giving purposes, and one for electro-plating? A. Ordinarily there is little or no difference. In some of the Ladd and Gramme machines used for plating, arrangements are made so as to alter the quantity of the current and to admit the use of only a fraction, or all of it, as desired.

(37) A. P. F. says: I wish a recipe that will thoroughly water and mildew proof cotton canvas, and which will not injure the fabric when exposed to 280° of heat for 30 minutes. A. We think it will be difficult to devise a method that will, with any degree of satisfaction, answer all your requirements. Strong, hot solutions of alum or pyrolignate of iron (iron liquor) may be used to render such material mildew proof, and, if subsequently boiled in a strong solution of rosin soap, the cloth will be made reasonably waterproof, by the formation of insoluble alum soap or iron soap in the fiber.

(38) J. D. W. asks: How can I prepare sulpho-carbonate of potassium? A. It may be prepared by digesting for a few hours potassium sulphide with a slight excess of carbon disulphide, then adding a little water, and evaporating the whole dearly to dryness over a water bath.

(39) H. L. B. asks for a recipe for crystalizing tin plate. A. Wash the surface of the plate, previously warmed, with dilute nitric acid (1 of acid to 2 of water). As soon as the crystalline appearance is fully developed, wash it thoroughly in running water, dry, and varnish. 2. Please give me a recipe for turning tin blue and other colors? A. Tin cannot be stained or colored other than by paints or colored varnishes, etc. Use a filtered alcoholic solution of bleached shellac, colored to suit with any of the aniline colors. Very beautiful effects may thus be produced, as these colors are very real and transparent.

(40) H. E. W. asks: 1. Where can electric pile referred to in SCIENTIFIC AMERICAN of January 22, 1876, on p. 55, be found? A. The battery, we believe, is in the market. See our advertising columns of addresses of electricians. 2. Is it patented? A. Yes. 3. What effect does the peroxide of manganese in porous cell of Leclanché have on the carbon? A. It has no effect on the carbon—it serves to oxidize into water the hydrogen liberated at that pile. 4, What is the object of pounded carbon in the cell, and how much oxide is there in it? A. The carbon serves to decrease the internal resistance of the battery. The proportion of carbon and manganic oxide is variable, but may be about 1 part of the former to 3 of the latter. 5. Does the ammonium chloride in outer cell unite with the manganese and form an acid? If so, why? A. No; when circuit is closed the zinc dissolves in the ammonium chloride, forming ammonio-chloride of zinc. 6. What compound will unite with chloride sodium and form an acid? A. There can be no such reaction.

(41) C. L. P. asks: How does the fly walk on the ceiling? A. The flies' feet are provided with small, hairy, inverted cup-shaped cavities, capable of distending when pressed on a smooth surface, so as to form a slight vacuum, after the manner of the sucker. See "Hogg on the Microscope."

(42) G. C. asks: Is there a process for coating the fibers of cotton with silk? A. We know of none.

(43) W. E. asks: 1. What kind of a brush or buff do they use in the silver plating factories to put on the high finish on plated ware? A. It is done by burnishing. 2. Is there any other way to clean goods for plating besides scouring them with pumicestone and brush? A. Yes, by filing, scraping, and pickling in acids. 3. I would like to know about the patent on nickel plating? A. We refer you to the patentees.

1. What is the best way to clean brass bird cages? A. Wash with soap and water or a weak alkali. 2. What kind of varnish is put on to make them look so well? A. Shellac varnish can be used.

(44) T. A. P. asks: It is claimed that certain base-ball pitchers are able to throw a ball so that it will describe a horizontal curve in the air. Is such a thing possible, with a perfectly spherical ball and in a still atmosphere? A. We have never seen it done.

(45) H. D. E. asks: How is paper powder made? A. You will find information in No. 21, vol. 36. The proportions of the ingredients we cannot give.

(46) O. G. B. asks: What are roller skates, and are they patented? A. They are made something like a pair of sandals, but with rollers in place of skate irons. There have been some patents granted on them.

Could a copyright be obtained for a plan for organizing a society so that no society could make use of it without the consent of the owner of the copyright? A. Yes.

How much force could a spring, similar to the spring in a spring clock, be made to overcome? For instance, could one be made to wind up like the spring of a clock that would exert a force of 1,000 lbs., or 500 lbs., or any given number of lbs.? A. Yes.

Could a patent be obtained on a new plan for a lottery wheel or other contrivance for the purpose of lottery drawing? A. Yes.

Will any regularly organized order, having by-laws and officers, have to be chartered by the State? A. Consult your State statutes.

Is a raw cowhide, as it is taken from the brute, impenetrable to water? A. Yes.

(47) A. C. S. asks: What compound is used for making patent leather? Also how is it applied to get such a perfectly smooth surface? How long should it be boiled to give it the drying quality that boiled oil possesses? A. Patent or enamelled leather is prepared from hides that have passed through two operations; the first to render the leather impermeable to the varnish, and the latter to lay on the varnish. The hides are rubbed on the grain side with three coatings of boiled linseed oil mixed with ocher or ground chalk, and dried after each coating. The surface is then pumiced, and treated with general applications of the same material of a thinner quality. Over the surface so prepared are laid successive layers of boiled linseed oil, and of the oil mixed with lampblack and turpentine spread on with a brush. The surface, which has become black and shining, is then varnished with copal and linseed oil with coloring matters. The following is recommended: Boiled linseed oil and turpentine 20 lbs. each, thick copal varnish 10 lbs. and 1 lb. each of asphaltum, Prussian blue, or ivory black. Five coats of varnish are successively applied, and the colors are varied at will. Oil should be boiled until all the moisture is expelled.

(48) F. H. D. & Co. ask: Will you give me recipe for making a marking pencil for lumbermen, or marking packages? A. A perusal of the article on "Pencils" in Knight's "Mechanical Dictionary" (part 25), will probably give you the information.

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

W. W.—If minerals in slate pencil box are yours, they are: No. 1, mispickle, sulphide, and arsenide of iron. No. 2 is limonite—an iron ore. No. 4 is tennantite, or sulphide of iron, copper, and arsenic. The green piece is a hydrous arsenate of copper—tyrolite. No 5 contains antimony, iron, and silver.—E. A. S.—It is magnetic iron pyrites—pyrrhotine. It may contain more valuable metals.—J. E.—(Minerals in tin box). They contain silicates of alumina, magnesia, potash, and soda, sulphate of lime, and carbonate of lime. They do not necessarily indicate the proximity of coal or oil. Limestones are very common in oil regions.—M. S.—No. 2 is calcite. No. 5 contains galena—sulphide of lead. No. 6, the irridiated brassy-colored piece is chalcopyrite—sulphide of copper and iron. No. 7 contains iron and copper pyrites, oxide of iron, and a little carbonate of copper. No. 9 is amianthus. No. 10 is quartzose rock with pyrites. No. 11 is magnetic oxide of iron. No. 12 is clay slate with oxides of iron. No. 13 contains galena and probably silver. No. 14 is augite. No. 16 is galena. No. 17 is mica-schist. No. 18 crystals of carbonate of lime. No. 21 is a clay with much oxide of iron. Nos. 1, 3, 4, 8, 19 and 20, are missing.—F., of Curaçao, South America.—The sample of pitchy material sent was probably formed by the evaporation of the more volatile constituents of a petroleum. It contains a large percentage of earthy impurities. It is probable that higher up the ravine referred to a more valuable oil may be obtained. Its commercial value could be definitely determined by an analysis. Its destructive distillation will yield a very rich illuminating gas. It probably contains some paraffin.

COMMUNICATIONS RECEIVED.

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

On Boiler Joints. By F. G. W.
On Snakes Catching Fish. By E. A. P.
On Hog Cholera. By ——.
On Submarine Torpedoes. By ——.
On an Apparatus for Analyzing Polarized Light. By W. L.
On the Brown Bat. By C. F. S.
On the Seventeen Year Locust. By R. K. S.
On a Telephone. By N. T. McK.
On a Tidal Motor. By A. S.

Also inquiries and answers from the following:

S. A. S.—F. P.—C. F. M.—P. N.—E. A. S.—D. B.—M. H. M.—A. I. F.—C. B. L.

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.

Inquiries 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 makes paper balloons? Who makes assays of minerals? Who deals in canary birds?" 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.

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

June 19, 1877,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

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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10,055.—CENTER PIECE.—A. Carlewitz, Newark, N. J.
10,056.—CASSIMERES.—C. F. Harrison, New York city.
10,057.—STAIR CARPET TACKS.—M. Krickl, N. Y. city.
10,058.—FANCY CASSIMERES.—P. McGee, Blackstone, Mass.
10,059.—PICTURE FRAME.—R. C. Mitchell, Aurora, Ind.
10,060.—COOKING RANGES.—T. H. Roberts, Detroit, Mich.
10,061.—STUCCO CENTER PIECE.—P. A. Stout, Allegheny, Pa.
10,062.—TRIMMING.—R. Werner, Hoboken, N. J.
10,063.—TOBACCO BAGS.—W. J. Cussen, Richmond, Va.
10,064 to 10,066.—OIL CLOTH.—C. T. Meyer *et al.*, Bergen, N. J.
10,067.—FLOWER STANDS.—H. P. Roberts, Tunkhannock, Pa.

[A copy of any one of the above patents may be had by remitting one dollar to MUNN & Co., 37 Park Row, New York city.]