

## THE MITRAILLEUSE.

Why not call things by their right names? The French are just now making a great fuss over what they style the *mitrailleuse*, and expect great things from its use against the Prussians.

This new word may add to the French military vocabulary, but the invention is nothing more or less than a modification of the Gatling gun, illustrated and described on page 353, Vol. XXI., of the SCIENTIFIC AMERICAN. The inventor, Dr. Richard J. Gatling, of Indianapolis, furnished drawings and a description of this famous gun to the Emperor Napoleon, in 1863, and since that time a large number of guns on substantially this plan have been secretly constructed at the French Armories. The new christening does not render it any the less an American invention.

DR. ANTISELL, U. S. Chemist, Washington, D. C., will visit the silver region of Colorado, during next September, and is open to engagements to examine and report on mines and mining interests. Address, Box 100, Washington, D. C. Reference to Prof. Torrey, U. S. Assay Office, New York.

## NEW BOOKS AND PUBLICATIONS.

THE HANDY-BOOK OF HUSBANDRY. A Guide for Farmers, Young and Old. Containing Practical Information in regard to Buying or Leasing a Farm; when and where to Buy; Commencing Operations; Key-note of Practical Farming; Fences and Farm Buildings; Farming Implements; Drainage and Tile Making; Plowing, Subsoiling, Trenching and Pulverizing, Surface Soil; Manures; Rotation of Crops; Root Crops; Forage Crops; Live Stocking, including Cattle, Horses, Sheep, Swine, Poultry, etc., with Winter Management, Feeding, Pasturing, Soiling, etc. With Directions for Medical and Surgical Treatment of the same; the Diary in all its Departments; Useful Tables for Farmers, Gardeners, etc. By George E. Waring, Jr., of "Ogden Farm," formerly Agricultural Engineer of the Central Park, New York, Author of "Elements of Agriculture," "Draining for Profit and for Health," "Earth Closets and Earth Sewage." Illustrated. New York: E. B. Treat & Co., 654 Broadway.

It is only ignorant men who indulge in ridicule of what is called "book arming." Not but that many errors are contained in books, and of course followed in practice, by those who rely upon books for guidance. It is, however, as foolish to denounce agricultural books on this account as it would be in any other department of the arts. We never knew a farmer who understood the art of reading, who did not become a better farmer by the perusal of agricultural works. Only those who are ready to receive mere opinions as facts, and are unable to discriminate between faulty and accurate experiments are likely to be misled. To the latter class, however, the book before us will scarcely offer opportunity to go astray. Its facts are demonstrated facts, and when anything of doubtful merit is discussed, its doubtful character is unmistakably indicated. Its author is too well known to the agricultural world to render it necessary to speak of his ability to treat the subject thoroughly and practically. The style of treatment is very agreeable, and even entertaining, and the table of contents shows that little, if anything, of importance is omitted. The question of tile draining is thoroughly and ably discussed, and the farmer seeking information on this important subject, whether in regard to the best way to do it, its cost or advantages, cannot fail to be benefited by its perusal. A considerable portion of the work is occupied with the discussion of the subject of implements and machines. Those seeking for light on the subject of steam plowing will find in this portion of the work much interesting matter relative thereto. The adaptability of soils to crops has received special attention, in connection with the advanced state of knowledge on the subject of fertilizers. In short, the work is all that its name implies, a handy-book, to which the farmer may refer in the case of the sickness of animals, or in other emergencies, with the certainty that the results of the best experience has been obtained for his guidance. The book is handsomely printed and bound, and will, we are informed, be sold by subscription.

TROW'S NEW YORK CITY DIRECTORY. Compiled by H. Wilson. Vol. LXXXIV., for the Year Ending May 1, 1870. New York: John F. Trow, Publisher, 52 Greene street. Price, \$5.00.

This volume contains a large increase of names over that of last year, the whole number being 204,617. The same system of collecting names having been used, it seems fair to suppose that the population, especially that of the business portion of the inhabitants, the names of which are most easily obtained, has increased correspondingly. The difficulty in obtaining a full list of names is well set forth by the editor of the work. We make the following extract from the preface: "The great difficulty in making the Directory adequate to the public wants, is to keep down its bulk and its cost. Even now it is becoming unwieldy in size, and it is only by a very rigid economy, which is the result of constant study, and an organized force which it has required many years to bring to the degree of perfection which it has reached under the control of the present manager, that it can be published at the low price which enables all to purchase it who need it in their business. The Directory is one of those beneficent institutions which everybody abuses, and most people seem to regard as a spontaneous production, which naturally comes round with the season, like green peas and strawberries. People do not crop into baker-shops, and say, 'Please give me a loaf of bread,' nor into the grocers and ask for a pound of butter and walk out without offering to pay, as they do when they rush into anybody's office or store, and say, 'I'll look at your Directory,' and having extracted from it the valuable information they were in pursuit of, rush out again, as if it were all a matter of course and an order of nature that directories should be furnished by somebody for their special benefit."

## WOODHULL &amp; CLAFFLIN'S WEEKLY.

This new claimant for public favor caters to a particular class of mind, in a very spirited and plucky manner. Many of its articles, particularly those from the pen of Stephen Pearl Andrews, appear to our matter of fact judgment rather speculative. His system of Universology, as he styles it is one which, never having been thoroughly examined, we are unprepared to either commend or to criticize. The short expositions and allusions made in it in his articles contributed to this new weekly, certainly do him or the system injustice. Without clear definitions of what he means by the principles of Unism, Duism, and Trinism, or the "Spirit of the Number One, which concentrates and unifies; the Spirit of the Number Two, which separates, distributes, or differentiates; and the Spirit of the Number Three, which combines or unites the Unism and the Duism in a Hinge-wise (partly united and partly separated) Complexity—the type of all real being," Mr. Andrews must expect most people to regard these terms as savoring of transcendentalism. Perhaps his full explanation would only confirm this view. We confess the short exposition given by him in the issue of August 6th has had this effect upon our mind. Nevertheless, as we honor independent thought, we say "God-speed" to all independent thinkers, and to any publication which encourages such thought."

LLOYD'S TOPOGRAPHICAL AND RAILWAY MAP OF THE SEAT OF WAR IN EUROPE 1870. E. Lloyd, Publisher. New York: 23 Cortlandt street. London: 83 Fleet street. Projected by J. T. Lloyd. Price, fifty cents, free by mail.

## APPLICATIONS FOR THE EXTENSION OF PATENTS.

PUTTING UP CAUSTIC ALKALIES.—Geo. Thompson, Philadelphia, Pa., has petitioned for the extension of the above patent. Day of hearing Oct. 5, 1870.

ARRANGEMENT OF BUCKLES OF PADDLE WHEELS.—Matthew A. Crooker, New York City, has applied for an extension of the above patent. Day of hearing Oct. 12, 1870.

WATER WHEEL.—John Tyler, West Lebanon, N. H., has petitioned for the extension of the above patent. Day of hearing Oct. 12, 1870.

BREECH-LOADING FIRE-ARM.—George W. Morse, Greenville, S. C., has applied for an extension of the above patent. Day of hearing Oct. 12, 1870.

CARTRIDGE.—George W. Morse, Greenville, S. C., has petitioned for an extension of the above patent. Day of hearing Oct. 12, 1870.

MACHINERY FOR OPERATING THE PAWL CASES OF A SHIP'S WINDLASS.—Christopher Amazeur, New York City, has applied for an extension of the above patent. Day of hearing Oct. 19, 1870.

## Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address correspondents by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at \$1.00 a line, under the head of "Business and Personal."

All reference to back numbers should be by volume and page.

C. E. M., of N. Y., describes a shaft on a wood planing machine, carrying a fast and loose pulley at one end, and two wide drums in the center, 24 inches in diameter, with edges in juxtaposition, making a drum of 36 inches width. Each of these pulleys has only one set of arms, and its rim is only three-eighths of an inch thick. These pulleys are balanced by iron plates, or counter poises, screwed upon the inside of the rims. When tested upon parallel steel bars, the shaft with its pulleys is found to be in perfect balance, but when run at a speed of nine hundred revolutions per minute, the system is out of balance, and causes great shaking of the machine. The causes of this phenomenon are requested. —It is undoubtedly the effect of centrifugal force, acting to expand the rims of the pulleys on the side of the counterpoise, or if the shaft is too light, to spring that also. The size of the shaft not being given, we cannot decide whether one or both these defects exist. Pulleys of such great width, designed to run at high speed, ought to have more than one set of arms.

J. C. D., of Ind.—A cement called marine glue will resist the action of water, and holds wood and similar materials with great firmness. You can purchase it ready made at druggists' stores, or make it as follows: Dissolve by heat, one part, by weight, of india-rubber in naphtha, and when melted, add two parts of shellac. The proportion of naphtha is simply that necessary to dissolve the rubber and shellac. It varies somewhat with the specific gravity. Pour the mixture, while hot, on smooth metal plates to cool. To use it, it should be melted and applied with a brush. Use a water bath about the vessel employed in dissolving the rubber and shellac, as the naphtha is very inflammable. The operation should also be performed when there is no danger of setting fire to buildings.

C. H. B., of —.—The pressure of the liquid in a vessel is what causes it to flow through an aperture or faucet. The rapidity of flow increases with the height of the liquid, because the pressure increases with the height. The velocities of flow of liquids through apertures in the sides of vessels, are as the square roots of the heads in theory, but there are many circumstances which modify this law so as to apparently change it. It is only accurate for liquids destitute of viscosity, flowing through apertures in their walls, without the attachment of pipes, faucets, etc.

E. B. G., of N. Y.—It is impossible to say, without knowing the character of the coal burned, what the substance was which so rapidly destroyed the Russia iron pipe to which you refer in your communication, or to prescribe a remedy. If you have a chemist in your vicinity, it would be interesting to refer the subject to him. The matter is one of practical importance. Such an instance as you describe, where in a single season the pipe was destroyed, has never come under our notice.

J. P., of Pa.—You can give iron a beautiful brilliant green, while retaining a metallic luster, by first coating it with Dutch metal, and then varnishing over it with distilled verdigris dissolved in alcohol. This last should be varnished over with a white transparent varnish, made of white seed lac. A very good green may also be made by mixing Prussian blue with turmeric in alcohol to the shade required, and after applying the same, varnishing with the lac varnish, as above.

A. W., of Vt.—The static force of a toggle joint, or system of toggle joints, or lazy tongs, exerted at the ends, is found by multiplying the power applied at the joint into the distance between the extremities, dividing this product by the length of a perpendicular drawn from the joint to the line joining the extremities, and subtracting the friction. This rule applies for all positions of the joint, or system of joints, as found in the lazy tongs.

R. M. R., of Mass.—A microscope is a most useful instrument in the examination of fine cutting edges, and the effect of different hones upon them. A cheap instrument, capable of magnifying sixty to one hundred diameters would be sufficient for the purpose. You can ascertain for yourself the price of such an instrument, by applying to an optician.

J. B., Jr., Ohio.—There is no more disagreement between different persons about the apparent size of the moon than would be the case about anything else to which they could apply no common standard of comparison. These differences are to be ascribed to mental and physical peculiarities in the observers.

J. G. P., of Ill.—Wooden pulleys may be balanced by boring holes on the light side, and driving in lead plugs, or by driving nails into the wood. If iron pulleys are badly out of balance, the only way to remedy the trouble is to fix counter poises upon the arms opposite to the light side.

W. H. P., of Ala.—The idea that the return of sap from the tops of vegetation into the roots, increases the flow in water courses, has no basis in fact. Evaporation from the tops of trees is the way they get rid of their moisture.

J. L., of N. B.—The lead rings, the drawings of which you send us, appear to us to be chucks, probably made for some special purpose which their form does not indicate.

J. L. I., of N. Y.—The French "beton agglomeré" may be worked on a small scale. You will find an article on this subject on page 124, last volume, of the SCIENTIFIC AMERICAN.

G. L. W., of Mass.—The mixture of plumbago with silicate of soda, to be used as a stove polish, has been tried, and has proved a failure, as we are informed by several correspondents.

Inventions Examined at the Patent Office.—Inventors can have a careful search made at the Patent Office into the novelty of their inventions, and receive a report in writing as to the probable success of the application. Send sketch and description by mail, inclosing fee of \$5. Address MUNN & CO. 37 Park Row New York.

## Business and Personal.

The Charge for Insertion under this head is One Dollar a Line. If the Notices exceed Four Lines, One Dollar and a Half per line will be charged.

The paper that meets the eye of manufacturers throughout the United States—Boston Bulletin, \$4.00 a year. Advertisements 17c. a line.

Gatling Guns that fire 400 times per minute are now made at Colt's Armory, Hartford, Conn. Send for pamphlets.

Wardwell's Patent Saw Tables—best in use—for sale by Richardson, Merriam & Co., 107 Liberty st., New York.

Wanted—The address of all manufacturers of Sewing Machine Trimmings and Findings, of all kinds. T. Shanks' Patent Bobbin Winder Manufacturer and Sewing Machine Dealer and Repairer, Southwest cor. Lombard and Sharp sts., Baltimore, Md.

Pictures for the Library.—Prang's latest publications: "Wild Flowers," "Water Lilies," "Chas. Dickens," Sold in all Art Stores.

Wanted—An economical second-hand engine, steam or caloric 1 or 2-M. P. Address Lock Box 69, Rutland, Vt.

Situation Wanted as Laboratory Assistant by an American, educated in Germany. Address J. S., Box 773, New York City.

Simonds Manufacturing Co., Fitchburgh, Mass. The report of the destruction of our works by fire, July 21, is false.

Roller-skate Patent for sale. Address C. A. Scott, Cincinnati, O.

Crampton's Imperial Laundry Soap, washes in hard or salt water, removes paint, tar, and grease spots, and, containing a large percentage of vegetable oils, is as agreeable as Castile soap for washing hands. "Grocers keep it." Office 84 Front st., New York.

Peck's patent drop press. For circulars, address the sole manufacturer, Milo Peck & Co., New Haven, Ct.

Millstone Dressing Diamond Machine—Simple, effective, durable. For description of the above see Scientific American, Nov. 27th 1869. Also, Glazier's Diamonds. John Dickinson, 64 Nassau st., N. Y.

The best boiler-tube cleaner is Morse's. See cut inside page.

Rawhide Carriage Washers are cheaper than leather, and run with less noise than any other. Darrow Manufacturing Co., Bristol, Conn.

Scientific American.—Back Nos., Vols., and Sets for sale. Address Theo. Tusch, City Agent, Sci. Am., 37 Park Row, New York.

Our Windmill pumps water for railroads, country and city buildings, hotels, stock fields, drainage, and irrigation. Self-regulating, durable, and well tested. Con. Windmill Co., 5 College Place, New York

The Entire Right of the best Wrench ever patented for sale For drawings address J. F. Ronan, 36 Orchard st., Boston, Mass.

For the neatest, most durable, and cheapest curtain holder now in use; also, relative to prices, agencies, etc., address Yount & Keepports, Littlestown, Pa.

For Sale—The entire right of Parsons' Patent Tool Adjuster for Lathes. Drawings and description sent on application. Address C. H. Standish, New Haven, Conn.

Send 50c. for silver-plated sample (free by mail) of "The Safety Shutter Bow." It holds the shutters securely, at various bows, and in such a way that they cannot be opened from the outside. Agents wanted. J. Pusey, 223 Dock st., Room No. 2, Philadelphia, Pa.

Artificial Skin, absolutely water-proof. Applied immediately. Bruises, cuts, & burns. 50c. by mail. Try it. Ward & Co., Skaneateles, N. Y.

Japanese Paper Ware—Spitoons, wash basins, pails, milk pans, etc. Perfectly water-proof, and will not break or rust. Send for circulars. Jennings Brothers, 352 Pearl st., New York.

"Your \$50 Foot Lathes are worth \$75." Good news for all. At your door. Catalogues Free. N. H. Baldwin, Laconia, N. H.

The Best Hand Shears and Punches for metal work, as well as the latest improved lathes, and other machinists' tools, from entirely new patterns, are manufactured by L. W. Pond, Worcester, Mass. Office, 98 Liberty st., New York.

Wm. Roberts & Co., Designers and Engravers on Wood, 36 Beekman st., New York, would respectfully announce that they are now prepared to receive orders from Manufacturers, and others, for engraving of machinery, views of stores, factories, trade marks, etc., etc.

Machinists and others using Fine Tools, send for illustrated catalogue. Goodnow & Wightman, 23 Cornhill, Boston.

Temped Steel Spiral Springs for machinists and manufacturers. John Chatillon, 91 and 93 Cliff st., New York.

One 60-Horse Locomotive Boiler, used 5 mos., \$1,200. Machinery from two 500-ton propellers, and two Martin boilers very low Wm. D. Andrews & Bro., 414 Water st., New York.

Kidder's Pastilles.—A sure relief for Asthma. Price 40 cents by mail. Stowell & Co., Charlestown, Mass.

For solid wrought-iron beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Keuffel & Esser, 116 Fulton st., N. Y., the best place to get 1st-class Drawing Materials, Swiss Instruments, and Rubber Triangles and Curves

For tinmams' tools, presses, etc., apply to Mays & Bliss, Plymouth, st., near Adams st., Brooklyn, N. Y.

Glynn's Anti-Incrustator for Steam Boiler—The only reliable preventative. No foaming, and does not attack metals of boiler. Liberal terms to Agents. C. D. Fredricks, 587 Broadway, New York.

To ascertain where there will be a demand for new machinery or manufacturers' supplies read Boston Commercial Bulletin's manufacturing news of the United States. Terms \$4.00 a year.

Cold Rolled—Shafting, piston rods, pump rods, Collins pat. double compression couplings, manufactured by Jones & Laughlins, Pittsburgh, Pa.

For mining, wrecking, pumping, drainage, and irrigating machinery, see advertisement of Andrews' Patents in another column.

It saves its Cost every sixty days—Mitchell's Combination Cooking Stove. Send for circular. R. B. Mitchell, Chicago, Ill.

The Burleigh Steam Rock Drills are used exclusively at the Hoosac Tunnel, Mass., and Nesquehoning Tunnel, Pa., making, at each heading, from four to six lineal feet per day. Pamphlets sent on application. J. T. & W. H. Daly, Agents, 49 New st., New York.

CITY SUBSCRIBERS.—The SCIENTIFIC AMERICAN will be delivered in every part of the city at \$3.50 a year. Single copies for sale at all the News Stands in this city, Brooklyn, Jersey City, and Williamsburgh, and by most of the News Dealers in the United States.

Caveats are desirable if an inventor is not fully prepared to apply for a patent. A Caveat affords protection for one year against the issue of a patent to another for the same invention. Patent Office fee on filing a Caveat, \$10. Agency charge for preparing and filing the documents from \$10 to \$12. Address MUNN & CO., 37 Park Row, New York.