gordon Bennett, Jr., has offered the government the use of his yacht *Rebecca*. He agrees to fit her up with Dahlgren guns and command her, provided the government will pay the expenses of seven additional seamen.

The amount of paper manufactured in Great Britain the past year was 223,575,285 pounds. The net produce of the duty was about $6,500,000.

THE PATRIOTIC CONTRIBUTIONS.

Free Gift Contributions of the People—Over $23,000,000 Advanced for War Purposes.

Albany, N. Y.	$46,000	Milwaukee, Wis.	$31,000
Auburn, N. Y.	4,000	Marblehead, Mass.	5,000
Abington, Mass.	5,000	Malden, Mass.	2,000
Amesbury, Mass.	5,000	Madison, Ind.	6,000
Acton, Mass.	5,000	Mount Holly, N. J.	3,000
Boston, Mass.	186,000	Morristown, N. J.	3,000
Brooklyn, N. Y.	75,000	Mystic, Conn.	7,000
Bridgeport, Conn.	31,000	Madison, Wis.	9,000
Burlington, Vt.	3,000	Marlboro', Mass.	10,000
Bath, Maine	10,000	Marshfield, Mass.	5,000
Batavia, N. Y.	4,000	New York (State)	3,000,000
Buffalo, N. Y.	110,000	New York (city)	2,173,000
Burlington, N. J.	4,000	New Jersey (State)	1,000,000
Bordentown, N. J.	3,000	Newark, N. J.	136,000
Bradford, Vt.	2,000	New Haven, Conn.	30,000
Bridgeton, N. J.	1,000	Norwich, Conn.	13,000
Bedford, Mass.	2,000	New London, Conn.	10,000
Bennington, Vt.	10,000	New Brunswick, N. J.	2,000
Barre, Mass.	2,000	Needham, Mass.	3,000
Braintree, Mass.	2,000	Newton, Mass.	3,000
Bedford, N. Y.	1,000	North Andover, Mass.	3,000
Brunswick, Maine	1,000	Noblesville, Ind.	10,000
Binghamton, N. Y.	10,000	Newbury, Mass.	3,000
Connecticut (State)	2,000,000	Newburyport, Mass.	4,000
Cincinnati, Ohio	280,000	Ohio (State)	3,000,000
Charlestown, Mass.	10,000	Oswego, N. Y.	13,000
Chicago, Ill.	20,000	Ottawa, Ill.	18,000
Circleville, Ohio	2,000	Pennsylvania (State)	3,500,000
Clinton, Ill.	5,000	Philadelphia, Pa.	330,000
Cohassett, Mass.	1,000	Plymouth, Mass.	2,000
Clinton, N. Y.	1,000	Poughkeepsie, N. Y.	10,000
Concord, Mass.	4,000	Piqua, Ohio	20,000
Concord, N. H.	10,000	Paterson, N. J.	10,000
Canandaigua, N. Y.	7,000	Portland, Maine	31,000
Canton, Mass.	5,000	Princeton, N. J.	2,000
Cass county, Ind.	6,000	Palmyra, N. Y.	6,000
Cam. & Am. RR. Co.	10,000	Quincy, Mass.	10,000
Detroit, Mich.	50,000	Rhode Island (State)	500,000
Dunkirk, N. Y.	20,000	Rochester, N. Y.	69,000
Dover, N. H.	10,000	Rockland, Maine	10,000
Damariscotta, Maine	3,000	Salem, Mass.	15,000
Elizabeth, N. J.	11,000	Stowe, Mass.	2,000
Elkhart, Ind.	8,000	Schenectady, N. Y.	2,000
Erie, Pa.	25,000	Seneca Falls, N. Y.	3,000
Evansville, Ind.	15,000	Stockbridge, Mass.	3,000
Fall River, Mass.	10,000	Sycamore, Ill.	4,000
Flemington, N. J.	5,000	St. Albans, Vt.	10,000
Fond du Lac, Wis.	4,000	Sag Harbor, N. Y.	3,000
Gloucester, Mass.	10,000	Saratoga Springs, N. Y.	2,000
Glen's Falls, N. Y.	10,000	Southboro', Mass.	2,000
Great Falls, N. H.	10,000	Syracuse, N. Y.	34,000
Greensburg, Ind.	2,000	Salsbury, Mass.	5,000
Georgetown, Mass.	5,000	Shelburne, Vt.	1,000
Galena, Ill.	1,000	Schuylkill county, Pa.	30,000
Hudson, N. Y.	4,000	Sutton, Mass.	6,000
Hamilton, Ohio	1,000	Troy, N. Y.	48,000
Hoboken, N. J.	2,000	Toledo, Ohio	5,000
Hornellsville, N. Y.	1,000	Taunton, Mass.	40,000
Hartford, Conn.	64,000	Utica, N. Y.	14,000
Harrisburg, Pa.	5,000	Upper Sandusky, Ohio	5,000
Illinois (State)	2,000,000	Vermont (State)	1,000,000
Indiana (State)	1,000,000	Wisconsin (State)	225,000
Iowa (State)	100,000	Weymouth, Mass.	5,000
Ithaca, N. Y.	10,000	Wilmington, Ohio	3,000
Indianapolis, Ind.	5,000	Waynesville, Ohio.	2,000
Ipswich, Mass.	4,000	Waltham, Mass.	5,000
Jersey City, N. J.	32,000	West Cambridge, Mass.	10,000
Janesville, Wis.	6,000	Woodstock, Vt.	1,000
Kenton, Ohio.	2,000	Watertown, Mass.	2,000
Keene, N. H.	10,000	Waterford, N. Y.	8,000
Lynn, Mass.	10,000	Watertown, N. Y.	3,000
Lockport, N. Y.	2,000	Warsaw, N. Y.	3,000
Lawrence, Mass.	5,000	Westboro', Mass.	8,000
Lowell, Mass.	8,000	West Troy, N. Y.	7,000
London, Ohio.	1,000	Woburn, Mass.	5,000
Lancaster, Pa.	5,000	Woodbury, Conn.	5,000
Lebanon county, Pa.	10,000	Webster, Mass.	4,000
Maine (State)	1,300,000	Xenia, Ohio	14,000
Michigan, various places	50,000	Zanesville, Ohio	3,000
Total			$23,271,000

The Pen and the Sword.—In the great campaign now opening the press will have its share of the work to perform. Some of our brethren will remain at home to chronicle the stirring events of the day while others will drop the pen and grasp the sword. Among the many incidents of the kind we record none more pleasing than the case of Joseph M. Barr, editor of the *Commonwealth*, Wilmington, Del. He announces his purpose in the following gallant style:—

The editor of this paper is going to the war, having raised a company, and been appointed an officer of the First Regiment of Delaware Volunteers, will march with the regiment, and continue with it during the campaign. He will keep up a regular correspondence with his paper: and those who wish to know all about the sayings, doings, incidents, accidents, exploits, history, &c., of the "Blue Hen's Chickens" who go to War, had better subscribe at once for *The Commonwealth*.

Taking out all the Grease from the Axis!—A gentleman who has spent some days in the region of the oil-wells in Pennsylvania, says that, in his opinion, the government of the United States, or some other mundane power, ought to interfere at once and put a stop to further boring and pumping for oil on this continent. He is quite certain that the oil is being drawn through these wells by the bearings of the earth's axis, and that the earth will cease to turn when the lubrication ceases. Such a suspension would beat anything that ever agitated Wall-street, and the consequence will be too great for ordinary minds to contemplate or comprehend. It had better be attended to at once.

The great leading builders in London have resolved hereafter to pay their workmen by the hour instead of the day; 15 cents an hour for experienced hands and 9 cents for laborers.

The Spanish government is building ten additional steam sloops of war for the suppression of the slave trade on the coast of Cuba.

Treatment of Grape Vines.

The Irish *Agricultural Review* contains the following very sensible information on this subject:—

The vine flourishes on the mountain sides, in rocky soils; so nature points clearly to a dry situation as best adapted for its roots. The border should (if circumstances permit) stand considerably above the surrounding ground, with a good inclination to the south. The ground should be excavated to the depth of three feet from where the intended surface of the border is to be, and the bottom sloped with a gentle inclination to the outside of the border, with a drain sunk along the front, say six inches below the fall of the border. This drainage should have an inclination to either end of the border, or should fall from both to the center of the border, and open into a good drain, to take the water from it; the object being to keep the border perfectly free from stagnant water. If circumstances will permit of it, the border should be at least fifteen feet wide. The following compost will be found well suited for the vine. Three-fourths of good sound turfy loam of medium texture, from a dry pasture, and full of vegetable fiber; add one-fourth good rotten manure, and bones, charcoal, or any charred vegetable matter, and lime rubbish sufficient to keep it thoroughly open. Such a soil will keep the vine in a sound, healthy condition for a number of years. Many grape growers use a much richer compost, and add a large quantity of animal matter; the result may be splendid grapes for two or three years, but the vines will ultimately become plethoric, and almost useless. Bones should be introduced largely, as the vine seems partial to them, and as their decomposition is gradual, they naturally supply the plant with nutriment, in such quantities as it can assimilate for a great number of years.

The mildew on the vine, like its fellow, the potato disease, has become epidemic this last few years, attacking the vine under all circumstances, and in all parts of the world, wherever grown. It is a parasitic fungus; but where it comes from seems a puzzle. It generally makes its appearance wholesale, and without warning. Flowers of sulphur seems to be the best, and most simple remedy for it. As soon as detected on the leaves or fruit, lose no time in dusting the parts affected thoroughly with the sulphur, the first application will generally destroy it; but a sharp look-out must be kept, as fresh attacks may be expected when it has once made its appearance; a deadly war must, therefore, be waged with it.

[The Black Hamburg and other popular varieties of the European grape are entirely different from native American grapes, such as the Isabella, Catawba, &c.; the pulp of European grapes being soft and melting in the mouth. On this continent, east of the Rocky mountains, none of the European varieties of grape can be cultivated successfully in the open air, though they are produced in the very highest perfection in glass-houses, either with or without artificial heat. The season is long enough to ripen them in the open air, but they are very subject to mildew, and even under glass a free use of sulphur is generally necessary to prevent this blight. Within a few years the same disease has made its appearance in the vineyards of Europe, and is spreading extensively. Spanish priests carried the best kinds of grape vines known in Europe to California nearly 300 years ago, and they have flourished there ever since. Sometimes 20 tuns are carried at one time on a steamer from Los Angeles to San Francisco, where they sell at 12 cents per lb., while the same varieties are retailed in New York at one dollar and a half per lb.—Eds.

The First Vermont Regiment.—Directly in front of our windows in the Park, we see the grey uniforms of the first Vermont regiment. They are a hardy, intelligent, robust body of men, 850 in number, inured to labor, and quite as familiar with the rifle as the famous hunters of Kentucky. They make no boasts, but modestly invite the attention of the country to their conduct in the hour of battle.

Great Waterfall.—During the late expedition of Dr. Livingstone up the Zambesi, in Africa, he measured the hight and breadth of Victoria falls on that river. Their hight is 300 feet; breadth, 2,000.

The savings banks in England have deposits amounting, in the aggregate, to two hundred millions of dollars.