

(26) J. F. B. asks: How can I make olefiant gas? A. The gaseous products of the destructive distillation of the fatty or so-called fixed oils and resins are very rich in elayl gas (olefiant gas). As oils yield further only a small quantity of carbonic acid gas, and no sulphuretted hydrogen, oil gas does not require any purifying, and hence the apparatus may be very simple; while, owing to the high illuminating power, smaller gas holders, smaller pipes, and burners of different construction are required. One pound of oil yields 20 to 25 cubic feet of gas, equal to 90 or 96 percent.

(27) A. W. C. asks: Is there a remedy to prevent verdigris forming on copper cartridges when carried in the thimbles of a belt? A. Dip them for a moment, when clean, in an alcoholic solution of shellac. Allow them to dry completely before placing in the belt.

(28) S. W. S. asks: What is aluminate of soda? A. It is now prepared on a large scale, as it has been found a very useful form of soluble alumina, especially in dyeing and calico printing. The preparation of this compound is based on the solubility of hydrate of alumina in caustic potassa or soda lye, and the ready decomposition of the solution by carbonic and acetic acids, bicarbonate and acetate of soda, sal ammoniac, etc. The compound is generally formed by calcining either cryolite or bauxite, minerals containing a large percent of alumina, with carbonate of soda, in a reverberatory furnace. It may be obtained on a small scale, by boiling alumina with caustic soda lye for some time.

(29) J. R. asks: What are the drawbacks, if any, to the use of gasoline as an illuminating agent, as applied for that purpose in the automatic gas machine? A. They are mainly due to the dangerous character of the materials used; gasoline, naphtha, and similar volatile hydrocarbon oils. The vapors arising from these oils, being heavier than the air, have a tendency to accumulate in pools on the floors of the cellars or vaults where the oils are used, and becoming mixed with the air form a terribly explosive mixture. The ignition of which, from the careless dropping of a partially extinguished match, or flame of any kind, is often sufficient to destroy the building.

(30) R. R. Z. says: 1. You speak of a glaze or enamel called boro-silicate of soda. How is this made? A. Melt together pulverized felspar 27 parts, borax 18 parts, sand (fine, white) 4 parts, potash, niter, and potter's earth, 3 parts each. Then add 3 parts of borax reduced to a fine powder, also fine black oxide of manganese in the proportion of 45 grains oxide to 6 lbs. of the enamel. When fully fused, throw into cold water, and then remelt and again quench in water, as before. Repeat this until the enamel is fine and white. It is then ready for use. 2. Will it stand the action of hot 66° sulphuric acid? A. Yes.

(31) J. O. F. asks: What is the latest and most approved plan of tempering small springs? A. There is nothing better than dipping them in oil and blazing the oil off.

(32) M. W. H. asks: 1. Will tool steel make good steel springs? A. No; it is apt to break. 2. What kind of steel is best for springs? A. Spring steel. 2. Can springs be tempered in water or oil, so that they will be tough and limber? A. Yes: harden in water, temper with oil.

(33) W. H. C. asks: What is the best way to join a band saw? A. Braze it, taking care to hold the ends true.

(34) P. J. M. asks: What is the best means to secure a good casting, free from blowholes and defects, where you are obliged to cast into it some pieces of wrought iron, as done in a fly wheel with cast rim, wrought iron arms, and cast iron hub? A. Heat the wrought iron, and have a good dry mold, casting endwise whenever possible.

(35) J. S. M. asks: 1. Does it take more power to run beveled gears than it does to run spur gears? A. There is no practical difference. 2. Can you tell me the best way to find the proper size of a hole (in a face plate, for instance), in which a thread is to be cut? I have heard that it is best to measure the outside of the thread of the screw; and if it is 10 to the inch, the hole should be bored 1/4 tenths = 2/5, less, which will give a full thread to match. If the thread is 12, 1/4 twelfths is right, and so on for every number of threads. A. We have never heard of the rule you give. Try it, and let us know the result.

(36) E. E. K. asks: Can india rubber valves which have been used in hot and cold water pumps be remolded for the same use? A. No.

(37) J. C. S. says: I have a grindstone 3 feet in diameter and of 5 inch face, that seems a great deal too hard for sharpening tools for working in wood. How can I soften it? A. Your only method is to keep water running over it, which will partially soften it.

(38) B. K. D.—If your self-operating water elevator only costs \$2.50, you can very readily test the question of demand by putting it on sale.

(39) H. S. asks: On a gravestone of fine Italian marble, the engraver inadvertently cut a superfluous comma. How can I fill it in so as to be permanent, and show as little as possible? A. We can think of nothing better for the purpose than plaster of Paris, mixed with a small quantity pulverized mica.

(40) R. says: I have tried many of your ink recipes, and send you an improvement on one which I found in the SCIENTIFIC AMERICAN, and used many years ago. Black ink: No. 1. Take powdered cloves 1/2 oz., extract logwood 2 ozs., hot water 1 gallon; dissolve. No. 2. Take bichromate of potash, powdered Prussian blue each 120 grains, potash, powdered 80 grains. Dissolve in 1 pint warm water, then mix No. 1 and No. 2 together. The Prussian blue is the improvement; it flows freely and dries quickly. Sugar will spoil it. I have not known it to gelatinize or mold.

(41) M. M. says, in reply to C. P. B., who is troubled by sparks flying from the top of his chimney: There is a much better way to stop the evil than by the use of a screen. So arrange your flue that the draft shall be projected downward into a short chamber, of about 5 or 6 times the sectional area of the chimney flue. From this chamber, let the draft enter the chimney. The current of smoke passing through this chamber will be so slow that nearly all the dirt will settle out of it. If the bottom of the chamber is kept flooded with water, no dirt whatever will pass out of the chimney. I have seen a chimney, that was a complete nuisance to the whole neighborhood, made perfectly clean by the above plan. The draft will not be affected perceptibly. The draft might pass from the side of the chamber to the chimney, but it should be near the opposite end from where it enters.

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

G. P. L. R.—No. 1 is decomposed sandstone containing scales of mica. No. 2 is a white clay. No. 3 is a fossiliferous stone containing a large percentage of lime. No. 4 is celestine. No. 5 is a variety of hard fine grained sandstone. Specimens of New Jersey green sand can be obtained from Dr. G. H. Cook, State Geologist, New Brunswick, N. J.—O. C.—Send us a sample of your oil, and we will endeavor to help you.—A. B. L.—A qualitative analysis was made of your samples. No. 1 contains sulphide of lead and iron. No. 2 contains sulphide of lead, iron, and quartz and No. 3 is quartz and sulphide of iron. No. 4 is sulphide of iron with traces of arsenic. No. 5 is sulphide of iron and quartz. We do not consider them of much value. You will find the cost of working these mines too expensive, as fully 70 per cent of the minerals is quartz.—M. A. B.—They are the wings of red mites, sub-order *ascarina*.

COMMUNICATIONS RECEIVED.

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

- On a Cure for Toothache. By E. D. P.
On the Keely Motor. By J. R., by L. W. S., by J. W. C., by L. K. Y.
On Mechanical Motors. By J. E.
On the Chemical Firefly. By C. W. W.
On the Potato Beetle. By O. E. D., and by J. G.
On the Iron Horse. By F. H. R.
On the Cincinnati Exposition. By J. C. B.
On Dental Surgery. By —
Also inquiries and answers from the following:
J. E. W.—L. G. F.—R.—W. B. H.—M. O. H.—P. O'N.—H. F. N.—J. W. C.—T. H.—A. W. & Co.—J. M. T.—W. J. P.—J. E. C.—S. C. M.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are sent: "Who sells Baumé hydrometers? Who makes field glasses and binocular telescopes? Who sells apparatus for making olefiant gas? Who makes rag boilers for paper makers' use?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

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- 8,452.—WRITING PAPER.—H. D. Cone, Stockbridge, Mass.
3,453.—COFFIN PLATES.—W. Parkin, Taunton, Mass.
3,454.—TYPE.—J. Herriet, New York city.
3,455, 8,456.—NUTS.—J. Phipps, Philadelphia, Pa.
3,457.—CARPETS.—T. J. Stearns, Boston, Mass.
3,458.—STOVES.—J. Van Wormer et al., Albany, N. Y.
3,459.—STOVE.—N. S. Vedder, Troy, N. Y.
3,460.—STOVE.—A. Wemyss, Philadelphia, Pa.
3,461.—EMBROIDERY.—E. Crisand, New Haven, Conn.
3,462.—COOK STOVE.—J. Dwyer, Detroit, Mich.
3,463.—TYPE.—W. W. Jackson, Philadelphia, Pa.
3,464, 8,465.—GLASSWARE.—J. B. Lyon, Pittsburgh, Pa.
3,466.—TOY BLOCKS.—S. Lyman, Leominster, Mass.

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 filing a Disclaimer..... \$10
On an application for Design (3 1/2 years)..... \$10
On application for Design (7 years)..... \$15
On application for Design (14 years)..... \$30

CANADIAN PATENTS.

- LIST OF PATENTS GRANTED IN CANADA, July 7, 1875.
4,950.—C. Dean, Crowland, Ont. Radiator for boiler flues. July 7, 1875.
4,951.—J. A. Wilson, Chester, Vt., U. S. Clothes wringer and bench. July 7, 1875.
4,952.—W. W. Price, Pettitcodiac, N. B. Lantern and dinner kettle. July 7, 1875.
4,953.—T. Elliott, Smith, Ont. Hay rake and loader. July 7, 1875.
4,954.—C. G. Force, Jr., Cleveland, Ohio, W. S. Arches for sewers and for other purposes. July 7, 1875.
4,955.—Wm. Abercrombie, Hamilton, Ont. Door-relishing attachment. July 7, 1875.