Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion.

NEW BOOKS AND PUBLICATIONS.

OUR MERCHANT MARINE. By Chas. S. Hill. Third Edition, revised. D. Appleton & Co., publishers, 549 and 551 Broadway, New York.

The writer of this little work aims to show the policy of our government as to internal improvements, compared with the neglect to ocean service; the policy of other nations as to their merchant marine; and lastly what we have lost to our commerce and how to repair our condition. A large amount of statistics and many forcible arguments are adduced in support of his views.

JOURNAL OF THE SOCIETY OF TELEGRAPH ENGINEERS. Nos. 15 to 19, inclusive. E. & F. N. Spon, publishers, 446 Broome St., New York.

The above numbers of the journal contain the proceedings of the society named from April 26, 1876, to May 9, 1877, besides a large number of valuable original communications. The principal papers included are those by Mr. Latimer Clark on Clamond's Thermo-Electric Battery, Mr. Roberts on Batteries, Mr. Risch on Double Current Translation, Herr Treuenfeld on Fire Telegraph, and Mr. Preece on Shunts. These papers are well illustrated and are exhaustive as to their subjects, while embodying the latest results of investigation.

GRUNDLINIEN EINER PHILOSOPHIE DER TECHNIK. Von Ernst Kapp. Braunschweig (Brunswick), 1877.

"That many subjects of an empirical nature have of late been treated in a philosophical manner is a pleasing proof," says the author, "that empiricism and speculation need to be supplemented one by the other." To supply just such a need existing in that branch of technology known as "mechanics" Dr. Kapp has written the present work. Believing that man, by the work of his hands, has translated the unknown forms, the hidden functions, and the normal proportions of his bodily members, it has been the author's aim to show in these pages the state of mechanism arrived at by following organic models as well as an understanding of the human organism by means of mechanical contrivances, as the only way possible of obtaining a knowledge of the "limits of human activity." It would be impossible in a short notice like this to follow, step by step (or even outline), the arguments by which the author reaches his conclusions, and we must therefore be content to simply call the attention of our readers to this book as an important contribution to German scientific literature, which we hope some enterprising publisher will put forth in an English dress, so that every one interested in such subjects may enjoy it.

A DIGEST OF THE LAW OF TRADEMARKS. By Chas. E. Coddington, Counselor-at-Law. Ward & Peloubet, publishers, New York City.

This volume contains a digest of all the reported and a few of the unreported adjudications in the courts of the United States, Great Britain, Ireland, and Canada, and of the principal decisions in the courts of France; the treaties between the United States and Foreign Countries; the statutes of the United States concerning trademarks, and the rules and forms of the United States Patent Office for their registration. The volume supplies a long felt deficiency, and will prove of much value to the legal profession.

THE APPLICATION OF ELECTRICITY TO RAILWAY WORKING. By William Edward Langdon. Macmillan & Co., publishers, New York City. Price $1.75.

The object of this work, says its author, is to set before each and all alike not merely the uses to which electricity may be applied in the advancement and for the protection of railway traffic, but also the rules and principles which should regulate its practice. The volume is divided into three divisions, namely, speaking telegraphs, block signaling, and miscellaneous appliances. Under the first heading are chapters on signaling instruments and regulations governing their use, single line working and supervision and circuit arrangement. The various systems of block signaling are taken up in turn, the information being carried down to the latest dates, and finally, under the last heading above noted, are considered signal repeaters, interlocking levers, bells, indicators, and train intercommunication. The author writes clearly, explaining with much care and perhaps with even more detail in elementary matters than might be looked for. There is a profusion of engravings and an appendix of forms, relating, however, to English practice.

Messrs. N. W. Ayer & Son, advertising agents, of Philadelphia, Pa., issue a manual containing carefully prepared lists of leading daily, weekly, and monthly papers, and a large amount of information valuable to advertisers and business men.

Annales des Ponts et Chaussées, Paris. December, 1877.

The December number of this publication, just received, in no respect falls short of its predecessors in the value of its contents to the engineering profession. The Mémoires contained in the present number are: No. 66, calculations of the strength of metallic girders supporting road-bridges; No. 67, on the conditions regulating the establishment of railways for small traffic; No. 68, report of the committee appointed to pass opinion on a new process for purifying the sewage waters of Reims; No. 69, on canals. The latter half of the publication is devoted to new laws and legal decisions that are of interest mainly to French engineers.

ECONOMIC MONOGRAPHS. G. P. Putnam's Sons. 1878. No. II. The Silver Question, by David A. Wells. No. III. The Tariff Question, by Horace White.

The able views held by these two distinguished authors, being well known to the public, need not be repeated here. These little monographs are a model of typographical neatness, and are put forth in a very convenient form for reference.

Rivista Europea—Rivista Internazionale. Florence (Italy), January, 1878.

The present number of this able Italian review contains, as its initial article, one of especial interest to scientists, entitled the "Trial of Galileo Galilei." The remainder of the periodical is devoted to literature and European politics.

The Princeton Review. January, 1878.

The present number of this review makes its appearance with the following table of contents: Divine Retribution; The Church and Civil Law, in Scotland and America; the Eastern Problem; Catholic Elements in Presbyterianism; Christian Theology in its vital form and positive Attitude; Genuineness of the Pentateuch; Evolutionism respecting Man, and the Bible; Conditions of Successful Prayer; Contemporary Philosophy—Historical; Materialism and the Pulpit; Casuistry—Theological and Legal. In the article on "Evolutionism respecting Man, and the Bible," Dr. Duffield in a temperate manner discusses the question: "Is evolutionism, as it respects man, consistent with the Bible?" Taking issue with the eminent scientists, both Romanists and Protestants, who maintain that in evolutionism there is nothing hostile to the system of truth revealed in the Scriptures, he discusses the subject in all its bearings and deduces the conclusion that "it is not only inconsistent with the Scriptures as to man's origin, the nature of sin, and man's original and present spiritual condition; its teaching as to the future of the human race is alike irreconcilable with the teaching of the Scriptures as to the way of man's salvation, its nature, and man's destiny." In concluding his remarks he makes the following disposition of those who differ in opinion with him on this subject: "If the development theory of the origin of man shall in a little while take its place—as doubtless it will—with other exploded scientific speculations, then they who accept it with its proper logical consequences will, in the life to come, have their portion with those who, in this life, 'know not God and obey not the gospel of His Son.'"

Notes & Queries

(1) B. A. W. asks: 1. What thickness of lead and copper plate, and what sizes, will be required in a small battery (for silver and nickel plating)? A. The lead plate may be 1/16 inch or less in thickness; copper, 1/4 inch or less. Use three cells, exposing about 200 square inches surface of zinc; plates about six inches square will answer. 2. Will common bar lead, melted and moulded, and stove zinc answer? A. Yes.

(2) M. S. asks: How can I make glass and tin adhere firmly together, so as to hold oil without leaking after awhile? Oil will work through almost anything. I have tried plaster of Paris, a number of cements and other mixtures, but without success. A. Try the following: Soak isinglass in water till it is quite soft; then dissolve it in the smallest possible quantity of proof spirit over a hot water bath; in 2 ozs. of this dissolve 10 grains of gum ammoniacum, and while still liquid add half a drachm of mastic dissolved in 3 drachms of rectified spirit; stir well together and use warm. 2. Add softened gelatin to about one half its weight of hot glycerin. 3. Gum shellac dissolved in a concentrated hot aqueous solution of borax; concentrate by evaporation. 4. Slake caustic lime with a little boiling water, beat it into a paste with white of egg or blood, and use immediately. Paper pulp may be added to the first three cements.

(3) W. C. A. writes: 1. Can you give some simple process of preparing the inside of oak casks, so that they will not color white liquor—spirits or gin? A. Gelatin or fine glue solution has been used for the purpose. 2. Spirits spilled on oiled or varnished furniture leave a milk-like stain. What will take it out? A. Rub with a little moist tripoli on chamois skin, and then with a drop of oil.

(4) F. W. S. asks: 1. What are rum, brandy, and whisky made from, and how? A. Rum is the spirit obtained by distillation from the fermented skimmings of the sugar boilers, molasses, the juice of the sugar cane, etc. Whisky is nominally the dilute spirits obtained from the distillation of fermented wort of malt or grains, potatoes, etc. Pure brandy is the spirit obtained from the distillation of wines. 2. How are herb extracts made? A. Extracts are usually obtained by heating or boiling the substances repeatedly with water (in some cases with dilute spirit) and rapidly evaporating down the several liquors obtained (after allowing to stand a few hours and straining through flannel) over a water or steam bath. See p. 286, Cooley's "Cyclopædia of Receipts and Processes."

How can blades cut out of iron be tempered to fine steel, so as to take and retain good cutting edge? A. If soft, by packing in a tight earthen box with fine charcoal, made into a thick paste with molasses, and exposing to a dull red heat for a week, re-heating, rolling, and quenching in cold water.

What chemical will rapidly destroy wood? A. A mixture of potassium chlorate and nitric acid, or of chromic acid and oil of vitriol.

What will eradicate the taint of coal oil from pewter, tin, or other metallic vessels? A. Hot soap and water; naphtha; carbon disulphide.

(5) E. E. M. asks how the musical tones are produced by common glass tumblers partly filled with water? A. By striking their rims with a little mallet or hammer, well padded with chamois leather; or by drawing a well rosined bow over their rims. A sufficient quantity of water is poured in each glass to give it the desired tone.

(6) C. E. H. asks whether there is any accepted standard pitch of screw threads for general brass-fitting work, such as glass gauge fittings, marine cocks, etc.? A. For brass nozzles, pipe couplings, and faucets there is. For general brass work the thread pitch is finer than for iron or steel work.

(7) C. A. T. writes: 1. I have a helix 8 inches long, containing 200 feet of No. 18 wire. What size and length of wire shall I use for the secondary coil? A. Use 1 lb. of No. 40 copper wire—silk insulation. 2. Whose battery will give the greatest shock? A. Daniell's—use two cells. 3. Does a secondary coil weaken the power of the helix for making permanent magnets? A. Yes. 4. I made a porous cup of white pine wood, 3/32 inch thick. It was a failure. Why? A. It opposed too much resistance to the passage of the electric current through the solutions of the battery.

(8) H. H. asks: Will paper macerated with nitric and sulphuric acids explode like gun cotton? A. Good unglazed paper, exposed for a few minutes to the action of a mixture of about equal parts fuming nitric and sulphuric acids, thoroughly washed in water made slightly alkaline with soda, and dried, has the composition and properties of gun cotton.

(9) J. O. K. P. asks: Can you give me recipes for colored fires, such as used for theatrical purposes, which will not emit noxious fumes? A. The powerful light from large oxyhydrogen lamps (calcium light), colored by the interposition of suitably stained glasses or gelatin films, is now generally substituted, and gives much better results.

(10) J. W. asks for a recipe for a waterproof dressing for leather or dry hides? A. Add to a boiling solution of common yellow soap, in water, solution of alum or alum cake (sulphate of alumina) as long as a separation of white alumina soap takes place; allow the precipitate to subside, wash it with hot water, heat moderately for some time to expel adhering water, and dissolve the semi-transparent mass in warm oil of turpentine. The solution may be applied by brush or by dipping and rolling. Oil and colors may be added to the bath and the substance dried in the air, or more rapidly in a drying room at 90° to 100° Fah., with care to prevent fire.

(11) E. L. R. writes: I have constructed one of Hill's gravity batteries, and it is imperfect. I get about as strong a current from one cell as from twelve. The zinc is from the ends of matting, and the hangers of brass 1/4 inch wide, 1/8 inch thick, No. 16 gauge, insulated with a thin coat of gutta percha. The battery is charged with 1/2 lb. sulphate of zinc and 1/2 lb. sulphate of copper to half a gallon of water. With a soft iron magnet one cell produces a current strong enough to hold 3 1/2 lbs., and the twelve cells are only able to sustain about 4 lbs. Where is the trouble? A. It is very likely that your zincs contain lead, and as this will cause local action, and interfere with the current of electricity produced by the battery, it would be advisable to procure new zincs. It is also possible that the wire that is wound on your electro-magnet is too coarse, and therefore has too little resistance for an intense current, such as is produced by a number of cells.

(12) J. M. G. asks: Is there a chemical process known by which the spectrum of a burned flower may be "raised from its ashes?" A. Moisten the ashes with a little pure hydrochloric acid and glycerin, gather a little on the loop of a thin platinum wire and expose it to the hottest part of the flame of an alcohol or Bunsen gas lamp, at the same instant viewing the flame through a good spectroscope.

Is there a cement by which a piece of ivory can be cemented to brass or steel? A. Melt together equal parts of good pitch and gutta percha; use hot.

(13) H. S. writes: Can you give me a recipe for making hair dye such as is used in barber shops? Also, a wash or solution which is used before and after dyeing the hair, mustache, and beard, and directions how to use it? A. Cleanse the hair with dilute ammonia water. Then moisten it uniformly with dilute solution of gallic acid or ammonium sulphide, and go over it with a comb moistened with solution of one part nitrate of silver in nine parts of water, touching the scalp as little as possible. Stains may be removed by applying a little dilute solution of iodine in iodide of potassium dissolved in water, and then with solution of sodium hyposulphite.

(14) H. E. E. says, in reply to W. B. H., who asks for the best process for tempering mainsprings for gun locks, and for best steel for that purpose: I have obtained best results with fine cast steel, being careful not to heat above a dull red in hammering as well as in hardening; quench in lukewarm water, then smoke the spring in the blaze of a lamp or resinous wood until it is very black, and heat gently until the soot burns off.

(15) A. J. asks: How long does it take a signal to pass from America to Europe by marine telegraph? A. About 1/4 of a second.

Was the paper money issued by the Continental Congress ever redeemed? A. No. In 1781 the depreciation was in the ratio of 200 and 500 to 1, and in that year all former tender acts were repealed.

(16) J. D. R. writes: I have read that the Continental Telegraph Company were about to use a combination of the Morse instrument and the telephone. Is such a combination possible? A. The combination refers to the use of the two systems of communication, not to a combination of the two instruments.

(17) G. W. R. asks: 1. Is the Atlantic cable laid in pipe through the ocean? A. No. 2. If not, how is it laid? A. It is protected by an armor of heavy

iron wire wrapped around it, and resembles a solid rope of wire.

Is there any known thing that travels faster than light, and what is its rate? A. Lighttravels through space at the rate of 192,000 miles in a second of time. According to Wheatstone static electricity travels along a copper conductor at the rate of about 288,000 miles in a second; but Fizeau's experiments make it 112,680 miles per second, and Walker's only 18,000; while subsequent investigation points to still lower figures—perhaps even only 3,000 miles per second. The matter is still in dispute.

(18) P. S. S. asks: How can I bronze gun barrels? A. See SCIENTIFIC AMERICAN, vol. 36, p. 203, (36).

How can a name be copied from type so as to make a hand stamp? A. By driving the type into wet blotting paper; when the paper is dry, it is removed from the type, and may be then used as a mould, from which a casting may be taken by pouring melted type metal over that surface of the blotting paper which was against the type.

(19) R. B. R. writes: I have a varnish cask, copal or shellac, which I wish to use to make a filter for drinkingwater, but I cannot remove the smell and taste of varnish. How can the difficulty be overcome? A. Fire the inside, and choke the flame by inverting or covering it after a few minutes, or as soon as the wood begins to char.

(20) J. W. D. asksfor a recipe for a cheap jet black for leather. A. The iron-logwood preparation is cheapest, and for ordinary work gives the best satisfaction. You may try the following: Go over the work with hot argol water, then apply a strong hot solution of bichromate of potash in slight excess, and immediately afterward hot logwood solution. A trace of indigo extract may be added to the logwood to correct any reddish cast.

(21) T. A. J. asks how to copperplate steel knives. A. Dissolve about 1 oz. of sulphate of copper in 1 quart of rain water, and to this add a solution of 3 ozs. of cyanide of potassium in 1 quart of rain water; stir the two solutions, and add 2 ozs. of ammonia water. This is called the "bath," and the articles to be plated are first thoroughly cleaned, then connected by a wire with the negative or zinc pole of the battery, and a sheet of copper is similarly connected with the positive pole of the battery, and both placed in the bath, facing but not touching each other.

(22) S. W. T. asks: What paste is best for pasteboard? A. An excellent paste for this and similar purposes is made as follows: 4 parts, by weight, of glue softened in 15 parts of water, then heat with the water until a clear solution is obtained, and add 65 parts of water with stirring. Mix 30 parts of starch with water to a thin milk, and stir this into the glue solution, and keep the mixture at the boiling point for a time. Stir in a few drops of carbolic acid, and store in covered vessels to prevent loss of water. It will not sour.

(23) J. R. E. asks: How can I find the north pole of a permanent bar magnet, without using another magnethaving its poles marked? A. By noticing the direction in which it settles when suspended by a silk thread about one yard long; one end of the thread being tied around the middle of the length of the magnet, and the other end held in the hand. The end of the magnet which points to the north pole of the earth is in this country called the north pole of the magnet; but in France it is called the south pole, reasoning from the fact that unlike poles attract.

(24) C. R. asks: 1. What liquid is used in connection with silver solder for brazing band saws? A. A saturated solution of bi-borate of soda in rain water. It is used simply as a flux to dissolve the oxide of the heated metal. 2. Can copper be used in place of silver solder with as much success? A. It is liable to make the joint brittle. The best of materials should be used in making this joint.

(25) D. C. W. writes: 1. I made a telephone having a bar magnet woundwith ¼ lb. cotton-covered wire, and a tintype plate for the diaphragm. The plate is $\frac{1}{100}$ inch thick, and has some kind of varnish on it. The apparatus will not work. Is the trouble in the wire, magnet, or plate? A. The principal difficulty is probably in the difference between the resistance of the wire on the magnet of your instrument and that on the magnet of the instrument at the other end of the line. The resistance of the wire on the magnet of each instrument—that is, in one circuit—should be equal. 2. The magnet will hold ½ oz. Is that strong enough? A. Hardly.

(26) R. F. S. writes: A friend of mine says that Damascus gun barrels are not made out of Damascus, and I claim that they are. Who is right? A. Whatareknown as Damascus gun barrels are made in England, Belgium, and other countries. The Damascus system is that of twisting square bars, forging them square again, re-twisting and re-forging, and so on; continuing the process as often as required to produce a given quality. This process refines the metal all through, the steel that has at any part of the process formed the corners of the bar being refined by forging.

(27) D. H. asks for a recipe for a cement, to be used cold, for leather; with the requisites of strength, elasticity, and resistance to moisture. 1. Dissolve good glue, previously softened in cold water, in strong acetic acid, over a hot water bath to a thin paste. Strong, but requires several hours to harden. 2. Melt together equal parts of good coal-tar pitch (not tar) and gutta percha; mix well and use hot. Very strong, elastic, quick setting and waterproof. It may be softened with naphtha and used cold.

(28) I. H. B. asks: What is the philosophy of the air chamber on the suction pipe of a steam pump? A. It acts very much on the same principle as the chamber on the delivery pipe, diminishing shocks that would otherwise be produced by suddenly stopping the column of water, and tending to cause a uniform flow.

(29) A. F. asks: Can a ½ inch pipe (80 lbs. pressure) furnishsteam enough for a cylinder 3½ x 4½, 225 revolutions, to make 3 horse power? A. It is rather small. It would be better to use a ¾ inch pipe.

(30) D. E. J. writes: I have an engine with cylinder 3 inches diameter and 6 inches stroke, which I intend putting in a boat 15 feet long and 5 feet beam. I shall use paddle wheels, and gear the engine 3 to 1. I intend making a tubular boiler 14 inches diameter and 3 feet long, with 40 tubes 1 inch in diameter, having the draught running the whole length of the boiler, and returning to the smokestack at the forward end of the boiler. With this arrangement, will the boiler be large enough to keep up steam to run the boat 4 miles an hour? A. By using a forced draught, such as can be produced by exhaust steam, probably the boiler will answer.

(31) G. M. H. asks: 1. What sort of steel should I use tomake dies for cutting stencil plates? A. Weld Jessup's steel to a wrought iron backing. 2. How should the dies be tempered? A. To a deep yellow.

(32) Z. F. asks how to face grindstones after they are hung. A. Run them dry at a slow speed, and turn them with a piece of 1½ inch gas pipe.

(33) W. F. C. S. writes: I have a fan, the speed of which I wish to double. Will it require twice or four times as much power to run it at the double speed? A. It will take about eight times as much power.

(34) G. A. E. asks: 1. How can the tone of a tuning fork be altered? A. By changing the length, thickness, or width of the prongs. 2. Will the tone of a tuning fork remain the same after years of use? A. When used with care a tuning fork does not change materially.

(35) F. M. suggests that A. H. J. (p. 75, current volume), whose stove pipe acts as a pyroligneous distilling apparatus, should fit the joints upside down, so that the drops will fall within the pipe instead of outside, and that the standing part should slant a little.

(36) W. F. L. writes: I wish to cement an iron to the under side of the bed-plate of a sewing machine to strengthen it. How can it be done? A. One of the best cements for this purpose is composed of melted rosin and plaster of Paris, thinned with boiled oil, and applied warm. The surfaces should be cleaned before application. A few screws or rivets would, however, be preferable to any cement.

(37) A. H. L. asks: What is the method of calculating the chronological cycles, as given in the almanacs? A. The rule for finding what position any given year occupies in the solar cycle is as follows: Add 9 to the date, and divide the sum by 28; the remainder is the year of the cycle, and the quotient is the number of cycles that have elapsed. If there is no remainder the given year is the 28th of the cycle.

(38) H. W. asks whether a square foot of surface near the axle of a windmill exerts more or less power than a square foot at the rim? A. The portion near the periphery is most effective, in windmills, water-wheels and fans.

(39) C. J. M. writes: I have a Bell wire passing over my house, in which the current is reversed at each stroke of the bell. How can I complete a local circuit, without cutting the Bell wire at each stroke of the bell? A. By tapping the main line as follows: Make a metallic connection between one end of a wire and the main line of the Bell circuit, and connect the other end of the wire with one of the two main line binding posts of a relay, and connect the other main line binding post with the earth. If the Bell circuit belongs to other persons, itis unlawful for you to do this.

(40) I. H. asks: 1. Can ice be made thick by pumping water upon it after the pond has frozen over? A. Yes, in some cases; but ice obtained in this way is not very homogeneous. 2. What will be the best method of flooding, so that the ice will not be cut through where it falls from the spout? A. The water may be supplied by a number of pipes, wide planking being laid on the ice in the immediate vicinity to avoid rotting it.

(41) F. A. P. writes: I am casting plates of bent form, which are required to be hard. I have been unsuccessful in chilling them; have greased the mould and heated it before pouring in the metal; imperfect castings always result, the plates being thinnerat some places than in others, and cracking in cooling. What is the trouble A. Probably you do not use a proper mixture of iron. Try pouring the metal through several gates, placing them where the castings are apt to crackor cast too thin.

(42) R. L. E. asks how to temper gun springs. A. Heat them evenly to a low red heat in a charcoal fire, and quench them in water with the cold chill off, keeping them immersed until reduced to the temperature of the water. Place an iron pan containing lard oil and tallow, in about equal quantities, over a fire, and place the springs therein, and heat the pan until its contents take fire; then hold the springs in the flames, turning them over and over and dipping them occasionally in the oil to keep them blazing; when the oil adhering to them blazes freely when they are removed from the flames, place them aside to cool off.

(43) J. M. K. asks: 1. Is there a cheap gum which would mix with castor oil to put on belts to prevent slipping? A. The best remedy for a slipping belt is to increase its width, run it over larger pulleys, or cover the pulleys with leather or rubber. There is no preparation to prevent slipping which is cheap in the end. 2. Would itbe advisable to run a circular saw, 36 inches in diameter and scant ⅛ inch thick, with flanges 14 or 16 inches diameter, ¾ inch thick at center, and tapering to ¼ inch at rim; would the friction between the lumber and flanges be too great? A. The idea does not appear practicable.

(44) S. W. M. writes: I send herewith a root used as a catarrh remedy. What is it? A. The root is galangal. It comes from the East Indies. It contains a volatile oil, an acrid resin, gum bassorin, lignin, and extractive starch and fixed oil, and a crystallizable body called kampferid. The active principles are the volatile oil and resin. It acts as a stimulant aromatic. It is of small value and seldom employed. It can be bought in the market for 15 or 20 cents a pound.

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

H. D. C.—It contains, besides calcium sulphate (plaster of Paris), glue or size, alum, lime, and whiting or chalk.—S. B.—Chlorite—hydrous silicate of magnesia and alumina, colored with oxides of chromium and iron. Not metalliferous.—E. G.—Rich lead sulphide ore (galena).—W. P.—The rock contains traces of lead, zinc, and iron sulphide.—A. H.—Argillaceous red sandstone.—P. S.—It is zircon-syenite. The red crystals are zircon, a silicate of zirconium.—L. W. J.—The gravel does not contain appreciable quantities of precious metals. The red pieces are jasper.

HINTS TO CORRESPONDENTS.

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 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.

OFFICIAL.

INDEX OF INVENTIONS

FOR WHICH

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

January 15, 1878,

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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