Business and Personal.

The Charge for Insertion under this head is **$1** *a Line.*

Notes & Queries

P. C. G. asks: How can I take India ink from a linen shirt bosom?

C. H. W. & Co. would like some one to give the process of churning butter from milk on a large scale, as is done in large butter dairies in New York.

G. C. R. asks: How can I make sheet iron soft and malleable? Are there any books on the subject?

A. L. T. asks: Can you give us a recipe for something to mix in with putty, so as to prevent it from falling from the sashes?

D. B. W. asks: How fast ought the reels of a bolt, of the following dimensions, to run? 2 reels of 52 inches diameter, 20 feet long, with 5½ inches fall to each reel. The cloths are as follows: 1st reel, No. 11 Dutch anchor brand. 2d reel, 9 feet No. 8, 6 feet No. 4, and 5 feet No. 0. These reels run at 37 revolutions per minute. We make too much seconds flour, and it is very coarse. The shorts are very bad and very light. 2d. Ought reels to run faster or slower with little fall? I contend that the flatter the reels, the slower they ought to run, as the flour will not travel so fast as it does in reels with more fall, and consequently it will get more knocks on its route through the reels. [There is such difference in the practice of millers that we place your letter before them, in preference to answering it ourselves, as we could only give you general figures. We think, however, that your reels are running rather too fast.—EDS.]

Answers to Correspondents

W. O. C. asks: 1. What is the difference in composition between white corn and yellow corn? 2. The common text books on physics say: A falling body will pass through $16\frac{1}{12}$ feet of space in one second. Is that space to be regarded as a vacuum, or as filled with air? 3. Where can I find a book giving the rate of fall of bodies of different specific gravities through water? 4. Is the upward motion through water of bodies specifically lighter than water a uniform or accelerated motion? If accelerated, what is the law? Answers: 1. There is no essential chemical difference. 2. In a vacuum. 3. There is no general law governing the rate of fall of different bodies through water. The rate will depend not only upon the specific gravity of the body, but upon its shape, whereby its resistance to the water in falling through it will be more or less modified. 4. The force with which a body specifically lighter than water is urged upward is equal to a weight which equals the difference between the weight of the body and the weight of an equal bulk of water. The motion of bodies either falling or rising through water is at first accelerated, but becomes uniform when the resistance of the water equals the acccelerating force. Consult Jamieson's "Mechanics of Fluids."

W. B. M. asks: Is there a cheaper, less dangerous to handle, or more practicable, solvent for silicate of soda than nitric acid? Would water dilute this mixture? If not, what will? What I want is a glaze for articles made of hydraulic cement. Answer: The proper solvent for silicate of soda (soluble glass) is boiling water. We do not know how nitric acid could be used without decomposing the silicate.

E. D. S. asks: Can silver be precipitated from the resulting solution of washed photograph paper (chloride of silver) by metallic or sulphate of iron; or must it (the paper proper) be first reduced by sulphuric acid by iron, as we now do? The former, as recommended in your journal of August 23, is much easier, but I thought it an error. The chloride of silver is formed by floating a chloride paper on a nitrate of silver solution. Please give proportions of iron to the ounce of silver. Answer: The method of precipitating metallic silver, given in the answer referred to, is one practiced in Germany on a large scale in treating certain ores of silver. In this process the chloride of silver, which is insoluble in water, is shaken up in contact with metallic iron and water. Water alone will not dissolve the chloride of silver from your photographic paper, but a solution of ammonia will. You can then add twice as much metallic iron or zinc as there is chloride of silver.

A. G. Jr. asks, in reference to the conversion of starch into glucose: Can it be accomplished in open vessels by the use of such a small proportion of acid as one tenth of 1 per cent? If not, what proportion of acid must be used to convert it with 5 or 6 hours boiling. Would the free acid, SO_3, be detrimental to fermentation? Would bringing the rightly acidulated solution to the boiling point and then stirring in the starch diffused in tepid water do, or must the starch be gelatinized first and then boiled? How can I easily determine as to the time when the starch is mainly converted into glucose and not into dextrin? Answer: Glucose is manufactured on the large scale, especially in continental Europe, in the following way: A mixture of starch and water at a temperature of about 130° Fahr. is made to flow gradually into a vat containing water, acidulated with 1 per cent of sulphuric acid, kept at the boiling point. In about half an hour the starch is converted into sugar. The liquid is drawn off, and the sulphuric acid neutralized by the gradual addition of chalk, till there is no longer any effervescence. Sulphate of lime precipitates, and the clear solution, after concentration by evaporation, is set aside to crystallize. The molasses is drained off and the sugar dried at a gentle heat in a current of air.

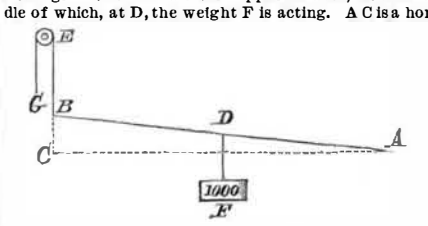
H. M. C. says: I am building a small boat. If I give it a coat of shellac, would the water take it off? Would it be as good as paint? Could you not suggest some way to varnish a boat? Answer: You can make waterproof varnish as follows: Pale shellac 5 ozs., borax 1 oz., water 1 pint; digest at nearly the boiling point until dissolved; then strain. It would perhaps be better to give your boat a good coat of paint before applying the varnish.

P. R. asks: 1. Is slate a mineral or vegetable substance? 2. When was slate introduced into use for roofing purposes? 3. In what country was it first used for that purpose? Answers: 1. Slate is a mineral substance, consisting of silica and alumina, with varying proportions of iron and other metallic oxides. 2 and 3. The history of the use of slates for roofing purposes indicate Europe as the place where they were first used, but at what date is uncertain.

L. T. B. asks: How can I remove the bituminous substance from the Egyptian mummies? It obscures the hieroglyphics underneath. Answer: If the substance you refer to is bitumen, try naphtha as a solvent. Rub with a sponge or cloth soaked in the naphtha.

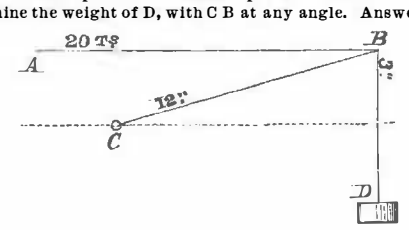
G. W. S. asks: What is the best way to extract grease from pork cracklings, and what is done with the residuum? I understand that potash is made from it. Answers: Digest the pork cracklings in bisulphuret of carbon, covered closely to prevent evaporation and in the cold, until the fat is dissolved. The fat extracted by the bisulphuret of carbon can be recovered by careful distilation, and the fluid recovered by condensing it in a receiver surrounded by ice, while the fat remains behind. The residuum not dissolved is valuable in the manufacture of prussiate of potash (potassium ferrocyanide), which is largely used in the manufacture of Prussian blue.

A. K. asks: 1. How can I calculate the loss of power caused by forces acting on levers under different degrees? A B is a lever supported at A, on the middle of which, at D, the weight F is acting. A C is a horizontal line 20 feet long, B C is 6 inches long, D F and E B C are vertical lines. How much power will a weight of 1,000 lbs. at F exert at D, and how much at E or G, not counting friction? 2. What shape must I give the spokes (or their substitutes) of a metal wheel, leaving it perfectly balanced as to center of gravity? I want it to be as strong and light as possible. Answers: 1. The pressure at E or G is equal to the weight multiplied by its distance from A, measured in a horizontal direction, divided by the distance of E from A, measured in a direction perpendicular to the direction of the cord B E. 2. If the wheel is for a carriage, observe the practice of the best builders, who have worked out the matter pretty thoroughly in light trotting wagons.



W. F. McK. asks: 1. Is there any cement or paint for shingle roofs that will stop the leaks? 2. Why is it that, when glycerin is used in the manufacture of printers' inking rollers, less glue should be used? I would naturally suppose that more glue would be required. Answers: We would recommend you to apply Portland cement, mixed with water to the consistence of ordinary mortar, over the coating of ordinary sand and lime. This will set hard in a short time and is a good waterproof cement, as well as a comparatively cheap one. Do not mix more cement than you can conveniently use at once, as it soon sets. 2. The object of using glycerin, which is a non-drying material, is to keep the rollers soft, and the greater the proportion of this, the less, of course, the proportion of glue in a given quantity of the compound.

O. S. says: The force exerted in the direction B A is 20 tuns. B C is a lever 12 inches long with a fulcrum at C. The point B is 3 inches above the center line. Required the weight at D necessary to hold the point B in equilibrium. Also required a rule to determine the weight of D, with C B at any angle. Answer:



Disregarding friction, the weight required at D, in the given case, will be about 5·145 tuns. The weight for any position of the lever may be found by multiplying the 20 tuns by the distance of the point B above the center line, and dividing the product by the square root of the difference of the squares of the length of the lever and the distance of the point B above the center line.

B. C. asks: What cheap substance will prevent lubricating oil from gumming and separating after being manufactured? It is composed of equal parts No. 1 whale oil, No. 1 lard oil, best imported soaps, and exhaust water. Answer: The cause of oil gumming is owing to oxidation, the oxygen being absorbed from the air. You cannot prevent this unless you can use it where it will not come in contact with the air. The uncombined water will always separate from the oil, on account of its greater specific gravity. Thanks for the back numbers.

A. L. asks: Will muriate of tin evaporate or change its quality and lose its strength (so as to be unfit for use in dyeing) if left in a bottle or vessel open to the action of the air and exposed to the heat of the sun? Answer: The compound of tin to which you refer, being a volatile substance, of course is lost, if left open to the air. It should be kept in close vessels.

A. B. asks: 1. Would it not require a current of air blowing at the velocity of a storm to carry the big balloon to Europe in the short space of time that Mr. Wise has calculated on? 2. What is asbestos? 3. What shall I mix with English vermilion or Prussian blue to give them a consistency for marking like pencil leads? 4. How can I make a good permanent marking ink for marking dry goods? Would a solution of vinegar and iron shavings answer, or would it be injurious to the cloth? Answers: 1. No, although to an opposing force the velocity of the current of air which Mr. Wise expected to meet would be decidedly felt. When once the balloon reaches such a current, there is no opposing force, the balloon being carried with the wind. This wind might blow a hurricane, and yet be unfelt by the occupants of the car. For a balloon to reach Europe in 50 hours, a velocity of from 30 to 40 miles would be sufficient. This velocity is not nearly so great as the wind sometimes attains, namely, 100 miles an hour. 2. Asbestos is a silicate of magnesia. From its property of withstanding heat is derived its name, which signifies in Greek "unconsumable." It is found, among numerous other localities, on Staten Island. 3. Use fine clay. 4. A good recipe for an indelible ink, to be used with a stencil plate, is: Dissolve asphaltum in amber varnish, and add oil of turpentine until of proper consistence. Color with lamp black.

W. W. E. asks: Is the following, intended for a fluid gas liquid, a dangerous compound? "To make one gallon: Add to one gallon gasoline, 1 table spoonful of salt, 1 tablespoonful of sal soda, half as much alum, 1 piece of alkanet root 1 inch long." What is gasoline? What is alkanet root? Answers: Gasoline is highly rectified naphtha obtained from petroleum, very volatile and inflammable, explosive when mixed with air, and consequently very dangerous to handle. Alkanet root is the root of a deciduous plant which the botanists term *lithospermum tinctorium*. It contains a fine blood red color, which it freely gives out to oils, fats, wax, spirits, etc., and is used by druggists, perfumers, varnish makers, etc. It grows in Asia Minor, Greece, and Hungary. The additions you propose to make to gasoline would not sufficiently destroy its inflammable properties, so as to render it safe to handle in open vessels.

P. G. G. asks: Is there any cheap preparation with which I can clean paint from the outside of iron gas pipe so that it will leave the pipe in good condition? The paint is thoroughly dry and the pipe is old. Answer: The most effective way, if the paint is hard and dry, is to first scrape as clean as possible, and afterwards remove the adhering particles with spirits of turpentine

A. G. asks: What is the cause of the explosion of fulminates, if effected by a blow? Is it the amount of heat developed, or only the change or disturbance of the particles, independent of any temperature? Answer: Both the causes that you have named may be considered as conjointly effecting the decomposition and explosion of the fulminates. Friction and percussion, however, seem to be the chief causes, as fulminating mercury explodes violently by both friction and percussion, but burns with almost a noiseless flash when kindled in the open air; and fulminate of silver which can hardly be touched with safety, may, when mixed with oxide of copper, be burned in a tube to determine its composition.

C. & Co. ask: What is iron pyrites used for, and where? Answer: Iron pyrites is used very extensively in England, and to some extent in this country, for the manufacture of oil of vitriol or sulphuric acid. To be of value for this purpose, however, it must be found in large quantities, and be easily and cheaply mined, and near means of transportation. Means have been tried, after burning it for the sulphur, to make the residue available as an ore of iron, but so far as known without success. If this should be accomplished, however, iron pyrites would be a much more sought for mineral than it is at present.

B. asks: How can I prepare crude india rubber so as to make a small balloon? Dissolving it and allowing the liquid to evaporate would answer the purpose, as the sheets must be very thin; but by what process can it be dissolved? Answer: The best and cheapest solvent for your use is carbon bisulphide, ordinarily called sulphuret of carbon. After the rubber is dissolved, pour it out thin upon a smooth, slightly greased surface, and leave until dry.

R. W. W. A. asks: How is the silver jewelry, known as oxidized jewelry, made? Answer: There are two distinct shades which can be formed in oxidizing silver. One is produced by chlorine, which has a brownish tint; the other by sulphur, which has a bluish black tint. To produce the brownish shade, wash the article with a solution of sal ammoniac. A more beautiful tint may, however, be obtained by using a solution composed of equal parts of sulphates of copper and sal ammoniac dissolved in vinegar. A fine black tint may be produced by a slightly warm solution of sulphuret of potassium or of sodium.

S. L. C. says: I have a pair of cavalry boots ornamented with considerable stitching around tops and sides of legs. This is all hand work, done with waxed ends. The wax exudes upon the boot, and nothing will apparently stop it. I have scraped it off with a knife and washed with benzine, apparently removing already enough to make a dozen pairs of boots; but they are now worse than ever, after lying unused for several months. Answer: We can only advise you to persevere with scraping and benzine; the wax must come to an end.

J. M. asks if there is anything that will soften buckhorn or bone so that it can be readily cut and carved, becoming solid after it is dried. Answer: Immerse the horn or bone in cool dilute hydrochloric acid, until the earthy matter is dissolved. The bone will thus be rendered transparent, flexible and elastic, and will dry hard.

J. W. B. asks: When is the sun on the meridian? Answer: When shadows are shortest. See Gillespie's "Land Surveying," pp. 190-192.

W. J. asks: In making artificial fibrin, do you separate the white from the yolk of the eggs? Answer: Break the raw eggs, one by one, into a dish containing cold water and let them remain for twelve hours. Then carefully remove them, one by one, and place in boiling water for two or three minutes, or longer, as desired.

E. N. C. says: Suppose you have a small amount of power to drive a saw mill, the majority of the timber being rather small, but occasionally there is a large stick; which would be the best, a 52 inch or a 42 inch saw, with 15 inch top saw? The 15 inch is to run only when the 42 inch is not large enough. Answer: We should prefer the 42 inch saw.

W. L. M.—The pressure of the wind at 15 miles per hour is 1 lb. 2 oz. per square foot. At 20 miles per hour, 2 lbs.

W. S. asks: 1. How do you determine the size of an air chamber, diameter of valves and amount of lift for a force pump? 2. How do you obtain the length of lever and throw of eccentric for a rotary valve? How do you obtain the diameter of a steam chest? Answer: It would require too much space to answer these inquiries in this column. Consult some standard work on the subject.

E. F. R. says: I have made brass lacquers according to various recipes which I have seen in your "Answers to Correspondents," and applied them in the manner described; but the work has a daubed look, and the lacquer will not adhere evenly. I have tried it at all temperatures. Dipping gives no better success. Does it require great practice to do it nicely? Or does it depend on the manner in which the brass is finished? Should it be very smooth or slightly rough? Answer: Polish your brass as smooth and bright as possible, and apply with a fine brush the following lacquer; Seed lac 3 ozs., turmeric 1 oz., dragon's blood ¼ oz., rectified spirit 1 pint; digest for a week, frequently shaking then decant the clear portion.

W. W. P. says: 1. A ball is set in motion, and immediately thereafter everything is annihilated except the ball; will the ball stop or move on forever? 2. What is the best definition of inertia? Answers: 1. In the impossible case mentioned, the ball would continue to move with the velocity and direction (if these can be conceived of, in this connection) that it had at the time of the general annihilation. 2. Inertia is a body's incapacity to change its state of rest or motion without the application of some external force.

E. W. asks: What will take grease out of sheep skins? Answer: Try bisulphide of carbon.

J. W. C. asks: 1. Is a vein or pocket of lignite (brown coal) any indication of coal below or in the coal formation? 2. What book is best for an amateur mineralogist to study? Answers: 1. We should say not. Lignite is usually found in alluvial earths, or connected with rocks of the more recent formations; while coal, strictly so called, appears to be of the same age as the older secondary rocks, or immediately to follow them. Anthracite coal most frequently occurs in primitive or transition rocks. 2. Dana's "Mineralogy" is a standard work.

S. C. C. asks: Is there any chemical solution which will renew the color of the ink in an old and faded manuscript? It should be colorless itself, lest it should stain the paper. Answer: Try the application of a solution of nut galls with a soft sponge or rag to the writing, or damp with a strong solution of yellow prussiate of potash. The latter will turn the ink blue

H. H. J. says: I have been studying upon a harvester to reap and thrash the grain as it runs, leaving the straw on the ground and delivering the grain to a proper receptacle; but I am told that the idea is not new. One man told me that such harvesters are used in California, but it takes 25 horses to run them. What is the reason that such a machine is not in general use? 2. Can a chemist ascertain by a quantity of scum on the water, whether it comes from any mineral or not? 3. Where in the United States is manganese found? Answers: 1. The reason such a machine as you speak of has not come into general use is probably either on account of the expense attending its employment, or its not being adequate to the work required, on account of a want of simplicity or easy derangement of parts. 2. He can. 3. Oxide of manganese is found in the United States in Vermont and Massachusetts.

W. F. S. asks: Will a ball fired from a rifle rise above a horizontal line drawn through the center of the barrel, or will it continue on a direct line? In neither case is the rifle elevated. Answer: The ball will follow neither of the paths mentioned, but will describe a curve, continually falling under the influence of gravity.

D. & W. say: A reservoir at a certain hight has a pipe leading from it, which pipe has a stopcock at its end. Is the pressure on each square inch of the pipe the same, whether the cock be open, allowing the water to flow, or shut, cutting off the water? If not, why not? No account is to be taken of the *coup de marteau* caused by closing the cock. Answer: The pressure will be different in the two cases, for the reason that when the water is in motion some of the pressure is required to overcome friction.

C. E. A. asks for the *modus operandi* of raising a number to a fractional power without the use of logarithms. For example, raise 2 to the power of $\frac{6}{10}$. Answer: Raise the number to the power indicated by the numerator of the fractional index, and extract the root indicated by the denominator. In the example given, you should take the tenth root of the thirty-sixth power of 2.

J. B. P. asks what is asbestos, and what is its original formation? Answer: Asbestos is a mineral substance. It is a silicate of magnesia. It is composed of the three elementary substances, silicon, magnesium and oxygen.

C. R. B. asks: What should be mixed with ground asbestos to keep it from being blown out of stuffing boxes when used for packing? Will oil or tallow do? Answer: Try plenty of tallow.

W. S. A. asks: Would a balloon filled with smoke rise? Answer: Smoke really consists of fine particles of unconsumed carbon, which are elevated in the atmosphere by the warm current of air or gases from combustion in which they are suspended. These particles of carbon, however, after the air surrounding them has cooled, or after they have drifted into a cooler atmosphere, ultimately fall to the earth. The term smoke, though, as generally understood and as you evidently regard it, embraces both the unconsumed carbon and the surrounding hot air gaseous media. This would raise a balloon a certain hight until the hot air, etc., filling it, fell to the temperature of the surrounding air, when the balloon would fall.

S. asks: From 900 gallons liquor at 15°, how much evaporates at 22·5°, at 30° and at 36°? Answer: The question does not give sufficient data for an explicit answer. What is the alcoholic strength of the liquor, that is, what percentage of alcohol does it contain, and does the writer refer to Fahrenheit's or the centigrade scale?

C. M. asks for a recipe for removing printers' ink from paper. Answer: Printer's ink consists of a mixture of linseed oil and lamp black, a kind of very finely divided carbon. There is no solvent for the carbon, but the dried oxydized oil might be removed to some extent by sulphide of carbon or ether, and with it some carbon might also be washed away. On the large scale, when old paper stock is worked up for the manufacture paper, the ink is removed in the process of bleaching, where the pulp is exposed in a vat to the action of chloride of lime. The removal of the carbon of the ink in this process is due to mechanical not to chemical, action. The carbon is not bleached by the chlorine, but the severe mechanical operations through which the material is passed, as pulping, washing, etc., serve to wash away and obliterate all traces of the carbon of the ink. On the small scale, as removing the ink from a printed page, the only effective way is by scraping with a sharp knife.

W. P. H. says: In coating friction match ignitors with emery, put on with varnish, the latter does not hold the emery on to the tin firmly, and it does not harden. Can I use any other preparation instead of varnish, or can I put something into the varnish that will cause it to dry quickly? Answer: Your varnish probably does not contain a sufficient amount of spirits of turpentine or other dryer, or it is otherwise improperly prepared. Use a spirit varnish, consisting of shellac, broken fine, and yellow resin, each 1½ lbs., rectified spirit 2 gallons; or shellac 8 oz., alcohol 1 quart; digest in close vessel in warm place 3 or 4 days, then decant and strain. You can try a strong solution of glue, applied to the metal with a brush, like a varnish, dusting the emery over the surface of the glue while still hot.

A. says: The following question has arisen: A stood within three feet of a window trying to get the focal length of a watchmaker's eye glass, by forming the image of the window on a piece of paper and measuring the distance from the paper to the glass, assuming that to be the focal length. B, who was standing by, said: "Go farther back from the window; an object so close as the window is no fair test." A insisted that it made no difference; that a four inch lens would show the image at four inches from the lens, no matter how near or remote the object. The following statement was drawn up at the time; "The nearness or distance of an object from the lens does not vary the focus, that is, the image formed by the lens is constantly at the same distance from the lens, no matter what the distance of the object." B contended that the focus receded as the object advanced; or that the focus for near objects would be farther from the lens than for distant ones; and that the test to get at the rated focus of a lens was with parallel rays. Which was right, A or B? Answer: B was right. The solar focus would be practically the focus for parallel rays of the lens mentioned.

S. H. S. asks: 1. If green hams are put into a tank filled with brine (ham pickle) and a strong pressure put on the brine, will the meat take up the brine and cure faster than if there were no pressure? Will the brine be forced into the meat? 2. Are there any methods of curing hog meat in pickle, other than the one now used, namely, brine made of water, salt, saltpeter, molasses and saleratus? 3. Will honey mix with above brine and not be deleterious to same? 4. Can a flavoring be added to such a pickle, as lemon, vanilla, orange, etc.? Answers: 1. The brine will be forced into the meat at a greater or less depth, according to the pressure. 2. There are various recipes for pickle. The following is said to give a fine red color and superior flavor to ham: Bay salt, 3 lbs., saltpeter 2½ ozs., moist sugar 1 lb., allspice and black pepper, of each, bruised, 1 oz., water 9 pints; simmer together in clean covered iron or enameled vessel 7 or 8 minutes; when cool, remove scum and pour it over the hams. 3 and 4. Yes.

W. M. R. says, in relation to the idea published on page 132 of our current volume: Applying a 30 inch magnifier to a telescopic image is a good thought. I once looked at the image of my Gregorian with a spy glass, and saw things on the moon. I could not hold it still, but I wished that I could put them together properly. Answer: The ordinary compound microscope is "under-corrected" for use as an eyepiece, and must be specially made for the purpose. The small telescope is used for viewing the spectrum of the sun's chromosphere. The combination of collimator, prisms, and small telescope is attached to two parallel balance rods, one on each side of the large telescope.

H. C. says: Our power is a turbine wheel; and with the head and fall, we have, according to the makers' estimate, about 15 horse power. There are 2 lengths of shafting, each 40 feet, connected by 2 feet bevel gears, and at the extreme end of the said shaft, 80 feet from the wheel, the greatest amount of work is required of it. Upon the machine driven is a 5 feet drum, and this is connected with the main shaft by a 10 inch belt running over a 20 inch pulley. We use a tightener to keep the belt down. The distance from center to center of pulley and drum is 11 feet. There are eight journals or bearings in the entire shafting. When there is nothing to drive but the machine, what amount of power do I get, and do I not lose power by using the tightener? Answer: We could not answer this question without more data. It ordinarily takes some power to drive a tightener; but as it prevents the belt from slipping, there is a gain of useful effect.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined with the results stated:

E. D. L.—The mineral specimen you send is apparently antimony.

V. E. H.—Beryl, a mineral composed of silica, alumina and glucina, and allied in composition to the emerald.

W. F. S.—Selenite, a transparent variety of gypsum.

E. W. T.—Pyrites in ferruginous quartz.

W. K. S.—Chrysocolla, a silicate of copper.

C. G.—Sandstone with the imprint of some fossil animal, or perhaps a vegetable nut.

G. W. S.—One is charcoal and the other pyrites.

T. B. J.—Ferruginous quartz.

A. G.—The green mineral occurring in spots in the specimen you send resembles malachite, a carbonate of copper.

G. A. F.—Your specimen of limestone is hard and compact enough for lithographic stone.

R. T.—Iron pyrites, only of value when found in large quantities.

L. M. L.—The mineral is sulphide of zinc or blende, a valuable ore of zinc.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

On Indelible Pencils. By R. B. F.

On Meteorology. By E. J. M., Jr.

On the Million Dollar Telescope. By J. H. S., and by J. S. P.

On the Cumberland Gap Cave. By A. L. S.

On the Bursting Strain on a Balloon. By T. W. B.

On Steel and Quill Pens. By W. V. R.

On the Compass on Board an Iron Ship By J. S.

On Lunar Acceleration. By J. H.

On Down Draft in Stoves. By C. W.

Also enquiries from the following:

A. E.—A. K.—E. M. D.—N. P. S.—D. M. B.—W. P. H.—W. S. B.—R. B. G.—W. S. & H.—H. W. P.—J. C.—T. A. S.—J. B. R.—G. H. H.

Correspondents who write to ask the address of certain manufacturers, or where specified articles are to be had, also those having goods for sale, or who want to find partners, should send with their communications an amount sufficient to cover the cost of publication under the head of "Business and Personal," which is specially devoted to such enquiries.

Correspondents in different parts of the country ask: Where can I obtain sulphuret of sodium? Who makes steam road carriages? Who builds really economical coal-burning portable engines? Where can I obtain Mushet steel? Who makes the best piston for steam engines? Where can I obtain a lathe for turning axe and broom handles? Is there a successful machine for separating pebbles or gravel from clay for brickmaking? Who makes steam engines at a cost of $20.00 each and under? Makers of the above articles will probably promote their interests by advertising, in reply, in the SCIENTIFIC AMERICAN.

[OFFICIAL.]

Index of Inventions

FOR WHICH

Letters Patent of the United States

WERE GRANTED FOR THE WEEK ENDING

September 2, 1873,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Air compresser, H. P. Fairfield 142,452
Auger handle, F. B. Pease 142,410
Axle and thimble skein, A. Kessberger 142,344
Axle, wagon, G. A. Bolser 142,368
Bale tie, cotton, W. J. Orr 142,505
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Basket, H. E. Jones 142,343
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Basket, grain, H. E. Jones 142,342
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Bed bottom, spring, C. H. Dunks 142,377
Bed bottom, spring, Hill & Van Valkenburg 142,391
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Beer, preserving, A. Adametz 142,428
Bell door, W. M. Preston 142,412
Billiard table cushion, J. E. Came 142,435
Blind slat fastener, T. G. Springer 142,526
Boat detaching device, W. F. Morgan 142,496
Boiler, agricultural, C. M. Cloud 142,326
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Boot crimping block, Bordner & Sullivan 142,369
Boot and shoe insole, J. Gascoigne 142,332
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Carbureting, etc., gas, T. G. Springer 142,525
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Ferrule, Green & Bodwell 142,461
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Heating air, J. A. Morrell 142,497
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Lead, white, M. Tolle 142,419
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Picture and card exhibitor, B. F. Bostian 142,370
Pipe, cement lined, M. Stephens 142,528
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Pipes, thawing ice from, O. R. Mason 142,488
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Planing machine, F. B. Miles 142,493
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Punching machine, J. M. Laughlin 142,403
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Quilting frame, G. Phillips 142,411
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Rudder for vessels, J. B. Baptista 142,367
Sad iron, shield for, J. Gleason 142,334
Salt, etc., evaporating, L. R. Cornell 142,440
Safe, fireproof, T. Hyatt 142,476
Sash fastener, G. W. Bishop 142,431
Sash holder, R. B. Hugunin, (r) 5,559
Saw tooth gage, C. E. Grandy 142,390
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Shaft, operating, F. B. Miles 142,494
Ships, etc., joint for iron, D. E. Merrick 142,406
Shuttle box mechanism, G. Crompton 142,441
Soda fountains, draft for, R. R. Robbins 142,513
Speed, regulating, L. H. Olmsted 142,504
Stone, securing letters to, J. Vennall 142,421
Stove, cooking, H. A. Hummer 142,467
Stove oven, C. O. Line 142,483
Sugar, granulating, J. A. Morrell 142,498
Suppository mold, P. I. Spenzer 142,524
Tablet, etc., non-conducting, H. L. Palmer, (r) 5,562
Telegraph apparatus, G. Little 142,486
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Thrashing machine, A. G. Hagerstrom 142,462
Tire upsetting machine, R. Gibbs 142,455
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Trap, animal, J. M. Wilkinson 142,362
Trap, steam, J. H. Blessing 142,323
Truss, J. F. Groves 142,337
Valve guide, R. J. Gould 142,458
Valve balance, safety, V. F. Lassoe 142,481
Vehicle spring, H. Bowles 142,325
Vise, J. Hunt 142,470
Wardrobe, table, etc., W. Getchell 142,387
Washing machine, J. Q. A. Smith 142,523
Washing machine, G. S. Walker 142,535
Whip socket, C. Lang 142,346
Windmill, A. T. Boon 142,324
Windmill, G. A. Carter 142,436
Windmill, M. J. Kauffmann 142,479
Windmill, O. B. Knapp 142,400
Window sash, making, J. Travers 142,420
Wire fabric, W. C. Edge 142,450
Wood filling compound, J. B. Dittenhaver 142,446
Wood preserving compound, L. S. Fales 142,453

APPLICATIONS FOR EXTENSIONS.

Applications have been duly filed, and are now pending for the extension of the following Letters Patent. Hearings upon the respective applications are appointed for the days hereinafter mentioned:

26,339.—WATER WHEEL.—J. P. Collins. Nov. 19.
26,401.—DEFECATING SUGAR.—N. P. Brashear. Nov. 19.

EXTENSIONS GRANTED.

25,239.—ELASTIC HOSE TUBING.—John C. Boyd.
25,343.—STOVE.—E. M. Manigle.
25,344.—WIRING JOINTS.—A. C. Mason.
25,373.—PAPER BOX MACHINE.—S. B. Terry.

DESIGNS PATENTED.

6,832.—TAILOR'S GOOSE.—J. Hargrave, Cincinnati, O.
6,833.—FABRIC.—C. H. Landenberger, Philadelphia, Pa.
6,834.—CHAIR FRAME.—J. H. Travis, Charlestown, Mass.
6,835 to 6,864.—SHAWLS.—F. Wink, Philadelphia, Pa.
6,865 & 6,866.—CARPETS.—J. Crabtree, Philadelphia, Pa.
6,867.—ESCUTCHEON PLATE.—W. Gorman, New Britain, Ct.
6,868.—TOY RAIL CAR.—W. A. Harwood, Brooklyn, N.Y.
6,869.—CAPE.—M. Landenberger, Philadelphia, Pa.
6,870.—VAILS.—S. M. Meyenberg *et al.*, Paterson, N. J.
6,871.—OIL CLOTH.—C. T. Meyer *et al.*, Bergen, N. J.
6,872.—CAN.—H. G. Shook, New York city.
6,873.—BELT BUCKLE.—J. E. Smith, Waterbury, Conn.

TRADE MARKS REGISTERED.

1,430.—PENCILS.—American Lead Pencil Co., N. Y. city.
1,431.—HAIR PREPARATION.—M. T. Clackner, Baltimore.
1,432 & 1,433.—FERTILIZERS.—Dugdale & Co., Baltimore.
1,434.—MEN'S FURNISHING GOODS.—Fisk & Co., N. Y. city.
1,435 & 1,436.—STEAM PACKING, ETC.—J. Glanding & Co., Philadelphia, Pa.
1,437.—AXLE GREASE.—Palm Oil Axle Grease Co., Charleston, S. C.
1,438.—BRUSHES.—C. C. Thum, Philadelphia, Pa.
1,439.—WHITE LEAD.—Beymer & Co., Pittsburgh, Pa.
1,440.—FERTILIZER.—G. Dugdale & Co., Baltimore, Md.
1,441.—CLEANING POWDER.—Wright & Co., Keene, N. H.

SCHEDULE OF PATENT FEES:

On each Caveat $10
On each Trade-Mark $25
On filing each application for a Patent (17 years) $15
On issuing each original Patent $20
On appeal to Examiners-in-Chief $10
On appeal to Commissioner of Patents $20
On application for Reissue $30
On application for Extension of Patent $50
On granting the Extension $50
On filing a Disclaimer $10
On an application for Design (3½ years) $10
On an application for Design (7 years) $15
On an application for Design (14 years) $30