receipt for preventing the hair of the head from falling out? Try the following, which has been successfully used: Aromatic spirits of ammonia, two ounces; gly. | the construction of electro-magnets and instruments for cerine and rose water each, two ounces; tincture of can- measuring electrical currents. The work is handsomely tharides, one-half ounce; alcohol, sufficient to clarify printed and is well illustrated. the mixture.

(12) T. N. writes: A friend has a common flat boat, 16 feet wide, 75 feetlong. He wants to run it by steam, with side wheels. Will two common slide valve engine, 71/2 inch bore by 3 feet stroke direct to shaft, turn wheels 12 feet in diameter, 9 inch x 31/2 feet bucket, and run the boat 7 miles an hour? A. Yes; but we think your wheel should not be over 101% or 11 feet diameter.

(13) W. D. K. writes: I have a cistern which does not hold water. Upon letting it get dry it is evident that the leak is not in any one place, but is general by percolation throughout the walls and sides. Will cement remedy this, and if so, which kind is best, and in what proportions of materials? If not by cement how can the trouble be remedied? A. We would advise cementing it over with a cement made by mixing silicate of soda solution to a paste with quicklime.

(14) D. G. P. asks what is the best form of condenser for a steam launch, 30 feet long? What should it be made of-copper or brass? A. The cheapest and lightest form is a keel condenser, that is, a copper pipe outside the boat, fitted alongside of the keel, and running aft from the engine to the stern post, and then returned on the opposite side and the end connected to the air pump

(15) R. asks: Which will be most economical of fuel in driving a 20 ft. catamaran-a screw or paddle wheel; in either case to be placed between the boat, and of course free from dead water: Have plenty of depth of water for screw. A. We are of the opinion that a screw will give the best results, as the weight of the machinery will be less, consequently the boat draws less water than with paddle wheel. 2. What is the best method of feeding a small boiler, i. e, what will be the surest and require least attention? A. There is no mode of feeding that is reliable without attention. It is usual to have two independent means, say a feed pump and an injector.

(16) L. F. writes: In your issue of May 27, 1882. p. 332, the Massachusetts Railroad Commissioners recommend the drilling of the stay-bolts in locomotive boilers, 34 in deep, $\frac{5}{16}$ in diameter. Please inform me what is the return or benefit. A. These braces almost invariably break or crack at the edge of the plate, and by so drilling the braces a break is discovered at once by the leak through the hole drilled in the brace. 2. Why is it in making silver solder we use or combine the two metals, silver and brass, in certain proportions, so the solder will melt at a lower temperature than the article we are soldering? How does the combining the two metals lower the melting point of the composition? A. It has never been satisfactorily explained.

(17) D. & H. S. write: We are using a large quantity of borax for welding cast steel to iron, and we believe that you can tell us the best way to prepare it for application. We now pulverize it by attrition. or | second relates to making moulds and castings, also the perhaps you may say by grinding, and then apply it to galvano-plastic art; the third treats of working metals, the heated metal with a small ladle or spoon, and by such as rolling, drawing, spinning, bending, cutting, this method much of it flows off into the fire, and, as we think, is a waste. Can you tell us of any better method? the decoration of metals, etching, polishing, enameling, If you can so tell ns, we shall be glad to pay you for it. A. Powder your borax in the manner you describe, and heat it is an iron pot gently until it ceases to boil, and and water motors, while the final chapter will treat of then to fusion. Pour it out on a flag stone, and when cool break into pieces and use. In this manner less HAND BOOK OF TENNESSEE. Prepared by need be used. It will not boil upon the metal, and consequently less loss will be incurred.

(18) W. R. asks what makes the rumbling noise in what they call the whistling buoy at Sandy Hook. A. The "whistling buoy," off Sandy Hook, is a heavy shell of iron which takes in air when it is raised by the waves, and when it falls forces the air through a pipe ending with a whistle like a steam whistle. The note of the whistle is very "low.

(19) D. F. writes: I would like to have you decide a point in dispute. I have a tubular boiler which I use for thrasbing from June to October, after which it is laid up. I used to clean it out well, and fill up with clean water, and let it stand so when not in usc. Last winter a boiler maker told me to fill the boiler to the dome with water, then put in 5 gallons of black oil, fire up until I had 20 pounds steam, then blow off slowly. This, he said, left the oil covering the inside of boiler and all the flues. prevented rusting, and took off any scale remaining in boiler. Which is the best plan to adopt? A. Cleaning out and refilling your hoiler was proper as far as it went, but if you did not boil the water it still contained air, which is a source of trouble. If you get up steam with the boiler full and blow a little steam from the safety valve, all the air will blow out, then and low barometer and other meteorological pheshut every outlet tight. You will find your boiler in the nomena upon the interpretation of which our Signal best condition for work at the beginning of the season, Service weather indications are founded; and shows and free from rust inside. This is the universal practice how by a proper study of the weather maps everybody with boilers used for house heating in this climate, where may become usefully weatherwise. there are thousands in use that are steamed only about How TO KEEP A STORE. By Samuel there is any scale-removing virtue in the oil. Tannic acid or a weak decoction of oak or hemlock bark is much used for removing scale where hard water is used.

(11) J. F. S. writes: Please give me a good in separate chapters. The use of electricity for lighting and other purposes also receives proper attention In an appendix the author gives various formulæ for

KATE SANBORN'S SUNSHINE CALENDAR FOR Consists of a pictorial card on which the daily calendar for the year is day. James R. Osgood & Co., publishers, Boston. C. T. Dillugham, agent, 678 Broadway, New York.

NAUTISCH-TECHNISCHES WOERTERBUCH DER MARINE Bearbeiter von P. E. Dabovich. Pola, 1882.

The peculiarity of this new technical dictionary consists in its polyglot character, four languages being represented, viz., German, Italian, French, and English It appears in parts of eighty pages each. The twelfth part brings it to SCH of the first volume, in which German and Italian terms (mixed) lead. while the German words are followed by Italian ones, or Italian by German and both of these by French, and that by English. The different languages are distinguished by the type, Italian and English being in italics of different fonts, French in spaced Roman letters, and the German in plain Roman.

GIORNALE DI ARLIGLIERIA E GENIO. Roma 1882.

We have received part second for May, 1882, of this handsomely illustrated journal. A considerable portion of the plates as well as the letter press is devoted to the application of the electric light to military purposes. This is followed by an illustrated article on the effects of dynamite, and other matters of interest to military men

- JOURNAL D'HYGIENE is a weekly paper published by Dr. Prosper de Pietra Stanta, at 54 Ave. de Wagram, Paris, at 20 Each number francs, foreign 22 francs. contains 16 pages about half the size of these, filled with interesting and useful reading connected with this important subject.
- ILLUSTRIRTES HAND UND HULFSBUCH FUER DEN PRAKTISCHEN METALLARBEITER. Von H. Schuberth. Hartleben, Vienna, Pest, Leipzig: 1882. Illustrated Handbook and Practical Metal Workers' Assistant.

This practical and exhaustive work is intended to cover the entire domain of technical metal working, while the sciences that bear upon the subject are also briefly explained so far as they interest the artisan. The work is issued in parts of forty-eight pages each, ten of which have already been received, and five more are to follow, so that the complete work will consist of seven hundred and twenty pages, illustrated with three hundred wood cuts and fifteen colored plates. Price in Germany, 15 cents per part; \$2.25 for the entire work. The book is divided into six sections, the first being devoted to the metals, their occurrence and preparation, their chemical properties and qualitative tests. The welding, soldering, riveting, etc. The fourth describes varnishing, etc., in the fifth we are to have a description of the motors, including the steam engine, hot air, gas. geometry, mechanics, and drawing.

A. W. Hawkins, State Commissioner of Agriculture, Statistics, Mines, and Im-migrations; assisted by Henry E. Colton, Geologist and Mining Engineer. Nashville, Tenn. 1882.

Describes briefly the geography, topography, and geology of Tennessee, its useful minerals and their outcroppings; its timber, agricultural products and capabilities; railways, educational, social, and political institutions; the natural and civil divisions of the State and their several characteristics; and gives much other information of interest to intending settlers and investors in mines and other properties within the State.

POINT LACE AND DIAMONDS. By George A. Baker, Jr. New York: R. Worthington.

A new edition of Mr. Baker's pretty little book of society verses, with some additions. Mr. Baker is clever at verse making-so clever that it seems a pity that he should spend his time over such trifies

How TO BE WEATHERWISE. A New View of our Weather System. By Isaac P. Noyes. New York: Fowler & Wells. 25 cents.

Explains briefly the conditions and effects of high

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 asearly as Thursday morning to appear in next issue.

Lettering for Draughtsmen.-1 sheet, 25 cts.; 5 for \$1; mounted. Appropriate poesy for each 150 for \$8.50. One-third discount to trade. W.A. Lorenz day. James R. Osgood & Co., publishers. Hartford, Conn.

Wanted-Four miles second-hand T-rail for tram-Weight about 30 pounds to yard. G. Gunby Jordan, Columbus, Ga.

Foot Lathes, W. E. Lewis, Cleveland, O.

Want nice model, in proportion, of 8 wheel car, with metal wheels, axles, etc. G. B. Thompson, Pittson, Pa. Emery Grinding Machinery of all kinds. Latest style and designs at reduced prices. Send for descriptive catalogue and price list of the celebrated Lehigh Emery Wheels. Lehigh Valley Emery Wheel Co., Lehighton

Blake's Belt Studs. The strongest and best fastening for leather and rubber belts. Greene, Tweed & Co., N. Y

In stock, ready for immediate delivery, all new, 24 in. Rotary ted Single Surfacer; No. 3 Wardwell's patent Saw Bench; 20 in. Upright Drill Press, hand feed, quick return; Cady Engine Lathe, 13 in. by 4 ft. Send for list of 2,000 new and second-hand machines. Rollstone Mchn. Co., %5 Liberty St., New York.

To make Violins, write James Roblee, Syracuse, N. Y Water parified for all purposes, from household supplies to those of largest cities, by the improved filters manufactured by the Newark Filtering Co., 177 Commerce St., Newark, N. J.

American Fruit Drier. Free Pamphlet. See ad., p. 334 Am. Twist Drill Co., Meredith, N. H., make Pat, Chuck Jaws, Emery Wheels, Grinders, automatic Knife Grinders. Fire Brick. Tile, and Clay Retorts, all shapes. Bornerg

& O'Brien, M'f'rs, 23d St., above Race, Phila.. Pa. Peck's Patent Drop Press. See adv., page 334

For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Co., Buffalo, N. Y. Drop Forgings. Billings & Spencer Co. See adv., p. 333. Brass & Copper in sheets wire & blanks. See ad. p. 332.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 20,000 Crank Shafts and 15.000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon. 24 Columbia St., New York. Diamond Saws. J. Dickinson, 64 Nassau St., N. Y. Eagle Anvils, 10 cents per pound. Fully warranted

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus, adv. p. 332.

Garmore's Artificial Ear Drums for relief of partial or entire deafness. Invented by one who has been deaf thirty years. Simple and scientific in construction; not observable in use. Send for circular. John Garmore, S. W. cor. 5th and Race Sts., Cincinnati, O.

Pure Turkey Emery, Glue Composition, Rouge, and Pumice for polishers. Greene, Tweed Co., New York.

Heliographic or Blue Process Paper to take copies of Drawings, at Keuffel & Esser, 127 Fulton St., New York. Pays well on small investment. - Stereopticons, Magic Lanterns, and Views illustrating every subject for public

exhibitions. Lanterns for colleges, Sunday-schools, and home amusement. 116 page illustrated catalogue free. McAllister, Manufacturing Optician, 49 Nassau St., N. Y.

Cutters for Teeth of Gear Wheels formed entirely by machinery, The Pratt & Whitney Co. Hartford, Conn. Catechism of the Locomotive. 625 pages, 250 engravings. Most accurate, complete, and easily understood book on the Locomotive. Price \$2.50. Send for catalogue of railroad books. The Railroad Gazette, 73 B'way, N.Y. Trevor's Patent Key Seat Cutter. Trevor & Co., Lock port, N. Y. See page 332.

Assays and Analyses of ores and all commercial pro ducts. Advice given and investigations made in all branches of chemical industry. Send or circular. N. Y. Assay Laboratory, 40 Broadway, New York.

Wanted .- A second-hand centrifugal machine for Address, with description and price, P. O. Box liquids 3396, Boston, Mass.

Small patented articles, or light machinery, made and introduced. Gaynor & Fitzgerald, New Haven.Conn. Lubricator, See advt., Detroit Lubricator Co., p 318, Bostwick's Giant Riding Saw Machine, adv., page 318. See New American File Co.'s Advertisement, p. 318. Steam Pumps. See adv. Smith, Vaile & Co., p. 316. Common Sense Dry Kiln. Adapted to drying of all material where kiln, etc., drying houses are used. See p.318. The Sweetland Chuck. See illus. adv., p. 318. Knivesfor Woodworking Machinery.Bookbinders, and Paper Mills. Taylor, Stiles & Co., Riegelsville, N. J.

Red Jacket Adjustable Force Pump. See adv., p. 302. Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 302. Cope & Maxwell M'f'g Co.'s Pump adv., page 285.

Steel Stamps and Pattern Letters. The best made. J. F.W.Dorman, 21 German St., Baltimore. Catalogue free. For Power & Economy, Alcott's Turbine, Mt.Holly, N. J. Presses, Dies, Tools for working Sheet Metals, etc. Fruitand other Can Yools, E. W. Bliss, Brooklyn, N. Y. Presses & Dies (fruit cans) Ayar Mach, Wks., Salem, N.J. Split Pulleys at low prices, and of same strength and ppearance as Whole Pulleys. Yocom & Son's Shafting Works. Drinker St., Philadelphia. Pa.

For Mill Macb'y & Mill Furnishing see illus adv. p.300. Supplement Catalogue .- Persons in pursuit of information on any special engineering. mechanical, or scientific subject, can have catalogue of contents of the Sci-ENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York, Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y. Presses & Dies. Ferracute Mach, Co., Bridgeton. N. J.

Adrerliszments.

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. Adver-lisements must be received at publication office as early as Thursday morning to appear in next issue.



TO CAPITALISTS: I will give one-fourth (4) interestin mynewiy invented Palace Cattle Car to a responsible party who will furnish means to develop the same. Separate stalls for each animal. Feed carried on car. Cattle watered at any R. R. tank. Readily changed into common freight car. Address WM. T. ABBOTT, Fort Wayne, Ind.



ATOR, VISIBLE DROP, Is guaranteed to be 1. A perfect nsurance escaints the cutting of Valvesease, Cylinder and Governor Valves of the engine. beits months, in the saving of of , coal, and packing. 8. It will immer more speed in the revolutions of the engine, say from one te two strokes per minute, thus increasing the power hompson, 217 River St., Tr. y, N.Y.

of the engine. M'f'd by Holland & Thompso



Patents for Sale,—The Weber and Scovel patents for manufacture of Sugar and Sirup and Glucinse out of Sorghum Cane, issued by Canadian Government. Samples of sugar sent. Address J. L. RAY, Champaign, Ill.



lication of the SCIENTIFIC AMERICAN, continue to examine Improvements, and to act as Solicitors of Patents

NEW BOOKS AND PUBLICATIONS.

Machines and Secondary Batteries.) By and the entertainment of the more experienced. Gustav Glaser De Cew. Wien, Pest. Leip-THE MODERN HOUSE CARPENTER'S zig: A. Hartleben, 1883. pp. 264.

This is the first volume of an electro technical library, by Mr. Claser De Cew. The author gives a clear description of the continuous and alternating current dynamo electric machines, and a history of the development of these mechanisms; the physical laws governing the ter. The information is well selected, well put, abunconstruction of the machines, the merits and demerits dant for so small a book, and, so far as necessary, of the several kinds. Secondary batteries are discussed clearly illustrated by diagrams,

Terry. New York: Fowler & Wells. 12mo, pp. 406. \$1.50.

The author seeks to give to young men beginning or contemplating a venture in retail trading the benefit of 30 years' experience in merchandising. The author's

spirit and method are commendable, and the advice he DIE MAGNET ELEKTRISCHEN UND DYNAMO. gives will be found suggestive and worthy of thoughtful ELEKTRISCHEN MASCHINEN UND DIE consideration by all young merchants and merchant's SEGENANNTEN SECUNDAR BATTERIEN, clerks. It is a good book to have around a store and (Magneto Electric and Dynamo Electric in mercantile libraries for the instruction of beginners

> THE MODERN HOUSE CARPENTER'S COM-PANION AND BUILDER'S GUIDE. By W. A. Sylvester. Boston: A. Williams & Co. \$1.25.

> the author's experience and needs as a practical carpen-

Sheet and cast brass goods, experimental tools, and | for Inventors. fine machinery. Estimates given when models are furnished. H. C. Goodrich, 66 to 72 Ogden Place, Chicago. Improved Skinner Portable Engines. Erie, Pa.

Engines, 10 to 50 horse power, complete, with governor. \$250 to \$550. Satisfaction guaranteed. Nearly seven hundred in use. For circular address Heald & Morris (Drawer 127), Baldwinsville, N. Y.

East Newark, N. J.

Combination Roll and Rubber Co., 68 Warren strot, N.Y. Wringer Rolls and Moulded Goods Specialties. F rst Class Engine Lathes. 20 inch swing, 8 foot bed. now ready. F.C. & A.E. Rowland, New Haven, Conn.

Ice Making Machines and Machines for Cooling Breweries, etc. Pictet Artificial Ice Co. (Limited), 142 Greenwich Street. P. O. Box 3083, New York city.

Soapstone Packing, Empire Packing, Hemp Packing, An unpretending handbook which has grown out of Rubber Packing of al kinds. Greene, Tweed & Co., N. Y., patents in all the principal countries of the world. Jas. F. Hotchkiss, 84 John St. N. Y .: Send me your free hook entitled "How to Keep Boilers Clean," containing useful information for steam users & engineers (Forward above by postal or letter; mention this paper.) | Washington. D. C.

In this line of business they have had thirty-five years' experience, and now have mequaled facilities for the preparation of Patent Drawings, Specifications, and the prosecution of Applications for Patents in the United States, Canada, and Foreign Countries. Messrs. Munn & Co. also attend to the preparation of Caveats, Copyrights for Books. Labels, Reissnes, Assignments, 25" Lathes of the best design. G. A. Ohl & Co., intrusted to them is done with special care and promptand Reports on Infringements of Patents. All business ness, on very reasonable terms.

A pamphlet sent free of charge, on application, containing full informatiou about Patents and how to pro cure them; directions concerning Labels, Copyrights, Designs, Patents, Appeals. Reissues, Infringements, Assignments, Rejected Cases, Hints on the Sale of Patents, etc.

We also send. free of charge. a Synopsis of Foreign Patent Laws, showing the cost and method of securing

MUNN & CO., Solicitors of Patents, 261 Broadway, New York. BRANCH OFFICE -Corner of F and 7th Streets,