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.

FROZEN WATER MAIN.—Query 6, March 16.—C. H. J. asks which is the quickest and cheapest way to thaw out 150 feet of frozen water main, etc.; and as he has taken the liberty to use my initials in asking the question, I will use his in answering it. Put a jet of steam (under a moderate pressure) into the top of the waste cock of your frozen pipe, and allow the water to escape from the bottom of the pipe, and you will very soon remove the ice.—C. H. J., of N. Y.

CONCRETE BUILDING.—To B. L. V. A., January 27. Molding the concrete into blocks, and laying with lime, mortar, or cement will answer; but it takes one half to one fourth more time and expense, and is not as good as when done by the following method: The basement or cellar walls should be 18 inches thick, the first story, 14, and the second, 12 inches. If granite or other good rock cannot be had in a quarried state for the underground wall, I should substitute a concrete of hydraulic cement, sand, and rock, till I got above the ground, dumping it into a trench where it was convenient to do so. The fireplace, if any, should be of iron, brick, or rock; and after the flue is started, it may be carried up in the concrete, by means of a coffin shaped box, or elongated hexagon, separated into two parts by a long wedge, which, being drawn out after the concrete has hardened, will allow the box to collapse; and it can then be raised and set for another course. The flues above the wall should be carried up with brick. There is no appreciable shrinkage about such walls. To J. P., January 27, 1872.—One fifth part of good lime, with clean sharp sand will make a substantial house wall. Such walls should be well anchored at the corners by long pieces of wood, stone, or iron. One thirteenth part of lime will answer equally well, by using eight parts of broken rock, brick, or other imperishable material, rammed into the mortar, as it is poured up. Masons require more lime, because it renders the mortar more plastic.—Z. L. H., of S. C.

CRACKED FLUTE.—Query 13, March 16. The experience of nearly forty years warrants me in offering the following advice: Anoint the flute thoroughly and repeatedly with pure raw linseed oil prepared by letting it remain unshaken for several weeks, when the clear oil should be poured off for use. It should be applied, inside and out, every time the flute is put away, it having been carefully cleaned from moisture for the first year, after which an application once a month will be sufficient. Pure olive oil will do better, but it must be oil of olives. On taking the flute from its case for use, the oil should be wiped out with an old silk handkerchief (cotton will do for the outside) wrapped tightly around a stick, using as much friction as possible. This will produce a burnished surface, which, besides aiding in filling the pores, adds to the mellowness of the tone. Care must be had to prevent the metal or anything other than the silk from touching the flute, and to apply the pressure equally on all sides, otherwise the bore will become distorted. To stop cracks that have already appeared, pack them full with good beeswax which has been mixed, by melting and stirring, with a small portion (say one sixth) of rosin, sufficient to stiffen but still leave it viscid; apply when cooled, and cram it in with the finger. Do not be tempted to use shellac or any rigid cement, as it will fail on account of the distention and contraction of the wood by change of temperature. It is well to pass your thumb over the cracks, filled as above, before commencing to play, the object being to smooth them down and insure their being tight, which rigid cement will not admit of.—AKT.

MADSTONE.—R. A., of North Carolina, sends us a stone discovered by a neighbor which he states "has been compared with the famous madstone (owned by the Pointer family of Halifax county, Va. for the past half century, and which extracts the poison of mad dogs, snakes, spiders, etc.), and found to be exactly alike in every respect, adhering to the flesh like a leech, and extracting the poison by absorption. The specimen I send you has been, to my own knowledge, applied in a case of bite by a copperhead snake and effected a complete cure in twelve hours. The patient was very sick and delirious. The flesh is moistened before application. Are there any other stones in the country of a similar character? I am arranging to advertise it for sale, and therefore wish your opinion before offering it to the public."—Answer: The stone which our correspondent sends is half an inch square and one eighth thick, black in color. In it we have determined the presence of alumina, which we suspected, and are now quite confident, is the "charm" of the madstone. We do not think there is anything in the stone which acts as an antidote; its virtue is its property of absorption, and any other aluminous mineral, as Websterite, pure clay, etc., would undoubtedly serve as well. Another correspondent, writing from Purdy, Tenn., describes the rampages of a mad dog in his vicinity, several children having been bitten, and great alarm among the residents having been occasioned. The parents of some of the suffering children immediately went to procure the use of madstones. Our correspondent says: "There are many fabulous stories told about the virtues of the madstone. I have seen one sold to Mr. David Riding, four miles south of this place, for $5, and have heard of several more sold by an old man who passed through the country shortly after the war with his pockets full. Will some one learned in the arts and sciences give your readers a short comment on the mad stone, its physical structure and appearance, its virtues and *modus operandi*, how long after the infliction of the bite may its wondrous virtues be depended upon, and above all, its origin? The specimen in Mr. Riding's possession is about ½x1 inch, and looks very much like a dark species of slate."—W. C. K. Answer: The "madstone" of the Southern States is an aluminous mineral, and its charm lies in its power of absorption. It is not an antidote. But we would have more faith in ten drops of ammonia than in ten pounds of this "madstone." It is not to be denied, however, that "snake stones" have been used in several countries with wonderful success. Sir Emerson Tennent, in his "Sketches of the Natural History of Ceylon," calls attention to the "pamboo-kaloo" as a remedy in cases of wounds by venomous serpents, and gives more than one well authenticated instance of its virtue when the patient was bitten by the deadly cobra di capello. The stone is intensely black and highly polished, and, being porous, rapidly imbibes the blood and with it the poison. The stone adheres for a few minutes, like the "madstone," and then drops off. The celebrated Faraday, after an analysis, declared his belief that it is a piece of charred bone, evidence of which is afforded both by the apertures of cells or tubes on its surface and by the fact that it exhibits an organic structure within. When heated, water and ammonia escape, and finally the carbon burns away, leaving a white ash which is phosphate of lime. The snake charmers from the coast also visit Ceylon proper to prepare the snake stones themselves, and to preserve the composition a secret. Dr. Davy says the manufacture of them is a lucrative trade carried on by the monks of Manilla, who supply the merchants of India. The Mexicans also have a snake stone, *piedraponsona*, which is nothing more than charred hart's horn. This adheres firmly and is very absorbent, and when speedily applied, has been found efficacious in the case of a bite from a rattlesnake. We would caution our readers against putting too much faith in these stones; they certainly are of no avail unless used immediately after the wound has been made.

CHLORO-ACETIC ACID.—No. 21, March 30.—Place a quantity of glacial acetic acid in a white glass bottle, which fill with chlorine gas. Place this in the direct sunlight for some hours; and eventually you will have a crystallization of the acid around the sides. There will also be oxalic acid formed, and some free acetic acid will remain. Mix all together, and place in shallow vessels under the receiver of an air pump, together with dishes containing fused potash and strong sulphuric acid. Oxalic acid will first crystallize out, and then the chloro-acetic, in rhombic crystals which may be dried on blotting paper.—E. H. H., of Mass.

RANCID BUTTER.—To J. B. B., No. 24, March 30.—Melt the butter at a tolerably high temperature, in fact, till nearly boiling. Strain clear through cloth, and thoroughly wash with water, to which has been added a little solution of chlorinated soda, or, as it is commonly called, Labarraque's solution. Finally wash with clean water, and I think you will find the butter sweet, though it will not have the flavor of the fresh made article.—E. H. H., of Mass.

BROWNING GUN BARRELS.—To W. H. R., query 10, page 154.—Your recipe is very good, and if you will have your barrel bright and free from grease, you can get a pretty glossy appearance by the following mode: Apply the fluid with a sponge, being particular not to touch it with your hands. Let it remain for from six to ten hours, or until it gets a brown coat of rust. Then scrape it off with a steel brush, give it another coat and scratch as before until the desired color is obtained, which you will readily see when you wet it with the fluid. Now take half a pound of carbonate of soda to one gallon of water and boil; scald the barrel with it after it is scratched off the last time, and, while it is warm, apply grease and it is finished with a beautiful glossy appearance. Five or six coats are enough to bring the desired color.—M. M., of Texas.

TO TAN SMALL SKINS.—When taken from the animal, let the skins be nailed in the shape of an oblong square on a board to dry, fur side down. Before taking them from the board, clean off all the fat or oily matter with a dull knife. Be careful not to cut the skins. When you wish to tan them, soak thoroughly in cold water until soft; then squeeze out the water, and take of soft water three quarts, salt, half a pint, and best oil vitriol, one ounce. Stir well with a stick, and put in the skins quickly, and leave them in thirty minutes. Then take them in your hands and squeeze (not wring) them out, and hang in the shade, fur side down, to dry. If you get the quantity of liquor proportioned to the skins, they will need no rubbing to make them soft; and, tanned in this way, the moths will never disturb them.—F.

BUFFALO ROBES.—These are not, strictly speaking, leather, as they are prepared without the use of bark or tannin in any form. They are simply a raw hide made soft and pliable by manipulation and the use of grease or oil. The Indian process, in principle, is the same we use in making our soft leathers, chamois, buckskin, lash or string leather, etc. The Indian women, in making buffalo robes, first "flesh" and pare down the green hide with a bone, toothed something like a saw, and knives. They then cover it on the flesh side with the brains, blood, liver, grease, and the contents of the gall bladder of the buffalo or elk. This is thoroughly worked in near a fire or in the sun. They then, after the hide is partially dried, work it over a cord and beam till the rope becomes soft and flexible. They sometimes make a species of leather by taking off the wool by the use of lime, and then preparing it as above, smoking it thoroughly. The hide of the buffalo is covered, not with hair, but with a true wool, which has the property of felting or fulling, and out of which cloth can be manufactured.—P. W.

BATTERY FOR PLATING.—To W. B. J., query 12, March 16. I have obtained excellent results in plating with a battery made as follows: Take a gallon jar, and get a shoemaker to make a leather cup, of the same hight as the jar, and about 2½ inches in diameter, and water tight. Solder a connecting wire to a strip of scrap zinc as wide as the length of the leather cup; roll it up and put it into the cup. Get a strip of sheet copper, no matter how old or thin, clean it, solder a wire to it, and bend and insert in the gallon jar. Set in the leather cup with the zinc inside and fill with a solution of common salt. Fill the gallon jar outside the leather cup with a concentrated solution of blue vitriol, and the battery is complete.—D. G. P., of Ill.

"Several new subscribers," of Three Rivers, Michigan, will find C. F.'s rule for screw cutting on page 58 of the current volume.

FLUIDS AND LIQUIDS.—To H. W. H., query 2, page 185.—Fluids are of two kinds, liquids and gases. In the first, the attractive force of the atoms equals the repulsive, as in water and in alcohol. In the second, the repulsive force exceeds the attractive, as in air, oxygen, illuminating gas. A quart of a liquid will fill two pint measures; a quart of gas will fill two gallon measures.—B. G., of N. J.

HYDROGEN GAS.—To E. X., query 4, page 185.—The metallic base of hydrogen has not been discovered, though a supposed amalgam of that element with platinum excited some interest a few years ago.—R. G., of N. J.

MICROSCOPY.—To A. M., query 20, page 185.—Use a condensing lens or mirror for viewing opaque objects; and view them on a black background.—R. G., of N. J.

IRON IN WATER.—To M. M., query 13, page 200.—The iron in your water should benefit you.—R. G., of N. J.

FUSIBLE METAL.—To O. E., query 14, page 200.—Cadmium makes the most fusible alloys. One alloy of cadmium, tin, lead, and bismuth melts at 63° to 65° Fah.—R. G., of N. J.

J. H., of N. J.—The shock experienced by you in approaching your hand to water in wash basins, gas jets, etc., is owing to the electricity in your system. It is not due to any galvanic action in the tin lined water pipe. By turning on the gas and shuffling your feet across the floor, then holding your knuckle to the jet at the point of emission from the burner, you may light the gas.

E. C. W., of Mo.—Your idea is erroneous; do not waste money on it.

T. C. B.—To make emery cloth belts use strong glue; put it on evenly with a brush, and then sift on the emery from a box with a perforated cover like a pepper box.

T. F. G., of Ga.—We believe gas made from gasolene and furnished through pipes is as safe as ordinary illuminating gas.

H. P. R., of O.—We never yet saw the foundation of a stationary engine too solid, and don't believe it can be made so. The idea that timber is necessary between the bed and the masonry is erroneous.

E. P. J., of Mass.—It would be difficult to contrive a more uneconomical way of using steam than the one you propose. To let the piston move a short distance before the full admission, and to exhaust at the end of the stroke with a full cylinder of high pressure steam, would be to exactly reverse the effect of expansion.

WET COAL DUST.—To G. W. F., query 3, March 30.—Coal dust burns better when moistened. The moisture helps it to coke, and if the back part of the fire is a bright red, the steam, being decomposed, acts as so much additional fuel, the oxygen promoting the combustion, and the hydrogen inflaming.—E. H. H., of Mass.

TESTING BARK FOR TANNIN.—To J. F. A., query 4, March 30.—Make a decoction of the bark or wood, from a definite quantity of the material, and filter. Make a solution of gelatin of a determined strength. Add of this to the liquor until no further precipitate is formed. Separate this precipitate, dry, and weigh. Knowing the quantity of gelatin added, it is easy to calculate now the quantity of tannin. This will be found accurate enough for practical purposes.—E. H. H., of Mass.

CLEANSING STOVEPIPE.—To N. C., query 15, March 30.—I presume you burn wood in your stove and that your pipe is horizontal. During the burning of the wood a vast quantity of water is formed, and the intense cold has condensed it, and, the pipe being horizontal, it has accumulated, and the soot mixed with it, forming a paste and thus the obstruction. A perpendicular pipe would not act so, as the condensed water would run back on to the heated surface and become again converted into vapor, until the pipe would become hot enough to allow the whole to pass off without condensation.—E. H. H., of Mass.

FUSIBLE PLUGS.—To W. H. W., query 1, March 30.—These are made of bismuth 8, lead 5, tin 3 parts. Increase proportions of lead and tin according to the temperature it is desired for the alloy to melt at. E. H. H., of Mass.

HYDROGEN.—To E. X., query 4, page 185.—Gas has been passed through many processes to produce hydrogen, but none, so far as I know, has been considered practical. Hydrogen is a base of itself.—E. H., of Mass.

BATTERY FOR PLATING.—To W. B. J., query 12, page 185.—I would advise you to purchase a Bunsen battery, as I have found that no other is as cheap in the long run.—E. H., of Mass.

MATCHES FOR MOLDING.—Query 21, March 16.—Take new sand and dry thoroughly, then mix, with boiled linseed oil and a small quantity of litharge, to the proper consistency. Care must be taken not to use too much oil. Ground pumice stone is sometimes used mixed with the above, and is generally approved.—K., of Conn.

ELECTROMAGNET.—In answer to F. L. T., query 5, page 154, I will state that the wire should be insulated, by first winding with best cotton or silk, and then coated with shellac dissolved in alcohol.—E. H., of Mass.

P., of Pa.—Ultramarine is doubtless the substance referred to in the recipe as refiner's blue.

MELTING POINTS OF PLATINUM AND STEEL.—To J. A. H., query 5, page 200.—Platinum melts at 3,080° Fah., and steel at 2,500° Fah.—L. V. B., of N. C.

DEMAGNETIZING STEEL.—For the information of J. B. W., query 17, March 23, I send the following: When the iron cores in telegraph relays become permanently magnetized by heavy currents of electricity, they are relieved of all residuary magnetism by pounding them on the ends with lead.—J. C. H., of Kan.

Declined.

Communications upon the following subjects have been received and examined by the Editor, but their publication is respectfully declined:

COLORING SEED.—O.

ENGINE PHENOMENON.—F. M. C.

ROTARY ENGINE.—D. B. K.

THE U. S. NAVY.—B. T.

TURBINE WHEELS.—G. C. P.

VITAL OR PSYCHIC FORCE.—B. T.

WHAT IS A MACHINE?—G. L. B.

ANSWERS TO CORRESPONDENTS.—C. O. I.—G. R. M.—J. P. W.—W. A. McH.—F. C.—A. M.—S.—J. C. H.—K.—H. J. H.—S. B. H.—G. A.

QUERIES.—H. J. R.—W. A. H.—R. F. D.—F. K.—Y.—R. D. P.—W. B.—W. M. G.—S. R. B.—C. D. W.—W. R. B.—J. P. H.—A. N.—O. S—J. C. S.—C. A. H.—A. S.—L. E. S.—A. L.—W. P. B.—E .K. D.—F. E. K.—M. E.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

WATER WHEEL.—William G. C. Mastersun, Proctorsville, Vt.—This is a wheel of the turbine class, but so strikingly different in many ways from those familiar to most of our readers that it will be very difficult to give any idea of its construction in a verbal description. The entire wheel, the rotary part as well as the chute, although independent of each other, may be raised by the water, receptacles being formed, beyond the outlet slots of the rim for water, which acts as a cushion and also as a regulator to steady the motion like a balance wheel. The gate is self acting. The mechanism by which these results are attained is very unique and ingenious, showing that the inventor is fertile in mechanical resources.

HARROW.—Oradon J. Leabo, Forest Grove, Oregon.—Two or more pairs of bars, pivoted in the middle under the frame, are provided with teeth at each end, and connected through rods with bars attached to a reciprocating pitman, so that the teeth are moved by the mechanism in such a way as to constantly cross their own furrows in a single passage over the ground, thereby, it is claimed, giving the ground a more thorough harrowing than can be done in the old way by twice harrowing. The harrow runs on wheels, and has a seat for the driver.

WHEEL FOR VEHICLE.—George R. Duval, Salem, Oregon.—The hub is made of cast iron or other metal, and provided with a projecting flange. Around the flange is shrunk a wrought iron band, which projects beyond both sides of the flange. The band is perforated with holes, which alternate from side to side of the flange, they being thus arranged in a zigzag row to receive the inner ends of the spokes on alternate sides of the flange. The rim of the wheel is made of wood or metal, semi-cylindrical in cross section so that its convex side forms the inner circumference. Each spoke is made in form of a bolt with a head at the outer ends—a screw thread on the inner end. The spokes are fitted through apertures of the tire and rim, so that their heads are countersunk into the outside of the tire, and their inner end, are then passed through the band, shrunk in the flange of the hub, receiving the nuts on the inner side of the same. A plate is then slipped over each end of the hub to fit within the band and rest against the nuts. The plates serve, therefore, to prevent the nuts from working loose, and also to protect them from mud and dust. Bolts hold these plates in place.

FIREPROOF ROOF.—Samuel Smith, of Mattoon, Ill.—This improvement in the construction of roofs of buildings has been made with a view of rendering them not only durable and fireproof, but a support to the side walls of the building. An arch, composed of tiles which lock into each other, laid so as to break joints with each other, is supported by bars of angle iron laid into the wall, which form the abutments of the arch. The bed plate of each of these bars extends from the wall over the joists, and where wooden joists are used the bars may be spiked or bolted to them, which would serve to support the walls and prevent them from spreading. Rods of iron pass through the flanges of the abutment bars and form chords to the arch at suitable distances from each other. These chords are protected from the action of heat in case of fire, and prevented from expanding, and consequently damaging the arch, by means of cylindrical fireproof tiles or composition placed on the chords, and secured thereto in any permanent manner. The water gutters of the roof are formed by gutter tiles, the latter of which are laid into the walls. Orifices in the end walls permit the discharge of the water from the gutters into the conductor pipes. The tiles are all laid in good cement, and the arch is formed on a temporary skeleton arch of wood, the same as in laying a brick or stone arch. When completed the arch is covered with a coating of mastic or other cement, so as to render the entire roof (with the gutters) perfectly waterproof. The side walls may be anchored to the angle iron abutments, or to the chords, in any manner, if necessary, but as described they would, in ordinary cases, be held together and supported in case of fire. It is claimed that a building provided with this roof cannot be destroyed, as everything combustible inside may burn, but the roof and walls will remain. The arch may be built on a circle of any radius, the arc simply diminishing or increasing according to the width of the building, so that tiles of the same pattern may be used for all roofs.

SELF ADJUSTING THREAD TENSION FOR SEWING MACHINES.—John Bromley, Macon, Ga.—The invention consists in a delicate tension device for sewing machines which automatically adjusts itself to any size of thread, and yet allows any thread to be readily inserted by persons who are unexpert in machine sewing. It is simple, applicable to any sewing machine, and not liable to get out of order.