and has therefore been named the vegetable dish cloth. The plants belonging to the genus *Luffa* are natives of tropical Asia and Africa.

(3002) G. H. L. asks: 1. What is the inclosed powder, and what is it worth per pound? A. Potassium nitrate, worth 10 to 12 cents a pound in small quantities. 2. What is chromic acid worth per pound, and why is it not more generally used in batteries instead of electropoion fluid? A. 40 cents a pound. It is often used with water and sulphuric acid for batteries. Alone it is not a substitute for electropoion fluid. 3. The formula for electropoion fluid as generally used is five parts of a saturated solution of potass. bichromate and one part sulphuric acid. Now, as the formula for producing chromic acid is 100 parts saturated solution potass. bichromate and 150 parts sulphuric acid, and as the end sought for is the liberation of chromic acid, it would seem to me that not enough sulpburic acid is used to secure economic working. Am I right? A. Working on the basis of saturated solutions is misleading. For electropoion fluid a good formula—and there are a number—is the following: Mix one gallon sulphuric acid with three gallons of water. In a separate vessel dissolve 6 pounds of bichromate of potash in 2 gallons of boiling water, then mix the two solutions carefully. Use when cold. You misapprehend the object of the sulphuric acid. It not only has to set free chromic acid, but has to supply the acid radical to combine with the chromium, and forming with the potassium sulphate chrome alum, and with zinc, zinc sulphate. 4. I have twice tried a battery, using electropoion fluid with sodium bichrom. in porous cup and sal-ammoniac in outer jar, and both times, after the cell had been set up two days, the porous cup would burst, bluish crystals forming in the pores. Why is it? A. It is hard to assign the exact cause from your description. As the combination is a bad one you should avoid it, and use sulphuric acid diluted with water in the outer cell.

(3003) F. G. S. asks (1) a simple way of testing milk so as to find out whether it has been adulterated with water, etc. A. There is no simple way that is reliable. The lactometer (a specially graduated hydrometer) gives some clew and is extensively used. See SUPPLEMENT, Nos. 71 and 292. There are also color or transparency tests. 2. Also a simple process for recutting files with acid. A. Clean with hot lye, benzine or turpentine and wash in warm water. Immerse in a jar containing 1 volume each of nitric and sulphuric acids and 2 volumes of water. The files should be put in toe downward for an hour or more. Wash finally. For sand blast sharpening see our SUPPLEMENT, No. 416. 3. In making permanent magnets is it best to temper the steel as hard as possible? A. No. Draw to a straw color.

(3004) D. B.—Red marking ink unaffected by soap alkalies is made as follows: Enough finely powdered cinnabar to form a moderately thick liquid is very intimately mixed with egg albumen previously diluted with an equal bulk of water, and beaten to a froth and filtered through fine linen. Marks are formed on cloth with this liquid by means of a quill and are fixed after they have become dry by pressing on the reverse side with a hot iron. This might work in a rubber stamp by adding glycerine, but we recommend you to use the quill.

(3005) Mrs. E. C. H.—The glistening substance in the sand is finely pulverized mica. The so-called star of Bethlehem may have been a sudden outburst by collision of two stars. The outbursts of star light at various times since have been called stars of Bethelem. They were accidental and without regularity of time and duration. They may appear at any time, but have nothing to do with the brilliant glows of the planet Venus.

(3006) A. G. L. asks how to copper-plate on the surface of plaster of Paris, the copper plate to be about an 8th or 16th of an inch thick. A. Coat with graphite rubbed on with a brush. Dust on some iron dust or very fine filings and pour some sulphate of copper solution over it. Then proceed to plate. The thickness seems excessive.

(3007) J. H. R. asks whether there is any difference between platina and platinum. A. There is no difference; the last, "platinum," is the best usage.

(3008) I. M. T. asks how to ink a type-writer ribbon with the ink used with the copying pad described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 438. A. Rub the ink on the ribbon with a stiff brush. For type-writer inks we refer you to the SCIENTIFIC AMERICAN, No. 21, vol. 59.

(3009) W. R. asks for a good harness dressing. A. ¼ ounce isinglass, ¼ ounce indigo, 4 ounces logwood, 2 ounces soft soap, 4 ounces best glue and 20 ounces vinegar. The whole is warmed, mixed, strained, and allowed to cool.

(3010) P. J. M.—Our navy ranks at present among the smallest, but the people have expectations of improvement.

(3011) C. S. asks: 1. Where can I get rubber (like the one inclosed) one foot square, or more? Address the New York Rubber Belting and Packing Company of this city. 2. How can it be fastened to cloth? A. It cannot be satisfactorily secured. 3. Will the cloth, attached to rubber, shrink, if kept always in water? A. Not to any great extent. If completely embedded in India rubber, the shrinkage will be still less. 4. What kind of cloth should be used? A. Cotton drilling or sheeting will answer. 5. Is cloth made waterproof in any other way, that is just as durable as the above mentioned, where the cloth is folded and brought apart every five minutes or so? A. No. 6. Is there any metal, and what kind, that won't rust if kept in water (being in frictional contact with another surface)? A. Platinum, also, within measurable limits, bronze, brass, aluminum bronze, and Babbitt metal. 7. Where it can be done, what substance should be used for covering, and how to protect metal where it is under water? A. Apply japanning baked on. The method of applying a rubber coating to cloth is quite complicated. It is described in "Rubber Hand Stamps and the Manipulation of India Rubber," $1, by mail.

(3012) J. F. C. asks: 1. What is the composition of the alkali found in the soil of western lands? A. The composition varies. An efflorescence from near Humboldt Lake, Nevada, contained:

Salt	49·67
Sulphate of sodium	20·88
Sesquicarbonate of sodium	18·15
Borate of sodium	11·30

2. What is a simple and reliable test for the same? A. No fixed test can be given. 3. Where can I find a full description of the storage battery, with explanation of its action? A. See our SUPPLEMENT, Nos. 338, 314, 342, 416, 517, 722.

(3013) G. F. K. asks: What are the chemicals used as a precipitate to determine the deposits in the water of an artesian well for boiler purposes? A. Clear lime water will precipitate any bicarbonate of lime that may be in solution. Alcohol added in large quantity, say in equal volume, will precipitate sulphate of lime. Care must be taken in executing the first test, as lime water in the air rapidly becomes clouded. The vessel in which the precipitation is effected should be covered immediately after the addition of lime water. If a test tube, the thumb may be placed over it and the whole may be shaken.

(3014) J. P. B. writes: In your paper of the 18th April, 1891, I noticed a communication from George M. Turner, regarding his mode of cutting off the bottom of a bottle. The most satisfactory and simple way I have ever tried is as follows: Having selected a small but well twisted cotton string, and saturated it in kerosene, turpentine, or some other oil, I tie it in two strands hard knot around the bottle where I desire to make the cut. This done, and after wiping off the excess of oil that may ooze out on the bottle, I set fire to the string, carefully and slowly rotating the bottle, in order that the flame may creep around. Then, when the oil has burned out, I trace around the bottle with a small brush wet (not dripping) in water. In nine times out of ten a successful cut can be made. Care should be taken, however, to have the bottle uncorked, and in no case have it contain moisture, these precautions being necesfary to prevent explosion.

(3015) C. B. N. asks: 1. What is the chemical that is used to oxidize carbon in batteries in which the carbon takes the place of the zinc in ordinary galvanic batteries? What is the composition of same? A. The Jablochkoff battery has a negative plate of cast iron, positive of carbon, with fused sodium nitrate as the electrolyte. 2. What is the latest theory in regard to what the process was by which the ancients used to harden or temper copper? A. It is we believe still unknown.

(3016) W. S. M. writes: In your SCIENTIFIC AMERICAN of January 10, 1891, on page 21, under the subject "Improved Lamps Greatly Needed," I would inquire what kind of gas is it that is generated in the wick of a lamp tube? A. The gas is a heavy hydrocarbon, easily condensible and inflammable in the air, and if mixed with the right proportion of air, it is explosive. Such proportion however must be nearly exact.

(3017) A. B. C. asks for a receipt for making a good liquid dentifrice. A. Carbonate of potash ½ ounce, honey 4 ounces, alcohol 2 ounces, water 10 ounces, oil of wintergreen and oil of rose enough to suit the taste. Color with cochineal if desired.

(3018) C. A. W. asks: By what solvent can I obtain a pure solution of ichthyol up to 5 per cent? A. Use water or alcohol.

(3019) R. W. R. writes: 1. What other moulding material is used in manufacturing rubber stamps besides plaster of Paris and stereo process? A. Flong and oxychloride of zinc matrices may be used for rubber stamps. We refer you to "Rubber Hand Stamps and the Manipulation of India Rubber" $1 by mail. 2. Also what is used to soften silex, I mean prepared silex, such as dentists use to cement porcelain teeth? A. Treatment with muriatic acid might effect this. It is removed from teeth by mechanical treatment.

TO INVENTORS.

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