## Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion, about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

For Sequeira Water Meter, see adv. on page 316. Patent for sale. G. Neu, 191 W. Liberty St., Cin., O. It never fails to give relief to the lungs, is what is said of Van Beil's "Rye and Rock."

Relief from the worst of aches. Use German Corn Remover. It never fails. Sold by all druggists. 25 cts. Upright Self-feeding Hand Drilling Machine. Excellent construction. Pratt & Whitney Co., Hartford, Conn. For Sale.-Screw Cutting Lathe. 36 in. x 18 ft.; New Haven make; good order. E. N. Brown, Pokeepsie, N.Y.

Punching Presses and Shears for Metal-workers. Power Drill Presses, \$25 upward. Power and Foot Lathes. Low Prices. Peerless Punch and Shear Co., 115 S. Liberty St., N. Y.

Your boiler is predisposed to weakness by thickening of the water or burning of the iron caused by impurities in feed water. They should be removed by Hotchkiss Mechanical Boiler Cleaner. 84 John St., N Y.

The price of Boomer & Boschert's Cider Press is so reasonable that every fruit grower in the country can afford one. They produce more cider from the same quantity of apples than any other press. Illustrated circulars mailed free. New York Office, 15 Park Row.

Books on Practical Science. Catalogues free. Pocket Book of Alphabets, 20 cts. Workshop Receipts; a reliable handbook for manufacturers. \$2, mail free. E. & F. N. Spon, 446 Broome St., N. Y.

Why suffer? German Corn Remover warranted to cure. Sold by all druggists. 25 cts.

Wanted.-An old established machinery firm on Cortland street would be pleased to represent, in New York city, a firm or company manufacturing a variety of Engines, Boilers, etc. Address Engine, Box 773, New York.

For Sale.-No. 1 221/2 inch 8 roll (Schenck) Planer and Matcher, with undercutter, in perfect order. Belcher & Bagnall, 40 Cortland St., N. Y.

For Sale .- A Valuable Patent for Photographers' use, or can be manufactured on royalty. Address G. W. Baker, Wilmington, Del.

Propellers, 10 to 26 in. Geo. F. Shedd, Waltham, Mass. Gardiner's Pat. Belt Clamp. See illus. adv., p. 284. Essay on Inventions.-What qualities will make them profitable, and how to incorporate these qualities in inventions. 25 cts. postpaid. Address N. Davenport, Valparaiso, Ind.

Improved Skinner Portable Engines. Erie, Pa.

"Rival" Steam Pumps for Hot or Cold Water; \$32 and upward. The John H. McGowan Co., Cincinnati, O.

The Eureka Mower cuts a six foot swath easier than a side cut mower cuts four feet, and leaves the cut grass standing light and loose, curing in half the time. Se for circular. Eureka Mower Company, Towanda, Pa.

The Newell Universal Mill Co., Office 34 Cortlandt St., New York, are manufacturers of the Newell Universal Grinder for crushing ores and grinding phosphates, bone, plaster, dyewoods, and all gummy and sticky substances. Circulars and prices forwarded upon request.

Pure Oak Leather Belting. C. W. Arny & Son, Manufacturers Philadelphia. Correspondence solicited. Jenkins' Patent Valves and Packing "The Standard." Jenkins Bros., Proprietors, 11 Dey St., New York.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Wood Working Machinery of Improved Design and Workmanship. Cordesman, Egan & Co., Cincinnati, O. The "1880" Lace Cutter by mail for 50 cts.; discount to the trade. Sterling Elliott, 262 Dover St., Boston, Mass. Experts in Patent Causes and Mechanical Counsel Park Benjamin & Bro., 50 Astor House, New York.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

Malleable and Gray Iron Castings, all descriptions, by Erie Ma'leable Iron Company, limited. Erie, l'a.

Long & Allstatter Co.'s Power Punch. See adv., p. 285. Eclipse Fan Blower and Exhauster. See adv., p. 285. National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 40 John St., N. Y.

Peck's Patent Drop Press. See adv., page 300. Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsb'g, Pa.

Wren's Patent Grate Bar. See adv. page 500. Best Oak Tanned Leather Belting Wm. F. Forepaugh, Jr., & Bros., 531 Jefferson St., Philadelphia, Pa. For Mill Macb'y & Mill Furnishing, see illus. adv. p.300

Stave, Barrel. Keg. and Hogshead Machinery a specialty, by E. & B. Holmes, Buffalo, N. Y.

Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 301. Wright's Patent Steam Engine, with automatic cut

Wright, Manufacturer, Newburgh, N. Y. For Light Machinists' Tools, etc., see Reed's adv., p. 301.

Nickel Plating .- Sole manufacturers cast nickel anodes, pure nickel salts, importers Vienna lime, crocus, etc. Condit. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York

Saw Mill Machinery. Stearns Mfg. Co. See p. 300. Presses, Dies, Tools for working Sheet Metals, etc. Saunders' Pipe Cutting Threading Mach. See p. 301.

The Sweetland Chuck. See illus. adv., p. 269. For best Duplex Injector, see Jenks' adv., p. 269.

The American Electric Co., Proprts Mfrs of Thomp- chemists. son Houston System of Electric Lighting the Arc Type. B'ake "Lion and Eagle "Imp'd Crusher, See p. 284. 4 to 40 H P. Steam Engines. See adv. p. 286.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 285.

For Machinists' Tools, see Whitcomb's adv., p. 301. See Bentel, Margedant & Co.'s adv., page 317.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York. Clark Rubber Wheels adv. See page 316.

50,000 Sawyers wanted. Your full address for Emerson's Hand Book of Saws (free). Over 100 illustrations and pages of valuable information. How to straighten saws, etc. Emerson, Smith & Co., Beaver Falls, Pa.

Peerless Colors-For coloring mortar. French, Rich ards & Co., 410 Callowhill St., Philadelphia, Pa,

Diamond Tools. J. Dickinson, 64 Nassau St., N. Y. For Pat, Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 316.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p.316. Elevators, Freight and Passenger, Shafting, Pulleys and Hangers. J. S. Graves & Son, Rochester, N. Y.

For the manufacture of metallic shells, cups, ferrules, blanks, and any and all kinds of small press and stamped work in copper, brass, zinc, Iron, or tin, address C. J. Godfrey & Son, Union City, Conn. The manufacture of small wares, notions, and novelties in the above line, a specialty. See advertisement on page 317.

Akron Rubber Works, Akron, O. Moulded goods and special work of every description.

Gear Wheels for Models (list free); Experimental Work, etc. D. Gilbert & Son, 212 Chester St., Phila., Pa. Gould & Eberhardt's Machinists' Tools. See adv., p. 316.

Grain Nickel, Nickel Anodes Rolled or Cast, Nickel Salts. Greene, Tweed & Co., 118 Chambers St., N. Y.

For Heavy Punches, etc., see illustrated advertise-

ment of Hilles & Jones, on page 317. Safety Boilers. See Harrison Boiler Works adv., p. 316.

The Medart Pat. Wrought Rim Pulley. See adv., p. 317.

Steam Engines; Eclipse Safety Sectional Boiler. Lambertville Iron Works. Lambertville, N. J. See ad. p. 317. Emery, Glue, Composition, Pumice, and all Goods for Polishing Metals. Greene, Tweed & Co., New York.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p.318.

For best low price Planer and Matcher. and latest improved Sash, Door, and Blind Machinery, Send for catalogue to Rowley & Hermance, Williamsport, Pa.

Rowland's Vertical Engine. Wearing parts of steel. Broad bearings. F.C.& A. E.Rowland, New Haven, Conn.

The only economical and practical Gas Engine in the market is the new "Otto" Silent, built by Schleicher. Schumm & Co., Philadelphia. Pa. Send for circular.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 318. Totten & Co., Pittsburg. Use Vacuum Oil Co.'s Lubricating Oil, Rochester, N.Y. For Thrashing Machines, Engines, and Horse Powers, seeillus. adv. of G. Westinghouse & Co., page 317.

## NEW BOOKS AND PUBLICATIONS.

Henderson's Hand Book of Plants. By Peter Henderson. New York: Peter Henderson & Co.

Something between a florist's and gardener's manual and a botanical dictionary, paying special attention to such plants and flowers as may be cultivated in this country. A multitude of cross references, giving the common and local names of plants, are a valuable feature of the book, the scope of which embraces also the systematic names of all the leading genera of useful and ornamental plants, with their more important species and varieties, with brief instructions with regard to their propagation. The glossary of botanical and horticultural terms and methods of cultivation is full and useful.

THE WOOL CARDER'S VADE MECUM. Wool Carder's Vade Mecum. By William Calvert Bramwell. Hyde Park, Mass. 1881. Published by the author.

The third and much enlarged edition of Mr. Bramwell's useful manual. Among the additions are three chapters on textile fibers used in connection with wool. The book is now, in general make up, perhaps the handmest industrial handbook in the maket.

How WE FED THE BABY TO MAKE HER HEALTHY AND HAPPY, WITH HEALTH HINTS. By C. E. Page, M.D. New York: Fowler & Wells.

A useful little handbook for young mothers, containing much sensible and practical advice calculated to diminish materially the murderously excessive death rate of young children. Special stress is laid upon the bad effects of over-feeding and frequent dosing of infants.

By Horatio R. Bigelow. Нурворновіа. M.D. Philadelphia: D. G. Brinton.

The author's aim has been to furnish in this monograph a critical digest of the literature of hydrophobia. a gluy nature-ignitible, not explosive, can I get strongly inclined to believe that this disease is not primf. The best engine made. For prices, address William arily one of the nervous system, but a blood disease, which must be treated by remedies acting d rectly upon the blood.

> AMERICAN CHEMICAL JOURNAL. Baltimore Md.: Published by the Editor, Professor Ira Remsen, Johns Hopkins University 8vo, pp. 448.

The second volume of this highly creditable periodical is completed with the February issue. The six Fruit and other Can Yools. E. W. Bliss, Brooklyn, N. Y numbers contain half a hundred original articles by American and foreign chemists, besides a considerable number of reports on progress in various departments of chemistry, reviews of books on chemical subjects. and many notes and ttems of general interest to

> Modern Architectural Designs and Details New York: Bicknell & Com-DETAILS New Yor stock. Part 7. \$1.

> Includes plates 49 to 56 showing a number of large and small seaside or lake shore cottages, and southern houses, with front, back, and side elevations, floor



#### HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the Scientific American Supple-MENT referred to in these columns may be had at this office. Price 10 cents each.

- (1) W. B. T. writes: 1. Having read a description of canoe in Scientific American Supplement No.219.I take the liberty of asking whether said canoe, when built, would be capable of carrying two persons If not, will you be kind enough to inform me, through your valuable paper, what dimensions are required to carry two? A. For two persons we think it should have 26 inches or 28 inches beam. 2. Will 15 oz. duck be heavy enough to cover deck? A. Yes.
- (2) J. D. W. asks how a perfectly transparent water size for gilding on glass is prepared—a preparation that may be easily worked. A. a. Isinglass, 1 oz.; dissolve in just enough water to cover it, and add 1 pint rectified wine spirit, then increase the quantity to a quart with water. Keep well corked when not in use. b. Dissolve ½ oz. isinglass in ½ pint of rum, add ½ pint distilled water, and filter through a piece of linen.
- (3) J. C. H. asks what the chemical constituents of fire clay are, and how it is prepared to manufacture into brick. A. Fire clay is a silicious aluminum silicate-silicate of aluminum mixed with more or less free silica and usually as little iron oxide, etc. The clay is elutriated to separate the coarser particles, the finer portion after settling, draining, and partly drying being well mixed together, pressed into form, dried slowly, but thoroughly, in the air, then fired in a kiln. 2. 1 am manufacturing hydraulic cement; have always presumed the bond was made by a chemical change. Yesterday I heard of some reported experiments in your city which showed by a powerful microscope that the particles of cement were fibers which, when wet, curled and twined together, thus making the bond. The theory appeared ridiculous to me. Is there anything in it? A. The bond is chiefly chemical. Consult Gillmore's 'Treatise on Hydraulic Cements and Mortars.'
- (4) J. S. B. asks: 1. Will you please to inform me the supply, demand, and price per pound of corundum? A. You can best obtain this information by addressing the dealers who advertise in this paper. 2. Is it probable, should corundum be found in sufficient quantities, that it will supplant the use of emery? What is the relative value as between corundum and emery, both as regards abrasive qualities and value? A. In a measure, yes. The value is determined chiefly by the comparative abrasive qualities—the standard wears away four-fifths its weight of glass. In this respect cor-undum from different localities varies widely. See articles on corundum and emery, Supplements, Nos. 125 and 42; also papers by J. Lawrence Smith and C. T. Jackson, Silliman's American Journal of Science (2d series), vii., 283; ix., 289; x., 354; xxxix., 87; xl., 112 and 123 3. Is corundum found anywhere in the world except in this State? A. Corundum has been extensively mined at Chester, Pa; it is found also in South Carolina and Alabama, Massachusetts and on the Pacific coast, in Brazil, Germany, and in South Africa and China. 3. Is it probable that in any reasonable length of time the supply of corundum will exceed the demand? A. Probably not. For other references on corundum see Scr-ENTIFIC AMERICAN, 405, vol. XXXVIII.; 193 and 276, vol. xxxix.; and 113 vol. xlii.
- (5) D. K. H. asks how files are measured. I say, for instance, a file measuring ten inches from shoulder to point is a ten-inch file, while a friend claims it is an eight-inch. Which is right? A. The tang of a file is not included in the measurement.
- (6) C. H. F. asks: What cheap solution of Contrary to the theory commonly held Dr. Bigelow is to cement fibrous matter together, such as hemp in our common ropes cut up fine; must also be waterproof? A. A solution of shellac in wood naphtha might answer your purpose. See cements, page 2510, SUPPLE-MENT, No. 158.
  - (7) T. S. W. asks. How can I make a liquidstove polish to be applied with an ordinary paint brush, and afterward polished with a stove brush? A. See ans. to L. A, p. 202 (9). Diluted with a sufficient quantity of water the polish there described may be used either as a paste or paint; for the latter it must be ground
  - (8) W. L. T. asks: 1. Can mica be dissolved. and if so, to what use can it be put? A. There is no solvent for mica. 2. Do you know of a machine for cutting mica to proper sizes? I have the control of a large mica mine, and will soon commence working it. We know of no special machinery for this purpose. 3. Do you know of what use the waste can be used for? A. See "The Utilization of Mica," page 241, vol. xxxiv.
  - (9) E. H. asks what acid or acids to use for taking out ink spots from ledgers, etc. A. Shake up 2 oz. of good bleaching powder (calcium hypochlorite) with 3 oz. of cold water; let it stand to settle, decant

the clear portion, add 1/4 oz. acetic acid, and bottle. Dry the paper as quickly as possible with clean blotting paper.

- (10) F. Y. asks: Do you know of any preparation that will remove from paper instantaneously ink stains, blots, or writing, made by inks or writing fluids, without injuring the enamel or gloss of the paper, so that it can immediately be rewritten? A. See answer to E. H., above.
- (11) O. F. N. writes: 1. I wish to draw negative pictures on glass by scratching with a needle through an opaque film. The finished plates are to be used for the same purpose, and to take the place of photographic negatives of line and dot subjects. Please tell me the best and simplest covering for the glass A. As we understand you, melted beeswax colored with any opaque pigment, or thin asphaltum varnish, will answer very well. 2. Is there any better vay to dispense with photography in producing gelatine relief plates? A. We know of nothing better.
- (12) O. F. D. asks whether there is an ink made that nitric acid will not affect, or if there can be one made? A. India ink of good quality is not materially altered by cold nitric acid. A solution of good asphaltum in lavender oil, with a little lampblack added, also resists the acid to a considerable extent.
- (13) L. M. asks for a receipt for making olive soap, costing not over two and a half or three cents per pound. A. See Cristiani's late work on soap and candles. Address the book dealers who advertise in this paper.
- (14) R. H. asks: 1. What are water colors? A. Generally speaking, colors or pigments finely ground in gum water. 2. How are they prepared for coloring printed cards? A. Consult Penley's "System of Water Color Painting," Hatton's "Hints on Sketching in Water Colors," and Gullick and Tims'" Painting Popularly Explained."
- (15) D. D. G. writes: I have suspected for woor three years that throwing salt on ice to melt it from stone sidewalks injured the stone, and this winter has convinced me of the fact. Our stone is a sand stone, and from the effects of the salt crumbles and scales off on the top. I account for it by the sudden and extreme cold made by the salt and ice, but find few to give any credence to my suggestions. A. It is quite probable that the use of salt injures the stone in the way you suggest.
- (16) W. F. S. asks how to make the solution used in Town's weather glass. A. The materials are dilute alcohol, camphor, sal-ammoniac, and niter. See "Weather Glasses," page 230, vol. xxvi.
- (17) G. D. asks for a receipt for a cement for cementing glass. I wish something to cement the joints of glass tanks, the glass to be supported by a lightframe. The cement must stand acids and a cyanous solution of metals. A. Melt together equal parts of pitch and gutta percha. See that the glass is free from grease and dry.
- (18) H. B. writes: I have two hundred gallons of white California wine, which has got pricked. Can you tell me of any compound that would bring it back to its natural state again without discoloring it? A. See answer to R. S., this page.
- (19) R. S. asks if there is a possibility of removing a flavor of acetic acid from wines caused by excessive fermentation, and if so, would like to know a remedy. A. The common remedy recommended in books is to saturate the excess of acid, with chalk, or calcined oyster shells; but such additions made in sufficient quantity to effect the object are apt to destroy the character of the wine and render it sickly. The best and safest method is to mix it with a considerable portion of full-bodied new wine, adding at the same time a little brandy, and in two or three weeks to fine it down. If too acid to admit of this it is better to make vinegar of the wine.
- (20) T. H. asks: What is the best material for the lining of an ice chest? A. Sheet zinc is commonly used for lining. The best non-conducting maerial for filling in the walls is powdered charcoal
- (21) J. A. C. asks how to make fish lines waterproof. A. Boiled oil, 2 parts; gold size, 1 part; shake together in a bottle, and it is ready for use. Apply to the line, thoroughly dried, with a piece of flannel, expose to the air, and dry. After using the line two or three times it should have another coat, the application being repeated when necessary.
- (22) J. A. S. asks if there is any chemical olution that willremove the roughoutside coating that is on sea shells. I wish to dress them for ornamental shells, but find it laborious and difficult, on account of the roughness, to remove this red coating by grinding. A Grinding is about the only practical way of removing the red silicious coating. We know of no means of dissolving it without injuring the other portions.
- (23) J. J. writes. 1 wish to make a small boiler suitable for runuing a small engine, 11/2 inch bore 3 inches stroke: what size should it be, and what style would be best and cheapest? A. A vertical tubular boiler having about 6 square feet of heating surface.
- (24) O. N. T. asks: How many screw propellers, 18 inches in diameter, 12 inches travel, would be required to exert the same power as two propellers. 4 feet in diameter, 24 inches travel-each propeller with four blades, and driven same speed? A. Seven; but we think six would do the work very well.
- (25) W. H. S. asks: What is used to put platinum points on to brass—is it a cement? A. They are either riveted or soklered with silver solder.
- (26) W. E. B. asks (1) for a receipt for naking a yeast that will be as strong, and that can be used in place of brewer's ale yeast? We wish to use it in making small beer without malt. Grean you give us lirections for making ale yeast, where we have not the convenience of an ale brewery? A Mix up 116 lb. of wheat flour to a thick paste with water, cover the vessel containing it with tissue paper, and set it aside in a moderately warm place for about a week. Soak a

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thoroughly. (See article on Lager Beer, page 192, cur- charge of portable engines that are left out-of-door rent volume.) Mash this malt in about 8 gallons of paint boilers once or twice a month with gas tar (that i water heated to 170° Fah., cover the vessel, and after an the tar obtained from the works for making illuminat hour's standing pour off the liquid, and stir up the malt ing gas). Is this deleterious, and is there not something again with a like quantity of hot water. Let it soak as better? A. It is not deleterious, but would be better it before, then draw off, mix the liquors, add 34 lb. hops, and boil for an hour. Cool down to about 90° Fah., and stir in the decomposed dough thoroughly beaten up the vapors will take fire. with tepid water. Keep in a warm place for a few hours, when active fermentation will take place, carbonic acid gas be disengaged, and when the action is complete and the liquid clear, a large quantity of yeast of excellent quality will be found at the bottom.

- (27) T. H. C. writes: S. R. B. can remove his wart by using chloral hydrate. Get a little and rub it up with just enough water to make a thick sirup. proved dynamo-electric machine, and also the induction Apply this to the wart with a match whittled to a wedge shape, carefully so as not to get the chloral on the well skin. It will burn without discoloring, and destroy the surface, which may be rubbed or scratched off and fresh chloral applied. This is infallible, and leaves no scar. If by accident a little gets on the well skin, no harm is done save a slight reddening and soreness.
- (28) A. C. L. writes: I was told by one who professed to be a machinist, that a right hand thread could be cut in a lathe by running the carriage to turn the cutting tool upside down, or place it behind the
- (29) S. E. W. writes: I have heard that cold pressure upon a boiler, as when testing it with water, strains boiler more than having same number of pounds of steam. Is this so? A. Cold pressure does not strain the boller more, if the pressure is increased gradually. If injury is done, it is by improper manipulation. The difference in strength, hot or cold, is so small as to be of no account.
- (30) L. B. asks: 1. Will you please tell me, through the Scientific American, how to make a hole about three-quarters of an inch in diameter into the bottom of a glass bottle? A. A three-quarter brass or copper tube used as a drill and supplied with emery and water will cut the hole. You may guide your drill with a wooden guide. Great care should be taken as the work nears completion. 2. How is transparent paint for coloring the glass slides of a magic lantern prepared? A. Prussian blue, gamboge, carmine, verdigris, madder brown, indigo, crimson lake, ivory black, and the coal tar, or aniline dyes, are the principal pigments used  $Raw \ sienna, burnt sienna, copper \ brown, an \textbf{d} \ \ \textbf{vandyke}$ brown are also sometimes used. The coal tar or aniline Letters Patent of the United States were dyes afford the richest colors, and tints are most transparent, but are unfortunately apt to fade on exposure to white light. The pigments may be ground in oil or water, but ordinary megilp (strong mastic varnish mixed with an equal quantity of pale drying oil) is preferred as the vehicle. Not a drop more than is necessary for properly working should be used, for if the colors are mixed too thin they will run into one another. A thin size of transparent gelatin in hot water may be laid on the glass when water colors are employed. The transparency of many of these colors is heightened by a thin coat of pure mastic varnish, afterdrying.
- (31) H. E. asks (1) how to make the platinum point of a plated blowpipe remain on the instrument. A. It should be screwed on. 2. How can I make an aniline blue ink? A. Dissolve an ounce of good aniline blue in half a pint of hot water, cool and dilute with cold water until it flows properly from the pen. See Inks, SUPPLEMENT, No. 157.
- (32) H. B. ask for a recipe for japanning tin covers, cheap. A. Give the ware a coat of good japan varnish and heat it in an oven at about 300° Fah. until properly hardened.
- (33) H. J. N. L. asks how to supply himself with a calcium or magnesium light, or other very bright and strong light for a sign, to attract attention now and again, and the cheapest way of manufacturing the same A. For the lime or calcium light use the jet described in answer to A. M. B. (28), page 123, current volume. The jet is supplied with oxygen and hydrogen (or illuminating gas) from India-rubber gas bags. It is cheaper to purchase the apparatus and bags. See our advertising columns for addresses of dealers in such things. The oxygen is prepared by heating in a copper retort pure chlorate of notash mixed with about one-fourth its weight of powdered peroxide of manganess. The gas given off is washed by passing it through water in a bottle similar to D., in answer to C. M., page 123 (26). current volume, and collected, is then put in the bag. Use a smooth cylinder of good quicklime three-quarters of an inch in diameter and 2 inches long, perforated to fit tightly on the spindle, or shaped with a knife to fit the lime cap. In the magnesium light a thin ribbon of the metal magnesium is placed between slender rollers operated by clockwork. so that the ribbon, when ignited, is fed forward as rapidly as consumed.
- (34) J. H. W. asks: 1. Is there any publication existing that gives the names of the different kinds of vegetable, animal, and mineral oils, their gravity. their process of manufacture, their illuminating and lubricating qualities, formulas for compounding, to refine or clarify? Or can you suggest a way I can obtain the above information? A. We know of no single book that will afford all the information required. Consult Wagner's "Chemical Technology," Muspratt's "Chemistry," Ure's "Dictionary of Arts and Manufactures," Knight's "New Mechanical Dictionary," and the encyclope  ${\bf d}{\it ias}.$
- (35) R. W. H. writes: 1. At a meeting of farmers in Westchester County, the writer stated that the length of rope used for draught made no other difference than its extra weight if the angle of draught were the same, and proved it by the ordinary steel yard and weight close to yard and three feet distant, the cord being balanced. Then arose a discussion on the most effective angle of draught. I was under the impression that it was 18°, but diligent search has failed to give me any information, and I think it a subject of such general interest that I trouble you for an answer through the Scientific American. A. Gregory says

bushel of barley in water, let it germinate, then dry it 181/2°; a French author 14° to 15°. 2. The parties in Chute and dnmp, fiexible, T. H. Walbridge first heated sufficiently to drive off the more volatile matters. This heating should be done with caution o

(36) F. P. asks: 1. What proportion does the electrical resistance of one copper wire bear to an other of half its diameter? A. It is inversely in pro portion to its sectional area; that is, the smaller wire would have four times the resistance of the larger, 2 What treatise on electricity can I get which takes up the theory and practical construction of the most ap coil, fully explaining the construction of each? A Back numbers of the SUPPLEMENT, Prescott's "Electri city and the Electric Telegraph," the " Electric Light, by Higgs, also recent text books on physics. 2. Is a electric light worked direct from the dynamo-electric machine, or is an induction coil inserted? If the latter is there a circuit breaker in the primary circuit? A The machine works direct. 4. How much does an induction coil increase the force ? A. It does not increas the dynamic force. The electromotive force of a the right. But I believe it to be impossible. A. It can secondary current is very high. 5. What is a condenser be done. Reverse the motion of the lathe spindle and as used with induction coil? A. A condenser is a series of sheets of tin foil insulated from each other and connected in alternation with opposite electrodes of the rimary circuit, its office being to neutralize the extra current of the primary circuit.

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

> A. M. D.-It is a yellow other; ground and washed it will make a cheap red or brown pigment.-O. G. S .-An impure kaolin—used in making cheap pottery, tiles drain pipes, etc.-G. J. H.-Crystallized quartz rock

## COMMUNICATIONS RECEIVED.

On the Coming Treatment of Ores. By J. C. C.

#### [OFFICIAL.]

### INDEX OF INVENTIONS

FOR WHICH

Granted in the Week Ending

April 19, 1881.

# AND EACH BEARING THAT DATE.

Those marked (r) are reissued patents.

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Cattle stall, T. Utley et al., U. S. Electrical signaling apparatus, I. T. Campbell, Boston, Máss.

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