

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 height 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  $\frac{3}{5}$ . 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.

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 height 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 oxidized 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 of 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  $\frac{1}{2}$  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  $2\frac{1}{2}$  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 sulphuretted 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 axle 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

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#### 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.

25,339.—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.—M. L. 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.—STREAM PACKING, ETC.—J. Glandling & 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  
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