

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

E. W. D.—Consists principally of orthoclase, quartz, and hornblende.—E. A. H.—No. 1 is chert or flint. It is not a quartz pseudomorph after wood, as supposed. No. 2 is anhydrite. No. 3 a limestone somewhat resembling that used for lithographic purposes. No. 89 is calcite. No. 300. The fossil shell was too mutilated for classification. No. 11 is an impure limestone. No. 173 is orthoclase containing seams of muscovite. No. 214 is calcite colored with iron. No. 194. These fossils will be referred to hereafter. No. 83 is a specimen of an extinct genus of the family Malloacea, of which the genera Avicula, Perna and melegrina are representatives.—W. P. E. and J. E. H.—It is the pollen of the common white pine (Pinus strobus).—S. S.—It is principally ferrous sulphate and alum.—A. M. K.—It is iron sulphide and arsenide—mispickel.—G. M. H.—It is nodular iron pyrites.—L. S. S.—No. 1 is hornblende and quartz. No. 2 is hornblende schist, containing ferropyrrite with a trace of nickel and arsenic.—J. L. F.—It is chalcedony—a variety of quartz.—G. H. M.—It contains iron sulphide and copper sulphide—chalcocopyrite. The ore may be of some value.

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Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here.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

May 21, 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.

Table listing inventions such as Amalgamator, Hobart & Steward; Animal trap, G. W. McMillan; Animal trap, S. Snell; Auger, well, J. T. Glass; Awning, J. Koenig; Bag holder, J. L. Conway; Balance, compensation, C. V. Woera; Barrel, L. L. Hansen; Batting or wadding, folding cotton, W. Lewis; Bed bottom, M. Stansel; Beestead, invalid, J. Goodwin; Beehive, O. Colvin; Beehive, I. Parke; Beehive, G. S. Walton; Belt, endless carrying, T. M. Healey; Belt, electro-galvanic, H. E. Jacobsen; Belting rubber, H. R. Barber; Bending machine, sheet metal, W. T. Holland; Bending plumbers' traps, E. A. Leland; Bird cage, E. Weissenborn; Blackboard, H. W. Eastman; Blanks, arranging, Deikscamp & Bradley; Blower, fan, R. Waskey; Boiler covering compound, G. C. Fowler; Boiler, steam, B. T. Babbitt; Bolt and nut, H. A. Harvey; Bolt heading machine, C. B. Allen; Boot and shoe burnishing machine, C. J. Aday; Boots, manufacture of, Miller & Creighton; Bottle stopper, D. E. Stevens; Box fastener, O. Geier; Braoelot fastening, L. Van Praag; Brake for elevators, C. H. Mitchell; Bridle and halter, J. McKibben; Bronzing machine, J. O. Kurtzmann; Bung stove lock, J. Kirby; Button, D. B. Waite; Can, jacket, F. C. Wilson; Can or vessel for liquors, J. P. Adams; Candle, electric, L. R. Longworth; Canister, E. Norton; Car coupling, A. Elliott; Car coupling, J. H. Hills; Car coupling, link guide for, A. M. Miller; Car heater, W. M. Jackson; Car, railway, R. L. & C. W. Dabney, Jr.; Car transfer apparatus, R. H. Ramsey; Cars, motor for street, J. F. Kelley; Carpet cleaning machine, J. Rae; Carriage loading device, H. Watkeys; Carriage package, J. W. Frazier; Cement, making hydraulic, C. F. Dunderdale; Chair attachment, rocking, J. Zangerle; Chair, barber and dental, G. W. Archer; Checking apparatus, J. Casey; Cheese vat, Smith, Freeman & Burrell; Cheroot machine, A. & J. Marengo; Churn, L. Cutshaw; Churn motor, G. W. Jones; Churn motor, W. A. Morgan; Cigar box, S. H. Hewlett; Cigar tip cutter, G. Ohmer; Cigars, apparatus for bundling, W. A. Abbott; Cigarette for medical purposes, D. Wark; Clothes pounder, G. M. Smith; Coffee, etc., making extracts of, B. Schmitz; Coffee roaster, J. Miller; Column, fire proof, P. B. Wight; Condensing vessel, E. D. Bangs; Copperas, red colors from, W. Peterson; Cordage, exhibitor for, H. E. Richards; Corn shellers, cob elevator for, H. H. Eby; Corsets, manufacture of, A. Feltheimer; Curtain roller and bracket, Buckley & Sawyer;

Table listing inventions such as Cutlery, table, E. Cady; Dental gold filling, E. G. & L. Kearsing; Dental tool, E. T. Starr; Derrick, wagon, J. D. Winters; Desk, school, J. P. Pies; Dough, preparing, M. Meinhold; Draught equalizer, M. A. Andrews; Drawer support, J. W. Dane; Dreager, vacuum, A. Crosby; Drying machine, G. N. Bliss; Earth closet, R. W. Riddle; Educational appliance, C. A. Bailey; Egg tester, C. L. Westerman; Electrical conductors, tip for, J. A. Nickerson; Elevator boot, Caldwell & Watson; Elevator, grain, O. D. Spalding; End gate, wagon, S. W. Perkins; Engine, steam, J. Baird; Engine, wind, L. Brayman; Engine, wind, J. Hollingsworth; Engraving block, G. C. Setchell; Exercising machine, W. H. Willcox; Fare register, J. Bluemel; Fence post, Canedy & Leach; Fence wire, W. C. Payne; Filter, drive well point, M. J. Eich; Fire escape, J. M. Lescale; Flower vase, F. Ratcliff; Fly trap, D. S. Kilder; Fork, horse hay, J. H. Harter; Fountain, drinking, J. Reid; Fruit basket, A. P. Gibson; Fruit box, A. P. Gibson; Funnel, self tapping can, A. W. P. Ladd; Furnace for desulphurizing pre. C. Olsted; Furnace, heating, D. L. Jaques; Gas apparatus, H. D. Fitch; Gas apparatus, J. Hanlon; Gate, A. B. Clayton; Glass, ornamenting, Cochum & Herrmann; Glove, corn husking, C. M. Townsend; Glucose, manufacturing, N. Pigeon; Grain drier, P. Provost; Grain masher, L. A. De Lime; Grain separator, T. Barnes; Grain separator, C. Wood; Graining machine, G. Pelstring; Halter, Puller & Warren; Harness attachment, T. B. Hand; Harness, metal loop for, D. A. Johnson; Hatchway, elevator, J. A. Marker; Hay feeder, S. Perry; Heel and sole trimming machine, J. H. Busell; Hinge, J. A. House; Hinge, W. S. Mains; Hoop machine, G. B. Selden; Hop picking machine, H. H. Hatheway; Horse collar, metallic, J. C. Smith; Hot air, utilizing, S. C. Salisbury; Hub attaching device, J. C. Hendry; Hydrocarbon generator, etc., C. Holland; Hydrocarbon generator and lighter, C. Holland; Hydrocarbon vapor generator, etc., C. Holland; Hydrocarbons, extracting, W. Adanson; Indicator for steam engines, pressure, J. Rae; Indicator, station, S. W. Colton; Inkstand, F. Klingspor; Iron, etc., melting and treating, G. W. Swett; Ironing table, A. T. Gale; Knapsack, H. C. Merriam; Knife, hay, D. L. Garver; Knife, paring, J. M. Wilhelm; Labels, etc., machine for counting, C. E. Sawyer; Lamp, fire escape, J. J. Lucas; Lamp, B. B. Schneider; Lamp, D. Whiteford; Last blocks, trimming, J. C. Kingston; Lathe for turning masts, etc., H. Kean; Lead cutter, Philippo & Owen; Leaf turner, Vincent & McMillan; Leather, etc., coloring and sizing, E. Andrews; Letter sheet and envelope, C. L. Riker; Lock, J. Klinzing; Lock for doors, extension, J. Moore; Lock, sash, G. B. Sarchet; Lock, seal, E. J. Brooks; Loom, H. D. Davis; Lubricant, C. Johnston; Lubricator, vehicle axle, L. Espenschied; Lumber-drying apparatus, R. P. Johnson; Medical compound, C. C. Wainwright; Milk, vessel for setting, J. W. Powers; Mill, grinding, J. Mills; Mill, grinding, A. N. Wolf; Millstones, device for leveling, etc., J. T. Beckwith; Moccasin, J. G. Pitts; Mouldings, machine for veneering, J. A. Dayton; Needle wrapper, B. M. Thomas; Netting, machine for making, W. J. Squire; Newspaper wrapping, etc., machine, P. A. Chaifant; Nut lock, R. Ely; Oils, extracting, Adanson & Simonin; Ore separator, P. Plant; Ore washer, C. O. Bagley; Organ stop action, G. R. Ellis; Organs, tremolo attachment for, J. H. Potter; Overshoes, attachment to rubber, J. W. Baker; Painting canvas, machine for, W. Levin; Paper and other fabrics, pasting, J. Callier; Paper box, G. A. Dunn; Paper cutting machines, drum for, W. E. Hudson; Paper felt and other fabrics, finishing, W. Seranton; Paper or cloth, finishing surfaces of, C. E. Sawyer; Paper pulp from wood, manufacture, W. R. Patrick; Paper pulp, preparing wood fiber for, J. C. McIntyre; Paper weight and copy holder, D. Zimmer; Pen holder, J. Hoffman; Pen, writing, L. B. Bertram; Piano forte, C. F. T. Steinway; Piano forte reaction, C. F. T. Steinway; Piano forte agraffe, C. F. T. Steinway; Piano forte, grand, C. F. T. Steinway; Piano fortes, capodastro frame, C. F. T. Steinway; Piano fortes, sounding board, C. F. T. Steinway; Pin, brooch, J. Jenkins; Pipe, cement and asphaltum, M. Allen; Pipe joint, water, F. P. Hallberg; Planing machine, J. B. D. Leavitt; Planter, corn, G. W. Brown; Planter, corn, D. & D. F. Luse; Planter, corn, A. & M. Runstetler; Planter, cotton, W. S. Turner; Planter, seed, W. C. Smith; Plow stock, I. J. Saunders; Plow, sulky, J. B. Fisher; Plow, sulky, W. C. Rogers; Press, baling, J. R. Blossom; Press, shingle, R. A. Stahn; Propellers, bearing for screw, J. Baird; Pump, J. S. Beal; Pump, T. Dowling;

Table listing inventions such as Pump for oil wells, steam, H. W. Faucett; Railway crossing, J. H. Sparkes; Railway, portable, N. W. Condict, Jr.; Railway track, portable, N. W. Condict, Jr.; Rake, hay, A. Rigby; Refrigerating milk wagons, P. T. Weir; Rice hulling machine, W. C. Howard; Rivet, M. Bray; Rivets, machine for inserting, T. Boardman; Rubber for canal boats, J. Supple; Saddle, harness, Standish & Bailey; Salve, J. G. Muller; Sash fastener, J. M. Keech; Sash, window, I. T. Dyer; Saw grinding machine, S. Bevan; Saw mill carriage, H. Groves; Scales, weighing, F. Fairbanks; Scoop, A. Button; Screw cutting die, Grant, Sawyer & Gardner; Screw cutting die, G. R. Stetson; Screw machine, metal, C. D. Rogers; Screw threads, die for cutting, M. C. Johnson; Sewing machine, J. L. Follett; Sewing machine tuck creaser, I. M. Rose; Shafts, bearing for rubroll, D. Hyde; Ships, construction of, J. Rees; Shirt, P. B. Pickens; Shoe tip, J. W. Hyatt; Shovel, fire A. Bardell; Shutter bower and fastener, T. B. Rogers, Jr.; Slate cleaner, reservoir, A. W. Overbaugh; Soap, A. H. West; Sower, fertilizer, C. F. Johnson, Jr.; Speed recorders, mechanism for, W. W. Wythe; Spinning machinery bearings, F. J. Rabbeth; Spring, wagon, W. L. Williams; Square, dressmakers', J. F. Wingate; Stamp, hand, B. B. Hill; Stamp, hand canceling, B. T. Hill; Stamp, rubber pocket, S. W. Garrison; Stencil plate, A. C. Barnes, Jr.; Stone polishing machine, Pitkin & Dougherty; Stove, camp, L. P. Vollbrecht; Stove, cooking, D. Stuart; Stove or lamp, oil, E. Blackman; Stove shelf, G. W. Robertson; Strainer, milk, H. More; Street sweeping machine, H. W. Richardson; Stud, shirt or sleeve, Salmon & Delaviere; Suspensory bandage, S. E. G. Rawson; Syringe, flexible, M. Mattson; Tablets, cover for holding, H. Willson; Tanks, man hole cover for oil, W. H. Brock; Tanks, man hole cover for petroleum, W. H. Brock; Tassel, V. Offer; Tea case, J. A. Anderson; Telephone, speaking, W. Gillett; Telephone, speaking, E. Gray; Telephone, speaking, J. J. McTigue; Tempering & lubricating, composition for, J. Park; Tiles, machine for making, etc., A. H. Austin; Time detector, watchman's, J. C. Marvil; Tobacco, device for marking plug, H. C. Holbrook; Tobacco germ, J. Woods; Tongue and thill support for vehicles, O. P. Tripp; Toy bank, D. J. MacLean; Track cleaner, W. T. Gruntler; Track clearer, G. Royal; Trading pit, R. S. Jennings; Tree protector, T. Doak; Trunk fixture, C. A. Taylor; Trunk, sectional, F. Van Sieten; Truss, M. M. Macdonald; Twine holder, J. Hill; Underdrain, W. Henning; Valve for hydrants, etc., P. H. Donahoe; Valve, puppet, H. F. Frisbie; Valve, steam, J. Saunders; Vegetable cutter, J. L. Boyle; Vehicle, side spring, A. Wood; Velocipede, S. P. Watt; Wagons, netting for unloading, J. D. Winters; Wash bench, C. Barlow; Wash boiler, J. J. Hall; Washing machine, C. & A. W. Guyer; Washing machine, Hess & Newton; Waste trap, D. Healy; Watch, D. A. A. Buck; Watch escapement, D. A. A. Buck; Watch plate, D. A. A. Buck; Watergate or stop valve, A. C. Austin; Water meter, oscillating, A. C. Austin; Water meter, piston, H. L. Arnold; Watermeter, piston, J. Barnes; Water wheel gate, J. S. Ladd; Wheel and axle, car, D. M. Cummings; Whipsocket and rein holder, H. W. Neal; Windlass, wire cable, J. P. Manton; Wire coiling machine, C. E. Green; Wool washing machine, W. H. Bradley; Wrench, carriage, G. W. Remington; Wrench, pipe, D. Fisher; Wringing machine, I. Copeland; Zinc, treating ores of, E. A. Parnell;

DESIGNS. Buckles, E. A. Smith; Clock case, H. J. Davies; Extension lamp fixture, F. R. Seidensticker; Font of printing types, J. M. Conner; Glassware, M. Smith; Parlor stoves, F. S. Bissell; Spoon handles, H. Vasseur; Stoves, W. A. Spicer;

English Patents Issued to Americans. From June 21 to June 25, 1878, inclusive. Canalestick.—V. L'Epplattenaire, New York city. Caustic lime, manufacture of.—A. W. Wilkinson. New York city. Fire and water indicators.—Automatic Safety Co., New Orleans, La. Furnace.—W. F. Nast, St. Louis, Mo. Harness.—B. Rice, Brooklyn, N. Y. Letter holder.—J. T. Foster, Arlington, N. J. Millstone drivers.—W. E. Sergeant et al., Minneapolis, Minn. Musical instrument.—M. J. Mathews, Boston, Mass. Photography.—J. Gurley, New York city. Projectile.—J. G. Butler, West Troy, N. Y.

Advertisements. Inside Page, each insertion --- 75 cents a line. Back Page, each insertion --- \$1.00 a line. (About eight words to a line.) Engravings may head advertisements at the same rate per line, by measurement, as the letter press. Advertisements must be received at publication office as early as Thursday morning to appear in next issue. SEND 20 CENTS BY MAIL AND GET AND NOT WEAR OUT. Circulars sent. J. S. BIRCH & CO., 33 Dey Street, N. Y.

THE GEOLOGICAL ANTIQUITY OF Flowers and Insects. By J. E. TAYLOR, F.G.S. A plain, comprehensive review of the subject, bringing forward many instructive facts; with six illustrations. The invariable correlation between insects and flowers. How they are fossilized. Fossil botany. Geological Evidence of Evolution. Correspondence in the succession of Animal and Vegetable life. Flowers necessary to Insects, and Insects necessary to Flowers. Insects and Plants in the Devonian, the Switzerland Lias, the English Stonesfield Slate, the Tertiary Strata, the Coal Measures, a Greenland, and other formations. A Peculiar Aspect of Evolution. Contained in SCIENTIFIC AMERICAN SUPPLEMENT No. 120. Price 10 cents. To be had at this office and of all newsdealers.

BETON CONCRETE IN ARCHITECTURE and Engineering, with 20 illustrations. Beton Bridge; Eric R. R. Portage Viaduct repaired with Beton; Beton Dwellings and Fountain, Brooklyn, N. Y.; Beton Church; Beton Culvert Lining, Eric R. R.; Beton Arches; Church Tracery, &c.; Beton-lined Railway Tunnels; Beton Pavements; Crushing Strength of Beton; Superior Strength of Beton Arches, etc. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 118. Price 10 cents. To be had at this office and of all newsdealers.

MANUFACTURE OF BESSEMER STEEL and Steel Rails as pursued at the works of Messrs. Brown, Bayley & Dixon, Sheffield. By C. B. HOLLAND. A valuable and instructive paper. Read before the Iron and Steel Institute. With five illustrations: the Plant; the Cupolas; Converters, the Ingot Pit, Blowing Engines, Hydraulic Machinery, etc. Hot Blast; Mode of Working, Improved Manufacture of Steel Rails. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 124. Price 10 cents. To be had at this office and of all newsdealers.

THE PHONOGRAPH AND ITS FUTURE. By THOMAS A. EDISON. The instrument and its Action. Durability, Duplication, and Postal Transmission of Phonograph Plates. The probable great utility of the Phonograph in Letter-writing, Business Correspondence and Dictation; Literature; Education; Law; Music; Oratory, etc. Application to Musical Boxes, Toys, and Clocks. Telegraphy of the Future; the Phonograph and Telephone combined. Being a most interesting and valuable paper by the author and inventor of the Phonograph himself. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 124. Price 10 cents. To be had at this office and of all newsdealers.

THE Scientific American. The Most Popular Scientific Paper in the World. THIRTY-THIRD YEAR. Only \$2.20 a Year including Postage. Weekly. 52 Numbers a Year.

This widely circulated and splendidly illustrated paper is published weekly. Every number contains sixteen pages of useful information, and a large number of original engravings of new inventions and discoveries, representing Engineering Works, Steam Machinery, New Inventions, Novelties in Mechanics, Manufactures, Chemistry, Electricity, Telegraphy, Photography, Architecture, Agriculture, Horticulture, Natural History, etc. All Classes of Readers find in THE SCIENTIFIC AMERICAN a popular resume of the best scientific information of the day; and it is the aim of the publishers to present it in an attractive form, avoiding as much as possible abstruse terms. To every intelligent mind, this journal affords a constant supply of instructive reading. It is promotive of knowledge and progress in every community where it circulates.

Terms of Subscription.—One copy of THE SCIENTIFIC AMERICAN will be sent for one year—52 numbers—postage prepaid, to any subscriber in the United States or Canada, on receipt of three dollars and twenty cents by the publishers; six months, \$1.60; three months, \$1.00. Clubs.—One extra copy of THE SCIENTIFIC AMERICAN will be supplied gratis for every club of five subscribers at \$3.20 each; additional copies at same proportionate rate. Postage prepaid. One copy of THE SCIENTIFIC AMERICAN and one copy of THE SCIENTIFIC AMERICAN SUPPLEMENT will be sent for one year, postage prepaid, to any subscriber in the United States or Canada, on receipt of seven dollars by the publishers.

The safest way to remit is by Postal Order, Draft, or Express. Money carefully placed inside of envelopes, securely sealed, and correctly addressed, seldom goes astray, but is at the sender's risk. Address all letters and make all orders, drafts, etc., payable to MUNN & CO., 37 Park Row, New York. To Foreign Subscribers.—Under the facilities of the Postal Union, THE SCIENTIFIC AMERICAN is now sent by post direct from New York, with regularity, to subscribers in Great Britain, India, Australia, and all other British colonies; to France, Austria, Belgium, Germany, Russia, and all other European States; Japan, Brazil, Mexico, and all States of Central and South America. Terms, when sent to foreign countries, Canada excepted, \$4. gold, for SCIENTIFIC AMERICAN, 1 year; \$9. gold, for both SCIENTIFIC AMERICAN and SUPPLEMENT for 1 year. This includes postage, which we pay. Remit by postal order or draft to order of Munn & Co., 37 Park Row, New York.