(32) J. H. K. and others.—Mix two or three drachms of white arsenic (arsenious acid) with an equal quantity of sodium carbonate and dissolve the mixture in a pint of boiling water, to which add also an ounce or more of honey. This may be projected, in limited quantity, by means of a small syringe, well into all open cracks in the walls and floors of rooms infested with the insects. The latter will soon discover the honey, and die. The only precaution necessary in the use of this mixture is that it should not be deposited or kept within the reach of children or domestic animals, or with medicines, etc., for which it is liable under any circumstances to be mistaken. It is better to make the small quantity required and use it at once.

(33) D. W. B. asks: Does the injector send a steady stream of water into the boiler, or is it in the form of spray? A. A steady stream.

Are most of the transatlantic steamships made in America or Europe? A. In Europe.

What is the proportion between the length and width of a steamboat beam? A. It varies greatly, as much as from 4 to 12 or even more.

(34) D. P. writes: We have tried concentrated lye as a preventive to the formation of scale in our boiler, and find it effective. Is there any danger of injury to the boiler, or any other objection to its continued use? A. If you blow off and clean the boiler regularly every two or three weeks, we see no objection.

(35) H. B. C. asks: 1. Does a permanent magnet lose or gain by being in constant use? A. A gradual diminution of power occurs when the keeper or armature is not in contact with the poles. 2. Which is the stronger, a compound or solid magnet of equal weight? A. A compound. See p. 227, "Science Record" for 1874. 3. Will an electro-magnetic machine produce magnetism of much power in an electro-magnet? A. Yes.

(36) H. K. A. asks: 1. How do scientists ascertain the average rainfall? A. Take a quart bottle of uniform diameter and graduate its liquid contents by a scale of tenths of an inch accurately engraved on the side; fit into the neck of the bottle a 40° funnel, the diameter (in inches) at the rim or widest part of which has been accurately ascertained; then diameter square × ·7854 = area in inches of the base of the inverted cone. Suspend the rain gauge in an upright and exposed position. Then, number of inches of rain collected in the bottle ÷ time of exposure = average rainfall in inches. The gauge should of course be out of the reach of spattering water from surrounding objects, and in order to avoid great error through the spattering of the water from the funnel, the angle of the sides of the latter should not be greater than 40°. The neck of the funnel should be narrow and due allowance must be made for evaporation. Readings should be taken if possible before as well as after a rain all. The indications of this simple instrument are sufficiently accurate for all ordinary purposes. 2. Would a tin pail set out during a shower where the water could not blow from any other object into it, and set high enough from the ground so that water could not spatter into it, register the rainfall for that particular section (the pail being the same size from bottom to top) by measuring the water in the pail? In other words, would the depth of water in the pail be the rainfall? A. Yes.

(37) W. C. R. asks for a recipe for a glue to fasten paper on glass; it must be colorless. A. (1.) Soak isinglass in water until it is soft, then dissolve it in the smallest possible quantity of proof spirit by the aid of gentle heat; in 2 ozs. of this mixture dissolve 10 grains of gum ammoniacum, and while still liquid add half a drachm of mastic dissolved in 3 drachms of rectified spirit. It is liquefied for use by standing the bottle containing it in hot water for a moment. (2.) Good starch paste is often used.

(38) G. F. S. asks: 1. Can you silver plate on lead or pewter? A. Yes, though with difficulty. It requires an intense current and a strong solution to throw on the first coating. 2. Give solution for copper plating. A. Dissolve sulphate of copper in 4 parts of not rain water; allow to cool before using.

(39) F. B. M. asks: 1. What is the best way of making a good paste blacking? Please give formula. A. See recipe on page 27. 2. How would you make the best of liquid blacking? A. Soft water, 1 gallon; extract of logwood, 6 ozs.; dissolve: soft water, 1 gallon; borax, 6 ozs.; shellac, 1½ oz.; boil until dissolved: potassium bichromate, ¾ oz.; water, ½ pint; dissolve, and add all together while warm.

(40) A. F. asks: How can I keep a working board clean from oil and spots? A. Cover the wood with a quantity of hot pipe clay over night; or apply a little benzine and use the clay cold.

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

C. W. C.—Slate containing pyrites.—J. A. P.—The deposit consists mainly of clay, silica, lime sulphate, iron oxide, and a little organic matter. It may be used as a cheap pigment, either before or after calcination. It does not contain phosphates.—J. J.—No. 1 is red jasper—an impure quartz, the coloring matter of which is iron sesquioxide. No. 2 is dolerite containing iron pyrite, of no value.—M. M.—They are clay stones, formed by eddies of water.—E. D. M.—They are nodular pyrites—iron sulphide.—M. F.—Specimens of banded agate, rose and amethystine quartz.—Will Canadian correspondent who sent sample of talc please send his address?—W. T. J.—Nodular pyrites—iron sulphide.—O. A. A.—The chalk is foraminiferous; use a $\frac{1}{10}$ objective.—D. L.—The sample is a clay—silicate of alumina—containing much salt, a little iron oxide, lime and magnesia sulphate, and silica. It is not of much value.

English Patents Issued to Americans.

From May 10 to May 30, 1878, inclusive.

Advertising apparatus.—E. Bostock *et al.*, N. Y. city.
Artificial leather.—E. E. Floyd, Boston, Mass.
Boat lowering apparatus.—M. Bourke *et al.*, Youngstown, O.
Boiler pressure regulator.—H. G. Ashton, Boston, Mass.
Book holder.—A. Mason, N. Y. city.
Bottle stopper.—C. O. Hammer, Pittsburg, Pa.
Ditching machine.—T. Fitz-Randolph, Morristown, N.J.
Drain trap.—H. Palmer, Rochester, N. Y.
Electric battery.—C. Brush, Cleveland, O.
Electro-motor.—D. Ward *et al.*, Berkshire, N. Y.
Gas manufacture.—H. W. Adams, Philadelphia, Pa.
Gas manufacture.—W. Harkness, N. Y. city.
Governor.—C. C. Jenkins, Philadelphia, Pa.
Grain drier.—E. H. Gratiot, Platteville, Wis.
Grinding machine.—G. G. Lobdell, Wilmington, Del.
Iron manufacture.—D. Thomas, St. Louis, Mo.
Ladder and hose elevator.—G. Juengst, N. Y. city.
Lead projectiles.—L. Crooke, N. Y. city.
Life boat.—M. Bourke *et al.*, Youngstown, O.
Life saving apparatus.—E. S. Hunt, Weymouth, Mass.
Lubricator.—C. Harris, N. Y. city.
Machine gun.—D. W. C. Farrington, Lowell, Mass.
Milling machinery.—Milwaukee Middlings Millstone Co., Milwaukee, Wis.
Nail machine.—H. B. Sheridan, Cleveland, O.
Non-conducting covering.—B. F. Smith, New Orleans, La.
Printer's quoins.—H. A. Hempel *et al.*, Buffalo, N. Y.
Propeller.—J. Baird, N. Y. city.
Railway truck.—G. Vincent, San Francisco, Cal.
Refining metals.—N. S. Keith, Brooklyn, N. Y.
Rolling mills.—W. R. Jenkins, Jr., Bellefonte, Pa.
Rubber cutter.—C. Ford *et al.*, N. Y. city.
Screw cutting machine.—H. E. Russell, New Britain, Ct.
Steam boiler.—S. J. Gold, Cornwall, Conn.
Telephone.—E. Gray, Chicago, Ill.
Tripod for instruments.—D. Hoffman, Philadelphia, Pa.
Water meter.—C. C. Barton *et al.*, Rochester, N. Y.
Wool scouring machine.—C. K. Bradford, Lyndfield, Mass.

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A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

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Oil cloths, C. T. Meyer and V. E. Meyer ..... 10,658 to 10,663
Spoons, J. Hammarth 10,654
Spoons, H. L. Wallace 10,664

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