

What an Editor should Eat.

It is often said that editors are born, not made. This, says the *American Newspaper Reporter*, is doubtless true, as it is of many other occupations in life. Yet we have abundant evidence to show that men born with great capacity for certain occupations are frequently beaten in the race by men of much lower caliber. It is clear that to be born for a position is by no means all that is necessary to enable one to fill it satisfactorily.

In the editorial profession many of the most noticeable failures have been the result of bad habits—mental, moral, or physical. Publishers will almost always prefer the even good sense and correct habits of average capacity to the fitful brilliancy of a born editor, whose habits are constantly stealing away his efficiency. To be a thorough editor, however, in all things, is a high ambition, and given first the mental capacity at birth, adding a thorough education and good habits, and everything worth having will be his. The question of food has assumed a large importance in the scientific world, and few things have so great a power over intellectual usefulness as what we eat and drink. An organism which is expected to be always clear, reliable, and ready, requires careful treatment to insure its usefulness. In all questions of stimulus an ambitious editor will always be a radical. No reliance can be placed in any stimulant whatever. It betrays when least expected to do so, and often destroys in a moment all that the labor of months, or even years, had accomplished. "I have never trusted," says Parton, "to a single sentence written under the influence of a stimulant." And it is well known that none of our journalists who have a reputation for long continued or arduous literary labor, ever depend upon stimulants in order to accomplish it.

After abstinence from stimulus, and a habit of perfect regularity in all things, the food question becomes of the highest importance. It is well known that certain kinds of food are peculiarly fitted for keeping the brain in a state of healthy activity. Many literary men here and in Europe permit themselves coffee, tea, and condiments in moderation, and for the rest confine themselves almost entirely to fish, fruit, vegetables, milk, and the various kinds of farinaceous food, Graham bread and oat meal taking the lead. These articles have, by repeated experiments, been found to be the best for brain workers. Some constitutions, however, seem to thrive best on a strictly vegetable diet.

Miles Grant, editor of the *World's Crisis*, has done a vast amount of intellectual labor; yet, after being eighteen years a vegetarian, he finds himself in the most perfect mental and physical health. The articles chosen are those preferred in the highest scientific circles, though, as we have indicated, few consider coffee and animal food, in strict moderation, injurious. The bread adopted by Mr. Grant, and which he says, with reason, will enable one to labor longer, and with less fatigue than any other one substance, is made with coarse Graham flour, mixed with water and baked in an oven. Oat-meal, in its various forms, is next on the list, and beans (boiled without meat) and baked apples are next in order. Two meals a day are found to be better than three, and they should be taken, Mr. Grant thinks, wholly without condiment, though equally high authority says that a sufficiency of condiment should be used to render the food palatable. A window in the sleeping room should be left open, feather beds avoided, and the hours kept as regularly as possible.

These seem simple directions, but Mr. Grant affirms that it is through these means that he has been enabled to fulfil his editing duties with comfort, and to preach, when necessary, fifteen sermons per week.

How to discover Sewage Contamination in Water.

Now that the warm summer months are approaching, the quality of the water used for drinking purposes becomes a matter of anxiety to the thoughtful householder. This is particularly the case in country districts, where the supply of water is obtained from wells, and may be affected by unsuspected sources of contamination. In the spring, therefore, every householder should call in the powers of the analyst, in order to demonstrate the purity or approaching foulness of his water supply; and this even though the water be clear, bright, and tasteless.

The reason an apparently pure sample of water should be analyzed is simply this: A water may contain so small an amount of sewage, that micro chemistry will alone reveal its presence; and waters which contain such small quantities of sewage may remain innocuous through the winter, and only develop their ill effects on the approach of warm weather, and then suddenly.

The possibility of approaching danger having been indicated by the analyst, it may often be turned aside by a little attention to surface drainage, which is most commonly the source of contamination. Surely it is worth while to spend a guinea or two in order to prevent a pestilence whose cure may cost many times the sum.

The trouble involved in getting the matter into the right hands need not be great, as your chemist and druggist will almost certainly know of a suitable analyst, and will probably negotiate the matter. The samples for analysis should be collected in half gallon bottles, which have been properly cleaned and have well fitting glass stoppers; one such bottle will suffice for an ordinary analysis. Here again your chemist will help you, and provide a bottle ready for filling. In drawing the water, say from a well, the pump should be worked for a few minutes before filling the bottle, so that the sample sent may be unquestionably free from casual impurity.

It may interest general readers if we point out the chief

features of the chemical evidence on which the analyst bases his judgment of a sample of water. We find, in the pages of a cotemporary, an account of the methods employed, from the pen of Mr. S. W. Rich. In the ordinary examination of a sample of water used for domestic purposes, two points have to be investigated: First, the freedom of the water from sewage contamination; secondly, the character of the water from a soap consuming point of view. The first point is determined by a series of micro-chemical processes, which indicate the presence of the elements of sewage in their characteristic form, and more particularly of "ammoniacal" and "albuminoid" organic matter. We may explain that these terms are applied to organic matter in a more or less advanced state of decomposition, from which ammonia is liberated, under specified conditions, and that the quantity of ammonia thus obtained commonly serves as a direct measure of the amount of sewage contamination. Collateral evidence has to be considered. The second point is determined by a direct estimation of hardness, and is interesting from an economic-domestic point of view. It is also customary to examine samples of water for lead, as this poisonous metal is frequently present where it is least suspected.

Druggist's Apparatus for Dividing Powders.

George P. Allen, of Woodbury, Conn., has invented an apparatus for proportioning and dividing powders, being intended to provide a simple and efficient means whereby druggists may quickly separate a mass of powder into any given number of equal quantities for doses, instead of the slow and inaccurate method of dividing with the spatula now employed. The invention consists of a board or plate of any kind or substance best suited for the purpose, having any required number of holes or pockets of uniform size and shape made through or in it, and each hole provided with a movable bottom or piston arranged for shifting quickly to vary the depth of the pocket, all the said bottoms or pistons being arranged so as to move equally in relation to the plate or holes therein. In using this instrument the mass of powder is placed on the table and scraped over the holes so as to fill as many as the number of divisions required. If it fails to fill as many holes as the said divisions require, the pistons are raised or the plate lowered, as the case may be, by which the powder in the filled pockets will be raised above the surface, so that some of it may be scraped into the holes not filled, which being done, and the requisite number of holes filled, the division is completed. The pistons are then raised to the level with the table and the powder raised up in separate piles, to be scraped away separately. The pistons are shifted downwards, and the operation of dividing the powders is carried on in like manner, if the pistons are too high at first.

Improved Show Case.

This show case is designed for showing and exposing for sale kid gloves, hosiery, laces, parasols, handkerchiefs, silks, ribbons, and any other merchandise that may be designed to show in cases. It consists of one or more glass covered compartments so arranged that the back compartments are more fully presented to the view of the customer, enabling the merchant to exhibit a greater quantity and variety of goods in a given space without increasing the height of the case. The cases may be used in a vertical position, or formed into an entire counter. If more than one case is used in a counter, the compartments are placed in an angular position. Where the cases are made as represented, eighteen sample dozen handkerchiefs, representing a stock of large amount, can be shown in a case three feet by two, thus bringing a great variety before the eye of the customer, while they are all at the same time under the eye of the seller, and, after the sale is made, can be put in order and re-arranged in a short space of time. With show cases of this description, where merchandise of the descriptions named is on sale, it is claimed that at least one third of the usual number of clerks now needed may be dispensed with. George A. Hearn, Jr., of New York city, is the inventor.

School Seat.

Mr. David I. Stagg, of New York city, has invented a new school seat, which is claimed to be a simple, strong, durable, neat, and convenient folding chair, so constructed as to allow the pupils to pass in and out freely and economize space. A pedestal is secured to the floor in the ordinary manner. To the upper end of the pedestal is secured a cross piece which equals in length the breadth of the chair, to the ends of which are securely attached end frames to which the back is attached, and to which the seat is pivoted. The end frames, back, and seat are constructed in the ordinary manner, except that the end frames do not extend below the top of the pedestal. This construction enables a folding school seat or chair to be attached to and supported by a single pedestal or column, so as to obtain, at the same time, the advantages of a folding seat and single column support.

Raising a Sunken Ironclad.

Efforts now making to raise the monitor *Weehawken*, sunk in Charleston harbor during the late civil war, reveal the facts that she lies due east and west on a bottom of mud, and there is about eight feet of water over her at low tide. In this position she is a dangerous obstruction in the channel. All her machinery has been taken up, and likewise the iron of her turret and deck. Her interior is all filled with mud and garbage, among which human bones are here and there visible. The diver is able to see about him when the water is clear. When the water is not clear he is compelled to go entirely by feeling, and in the muddy water, it is said, he sees better by night than by day, owing to the presence of innumerable phosphorescent animalculæ. Over two hundred tons of iron and various metals have been raised from this ship.

Resignation of the Hon. Horace Capron.

We are to lose the valuable services of the Hon. Horace Capron, as Commissioner of Agriculture. The peculiar fitness of this gentleman for the office which he has so long and so worthily held, has been made familiar to our readers by quotations, from his elaborate reports, which have appeared from time to time in our journal.

Mr. Capron proceeds to Japan, on a mission undertaken at the solicitation of the Japanese Government, to introduce American systems of, and appliances for, agriculture, engineering, railroading, and industrial pursuits generally. The expedition will be aided by a corps of scientific men, and the best possible results from it may be looked for.

Mr. Capron's resignation takes effect on 1st next August.

EDITORIAL SUMMARY.

THE following illustration, says Professor Henry, of the vibratory movement of matter is attested by Professor Horsford, of the United States. The top of the high tower which constitutes the Bunker Hill monument inclines towards the west in the morning and the north at mid-day, and towards the east in the afternoon. These movements are due to the expanding influence of the sun as it warms, in succession, the different sides of the structure. A similar but more marked effect is produced on the dome of the capitol at Washington, as indicated by the apparent motion of the bob of a long plumb line fastened to the under side of the roof of the rotunda, and extending to the pavement beneath. This bob describes daily an ellipsoidal curve, of which the longer diameter is 4 inches or 5 inches in length. By molecular actions of this kind, Time, the slow but sure destroyer, levels to the ground the loftiest monuments of human pride.

IN a recent number of Poggendorff's *Annalen*, Dr. Weinhold states that the black absorption line of sodium can be easily obtained by a simple process. The usual method has been to interpose a flame, colored with chloride of sodium, between a strong light, such as the electric light, and the slit of a spectroscope. The source of light now proposed by M. Weinhold is an ordinary petroleum lamp; the light is allowed to pass through a slit directly on to a prism, and a spirit lamp flame, intensely colored with chloride of sodium, interposed between the prism and the eye, so as to cover the entire spectrum; the black absorption line will then be seen distinctly. If the flame colored with sodium be placed in front of the slit, the bright yellow line will be seen as usual. M. Weinhold has not been successful in using this method with an ordinary spectroscope fitted with telescopes, on account of various practical difficulties.

FORTIETH INDUSTRIAL EXHIBITION OF THE AMERICAN INSTITUTE.—The American Institute will hold its Fortieth Exhibition of National Industries during the coming autumn in the great structure known as the Empire Rink, covering the block between Second and Third Avenues, and Sixty-third and Sixty-fourth streets, opening, August 15th, for the reception of heavy machinery; Monday, August 28th, for reception of goods; Thursday, Sept. 7th, at 12 M., to the public, with an opening address; remaining open every secular day from 9 A. M. to 10 P. M., until and including Saturday, Nov. 4th, when it will close with an address and the proclamation of awards.

CRAMP in horses arises from irregular action of the motor nerves. Rubbing the affected parts with a wisp of hay for ten minutes would be beneficial; and should friction alone not remove the tendency to cramp, the parts affected should be rubbed occasionally with a solution of camphor and olive oil, in the proportion of one part of camphor to four of olive oil.

CEMENT FOR METAL AND GLASS.—The following cement will firmly attach any metallic substance to glass or porcelain: Mix two ounces of a thick solution of glue with one ounce of linseed oil varnish, or three fourths of an ounce of Venice turpentine; boil them together, stirring them until they mix as thoroughly as possible. The pieces cemented should be tied together for two or three days.

THE fifty per cent of silica in the straw and grain, respectively, show why it is that oats flourish luxuriantly on meadow land that has been broken up from grass. It also indicates that potash, for the reduction of the silicates, is absolutely essential as a constituent of the soil. Wood ashes, therefore, are very serviceable in the growth of the crop, as well as in the production of the finer grasses.

THE improved foot lathes made at Laconia, N. H., have obtained quite a notoriety. One was taken with Hall's Arctic Expedition which left this port lately. We learn that they are being sent in all directions—to California, Canada, Cuba, and Europe; many of them to noted places, such as the U. S. Military Academy, West Point, N. Y., Brown's University, Providence, R. I., etc.

AN exhibition illustrating the progress of all kinds of industrial pursuits is announced to be held at Moscow, Russia, next year, being the two hundredth anniversary of Peter the Great. The naval branch of the exhibition will have a most attractive curiosity, a boat built by the great Emperor, who "served his time" as a ship carpenter at Woolwich, England.

A SINGULAR accident happened to a lady in Portland, Me., not long ago. She went to call on a friend, and when she pulled the door bell, the wire broke, and she fell backward, striking her head on the steps. She was rendered insensible and very severely hurt.

The Electro-deposition of Tin.

The *English Mechanic* says: An improved process for coating articles, made of certain metals, with tin, by means of electricity, has been recently patented in England. The inventor (Mr. J. E. Bingham) claims that he can coat and preserve iron, steel, brass, copper, nickel, lead, zinc, gold, platinum, and any of their alloys, or the alloys of manganese; and states that his improved method is specially applicable to the prevention of oxidization or tarnishing of silver surfaces exposed to atmospheric influences.

The inventor, in carrying out his improvements in the electro-deposition of tin, takes a given quantity of that metal, by preference in a pure state, although what is commercially known and sold as tin may be employed, which he dissolves in chlorhydric acid, and precipitates by means of a solution of crude potassic hydrate; the precipitated tin is then washed free from acid, after which a quantity of potassic hydrate and also of cyanide of potassium is added; the temperature is raised to a point just below that at which the solution boils; and when it has been thus heated, a quantity of solution of calcic hydrate is added.

In the solution thus obtained, sheets of tin and the articles to be coated with the same are suspended; the articles having been prepared in the usual manner. The tin and the articles to be coated are then connected with the battery in the usual manner, and the articles are retained a longer or shorter time in the solution according to the quantity or thickness of tin required to be deposited on their surface.

The quantity of ingredients may be varied, but the inventor uses with advantage a bath of the following composition: To ten gallons of water eight hundred and twenty-six grains of tin in solution, two and a half pounds of potassic hydrate, half a pound of cyanide of potassium, and one hundred grains of calcic hydrate are added. These proportions constantly vary according to the heat of the solution, the state of the electric current, and the quantity of metal dissolved and deposited. Thus a variation in the quantities of the several ingredients, will be caused, which can only be determined and altered by a practical operator, in accordance with the requirements of his solution.

In the event of the equilibrium of the solution not being maintained in so far as regards the heat, quantity of metal, electricity, or chemicals employed, the deposit obtained is liable to become rough, in which event the article should be taken out and brushed with wire brushes (as is usual in the manufacture of electro-plated articles) and again passed into the solution; and also in the case of large articles, the granular, soft, or surplus deposit must be removed by an ordinary brush, a cloth and sand, or by any other convenient method.

The solution may be made from several precipitates of tin, provided that potassic hydrate, cyanide of potassium, and calcic hydrate are added, and a similar result may be obtained by dissolving the tin into the solution by the aid of electricity.

THE Broom (*Sorothamus scoparius*) is extremely abundant in Madeira, but is supposed to have been originally introduced to the island. It is now sown extensively on the mountains for the purpose of being cut down for firing, or burnt on the spot every five to seven years to fertilize the ground. The twigs and more slender branches are also used commonly as withs for binding bundles of faggots, brushwood, fern, etc.; and numbers of country people, especially young girls and children, residing within reach of Funchal, gain a livelihood by bringing daily into the town bundles of broom for use in heating ovens, etc. The fine and delicate basket-work peculiar to Madeira is manufactured from the slender peeled twigs of this plant. Mr. Lowe speaks of a variety with pure white flowers, which occurs on this island.

A LONG STRETCH OF WIRE.—The American Compound Telegraph Wire Company have just completed, for the Pacific and Atlantic Telegraph Company, a wire for crossing the Mississippi river at St. Louis, which requires a stretch of about a mile and a half in one piece. This wire weighs 220 pounds to the mile, and by actual test the breaking strain is 1,240 pounds, which is very much more than sufficient to guarantee it against fracture after suspension, either from its own weight or by any other means.

VAGARIES OF TYPOGRAPHY.—It is hardly necessary to notify our general readers that an egregious blunder was perpetrated in our last issue, by which the cut of "Baxter's Steam Engine" was inserted with the advertisement of the "Roper Caloric Engine," and *vice versa*. The only apology we can make is to place each cut in its proper place in this present issue, and notify all our readers that "Baxter" is "Baxter," and "Roper" is "Roper."

Inventions Patented in England by Americans.

June 13 and 14, 1871.

[Compiled from the Commissioners of Patents' Journal.]

CONSTRUCTION OF SHIPS.—W. G. Warden, Philadelphia, Pa.

GANG PLOW.—L. Chapman, Collinsville, Conn.

GOVERNOR FOR STEAM ENGINE.—H. B. Weaver, Hartford, Conn.

MOLD FOR GLASS BLOWING.—S. R. Bowie, New Bedford, Mass.

Foreign Patents.

The population of Great Britain is 31,000,000; of France, 37,000,000; Belgium, 5,000,000; Austria, 36,000,000; Prussia, 40,000,000; and Russia, 70,000,000. Patents may be secured by American citizens in all of these countries. Now is the time, while business is dull at home, to take advantage of these immense foreign fields. Mechanical improvements of all kinds are always in demand in Europe. There will never be a better time than the present to take patents abroad. We have reliable business connections with the principal capitals of Europe. A large share of all the patents secured in foreign countries by Americans are obtained through our Agency. Address MUNN & Co., 31 Park Row, New York. Circulars, with full information on foreign patents, furnished free.

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, \$1 00 a year. Advertisements 17c. a line. SCIENTIFIC AMERICAN.—Back Numbers, Volumes, and Sets, for sale at low prices. Theo. Tusch, 37 Park Row, New York.

Water Engines—Manufacturers will please send price lists and circulars to John Osborn, Engineer Fair Haven Water Co., New Haven, Ct.

Fine Engravings, more of them and better than ever before, will be given in every number of the present volume of the RAILROAD GAZETTE.

The "Union Water Meter Co.," Worcester, Mass., manufactures Steam-pressure Regulators, the best machine in use for reducing and regulating the pressure on paper machines, bleacheries, slaters, and all places where an even temperature is desired.

We pay more for Brass Turnings, Brass, Copper, Lead, Zinc, Pewter, than any other establishment. Consignments, large or small, wanted, from all parts of the country. DuPlaine & Reeves, Philadelphia.

Line, Shafting, Pulleys, and Hangers.

First class. Send for circulars and price lists. Greenleaf Machine Works, Indianapolis, Ind.

For Centrifugal Pumps, address Morris, Alvord & Co., 70 Canal street, Syracuse, N. Y.

Wanted.—The address of manufacturers of Wire Fences, Driven and Bored Well Machinery, etc. J. M. Ferguson, Summit, Miss.

Steel and Brass Letter Cutter. John C. Hilton, Chicago, Ill.

Magic Lanterns and Stereopticons, of every description. Send for Catalogue. W. Mitchell McAlister, 728 Chestnut st., Philadelphia.

Diamonds and Carbon turned and shaped for Philosophical and Mechanical purposes, also Glazier's Diamonds, manufactured and reset by J. Dickinson, 64 Nassau st., New York.

Peck's Patent Drop Press. For circulars address the sole manufacturers, Milo, Peck & Co., New Haven, Ct.

Mining, Wrecking, Pumping, Drainage, or Irrigating Machinery, for sale or rent. See advertisement, Andrew's Patent, inside page.

Rollers.—Allen's patent will prevent scale from forming, and not injure the iron. In 3 gallon cans, price \$6. J. J. Allen, Philadelphia.

J. A. Whitman's Water Wheel Governor beats them all for his. and price. Auburn, Me.

Electrical Instruments, Models, etc., made to order, and Gear Wheels and Pinions cut, by W. Hochhausen, 113 Nassau st., Room 10, N. Y.

Bliss & Williams, successors to Mays & Bliss, 118 to 122 Plymouth st., Brooklyn, manufacture Presses and Dies. Send for Catalogue.

Bright and industrious American, Scotch, English, German, or French boys, of 16 years or older, who desire to learn the machinist trade, in a first class establishment, will please address, for terms, P. O. Box 685, Hartford, Conn.

The Bucket-Plunger Steam Pump discharges at both strokes, with only two water valves. Valley Machine Co., Easthampton, Mass.

Lord's Boiler Powder is only 15 cts. per pound by the bbl., and guaranteed to remove any scale that forms in steam boilers. Our Circular, with terms and references, will satisfy all. Geo. W. Lord, 107 W. Girard ave., Philadelphia, Pa.

Improved mode of Graining Wood, pat. July 5, '70, by J. J. Callow, Cleveland, O. See illustrated S. A., Dec. 17, '70. Send stamp for circular.

Ford's Portable Tobacco Press for Planters. Will sell Virginia, Maryland, Missouri. Address Ford's Tobacco Warehouse, Evansville, Ind.

Air Cylinder Graining Machine.—A perfect tool for House Painters and Manufacturers of all kinds of Decorated Ware. Complete Machine for \$50.00. Send stamp for Circular. The Heath & Smith Manufacturing Co., 44 Murray street New York.

For the most perfect Band Instruments in the world, send to Isaac Fiske, Worcester, Mass. Illustrated Catalogues free on application.

The Patent for the best Hydrant, or Fire Plug ever invented, for sale. For descriptions, terms, etc., address Lock Box 356, Lockport, N. Y.

Best Scales.—Fair Prices. Jones, Binghamton, N. Y.

Steam Watch Case Manufactory, J. C. Dueber, Cincinnati, Ohio. Every style of case on hand, and made to special order.

L. & J. W. Feuchtwanger, Chemists, 55 Cedar st., New York, manufacturers of Silicates of Soda and Potash, and Souble Glass.

For Hydraulic Jacks, Punches, or Presses, write for circular to E. Lyon, 470 Grand st., New York.

Belting that is Belting.—Always send for the Best Philadelphia Oak-Tanned, to C. W. Army, Manufacturer, 301 Cherry st., Phila.

Send your address to Howard & Co., No. 865 Broadway, New York, and by return mail you will receive their Descriptive Price List of Waltham Watches. All prices reduced since February 1st.

Ashcroft's Low Water Detector, \$15; thousands in use; can be applied for less than \$1. Names of corporations having thirty in use can be given. Send or circular. E. H. Ashcroft, Boston, Mass.

To Cotton Pressers, Storage Men, and Freighters.—35-horse Engine and Boiler, with two Hydraulic Cotton Presses, each capable of pressing 35 bales an hour. Machinery first class. Price extremely low. Wm. D. Andrews & Bro., 414 Water st. New York.

Brown's Coal-yard Quarry & Contractors' Apparatus for hoisting and conveying material by iron cable. W. D. Andrews & Bro., 414 Water st., N. Y.

Improved Foot Lathes, Hand Planers, etc. Many a reader of this paper has one of them. Selling in all parts of the country, Canada Europe, etc. Catalogue free. N. H. Baldwin, Laconia, N. H.

Presses, Dies, and Tanners' Tools. Conor & Mays, late Mays & Bliss, 4 to 8 Water st., opposite Fulton Ferry, Brooklyn, N. Y.

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

For Solid Wrought-iron Beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Glynn's Anti-Incrustator for Steam Boilers—The only reliable preventive. No foaming, and does not attack metals of boilers. Price 25 cents per lb. C. D. Fredricks, 557 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 \$1 00 a year.

A Practical Chemist, educated in Germany, desires a situation in a manufacturing laboratory or technical school. Address J. S. Peckskill, N. Y.

If Every Man

Who spends money in advertising would go or send to Geo. P. Rowell & Co., the New York Agents for most of the newspapers published in the United States, the number of successful advertisers would be largely increased.

Examples for the Ladies.

Mrs. E. B. Dodge, Little Rock, Ark., has used her Wheeler & Wilson Machine 14 years, doing the family sewing for 9 children (6 of them daughters), working with scarcely a day's intermission, alike satisfactorily upon the finest silks, cambric, and the coarsest soldier's clothing, without any repair. She has used the same needle—a No. 2—for more than three years, lowering it as it wears off.

Answers to Correspondents.

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 must be by volume and page.

THE USE OF APERIENTS.—I am every year more dissatisfied with mankind; they want to know everything except what concerns them most. Just think of F. C. asking the question, in the SCIENTIFIC AMERICAN of June 21, "whether the habitual use of aperients is injurious." This is one of the wide roads to the grave. Let F. C., if he be one of those victims, gradually learn to do without aperients, and increase the quantity of his food, *sans increase of nourishment*, as much as he can. Volumes could be written in explanation, but I only lay down the principle. If F. C. keeps the principle always in view as long as he may live, he will thank the writer of this letter, before he is five years older.—J. M.

BELTS.—It is asked by one of your querists, "Why a belt will run to the largest part of a pulley?" If a ribbon be drawn tighter on one edge than the other, it will bow out, or become crowning on the tight edge, more particularly at the point taken hold of. It is the same with a belt. The large part of the pulley draws the belt tighter than the small part, and consequently changes its direction, at the point of its entering on the pulley.—S. G. D., of Pa.

DISSOLVING MICA.—In the column of queries, page 347, Vol. XXIV., M. asks if he can dissolve mica. He can do what will perhaps answer his purpose equally well. Grind mica fine, and mix to a proper consistency, with a solution of gum arabic, in water. It is sometimes used in this form as a substitute for silver ink.—J. E. W., of N.H.

CISTERN.—If E. E. H. will take the pains he will always have good cistern water. Let him construct the cistern so it will hold water to the top necessary; cover it so no sweepings or washings can enter, and provide for good ventilation. If a pump be used, he should run the suction pipe no nearer the bottom than 18 inches. He must keep the gutters clear of leaves, otherwise he will have a filter of rotten leaves instead of charcoal. He should make the connection from the gutter to the cistern so it can be detached, and never allow the water to enter until the house roof and gutters are completely washed off by the rain. This rule I follow strictly, and clean out the cistern once a year. I always have good cistern water.—J. A. Mc., Ind.

POWER TO DRIVE CIRCULAR SAWS.—If E. A. M. wishes to know which of the two circular sawstakes the least power, I will say the thin saw always; but the same saw will not be suitable for all kinds of work. The saw with sixty teeth will answer well for some work, but the saw with thirty teeth would not. Practice will soon tell him which is best.—J. A. Mc., Ind.

CASING OF STEAM PIPE.—B. L. C., who wants information as to casing a steam pipe, ought to be surprised if he ever works anything but warm water into his engine. Such an elaborate device for condensing his steam as a pipe 180 feet long, uncovered with any non-conducting material, is seldom seen. He will find that a covering of felt, or of the numerous boiler cements now made, will produce an immediate and great effect. But he should at once, if possible, place his boiler and his engine in close proximity, and then use all possible means to prevent the radiation of heat. He will not, then, be forced to diminish the pressure in his cylinder by keeping his cylinder cocks open.—D. B., of N. Y.

TO RESTORE BURNT CAST STEEL.—In your paper of June 17, A. T. L. asks for a recipe to restore burnt cast steel. Take 1 1/2 pounds borax, 1/2 pound sal ammoniac, 1/2 pound prussiate of potash, 1 ounce rosin. Pound the above fine, add a gill each of water and alcohol. Put in an iron kettle, and boil until it becomes a paste. Do not boil too long, or it will become hard on cooling.—F. A. K., of Pa.

TELESCOPE.—In reply to E. T., I would say that the directions I gave were for a terrestrial telescope, which answers equally well for an astronomical one.

J. R., of N. J.—The pressure of steam in a boiler is exerted in all directions. The pressure of the water is transmitted in only one direction—downward. The pressure upward on the inner side of the top of the shell is that due to the expansive force of the steam. The pressure downward on the inner side of the bottom of the shell will be that due to the expansive force of the steam plus the weight of the water and the steam. The weight of the water and the steam is, however, received by the exterior supports upon which the boiler rests, so that practically there is on this account, very little if any more liability of the breaking of the shell at the bottom than at the top.

C. E. M.—The rule for finding the area of a circle, *i. e.*, multiplying the circumference by one fourth the diameter, depends for its approximation to exactness upon the exactness with which the circumference has been determined. As this is only attained approximately, of course the rule in question, although practically exact enough for all purposes, is theoretically imperfect. The problem of "squaring the circle" requires that the theoretically exact area shall be found.

A. E. S., of Mo.—In the oxychloride of zinc paint, the proportion of oxide of zinc used may be varied. It should, however, not be less than half the weight of the chloride. The object of the tartrate of potassa is to prevent too rapid drying. This may, therefore, be used in variable proportions. The amount of water and starch used depends upon the consistency required. Experience can be the only sure guide in these particulars. By a few preliminary experiments with small quantities you will probably be able to succeed.

S. —, of —.—"Let well enough alone." If the iron pipe used does not rust, why should you wish a galvanized pipe? We have often expressed our disapproval of zinc coated iron pipes to convey water for culinary purposes. We believe them pernicious. We do not think burning an iron pipe in a wood fire would keep it from rusting in contact with water that would rust ordinary iron pipes.

A. G. X., of Ohio.—Glycerine and litharge stirred to a paste, hardens rapidly, and makes a suitable cement for iron upon iron, for two stone surfaces, and especially for fastening iron to stone. The cement is insoluble, and is not attacked by strong acids.

C. E. A., of R. I.—In your attempts to make a solution for electro-plating without a battery, you failed, probably through not using sufficient hyposulphite of soda. The recipe distinctly says, "a slight excess of the salt must be added."

C. B. P., of N. Y.—You can procure Haserick's "Secrets of Dyeing," of E. C. Haserick, Laconia, N.H.