

**NASAL AND BRONCHIAL CATARRH.—A STRONG RECORD.**

Rev. T. P. Childs, of Troy, Ohio, whose advertisement of his Catarrh Treatment appears in this issue of the SCIENTIFIC AMERICAN, has addressed our subscribers and readers before. It is not surprising when we consider the facts, that Mr. Childs should be constrained to urge the attention of people to this matter, and mention his ability to treat successfully this scourge of the human race. Leading men of every denomination publicly state that Childs' treatment has cured them or their families of Catarrh or Throat difficulties, not obscure, unknown men, but men whose reputation is national, men widely known for their services in the pulpit or the missionary field. Editors and publishers of our leading periodicals, among them the *Congregationalist* and *Watchman*, of Boston, the *Illustrated Christian Weekly* and the *Examiner and Chronicle*, of New York, the *Journal and Messenger* and *Daily Gazette*, of Cincinnati, and many others, have personally investigated the facts, and they are satisfied that, while Mr. Childs is not—as he does not claim to be—a regularly educated physician, but, on the other hand, a highly esteemed minister of the gospel, who has spent thirty years as a pastor in the State of Ohio, yet he has made such a study of the disease known as Catarrh, as to have enabled him to treat it with most extraordinary success.—*Adv.*

**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.*

*The publishers of this paper guarantee to advertisers a circulation of not less than 50,000 copies every weekly issue.*

For Sale.—Planing and Moulding Mill and Coal Yard. All in operation. With or without machinery. Fireproof buildings. Address Morgan Bird, Plainfield, N. J.

Collection of Ornaments.—A book containing over 1,000 different designs, such as crests, coats of arms, vignettes, scrolls, corners, borders, etc., sent post free on receipt of \$2. Palm & Fechteler, 403 Broadway, New York city.

Rundell's Mower and Patterns will be sold, or licensed to manufacture on royalty, to the highest bidder. The sale will be closed March 16, 1880. Pat. Oct. 21, 1879. For further information, inquire or visit the inventor, Wm. F. Rundell, Genoa, Cayuga Co., N. Y.

Skillful Mechanical Draughtsman wanted. 121 Liberty St., N. Y.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See adv. page. Totten & Co., Pitts'g.

Twin Injectors "Clipper" and "Ajax." "Acme" Governors, etc. Improved; new. Catalogue 1880. J. D. Lynde, Phila., Pa.

Emery Wheels to grind rolls heated by steam wanted by The J. Morton Poole Co., Wilmington, Del.

Cut Glass for Models, etc. Models, working machinery, experimental work, manufacturing, etc., to order. D. Gilbert & Son, 212 Chester St., Phila., Pa.

J. H. Longstreet, Manufacturer of Electrical Apparatus, No. 9 Barclay St., New York. Telegraph Instruments, Hotel Annunciators, Burglar Alarms, etc. Experimental work. Orders by mail receive prompt attention.

Best Oak Tanned Leather Belting. Wm. F. Forepaugh, Jr., & Bros., 531 Jefferson St., Philadelphia, Pa. Launches and Engines. S. E. Harthan, Worcester, Mass.

Inventors' Institute, Cooper Union. A permanent exhibition of inventions. Prospectus on application. 733 Broadway, N. Y.

Brick Presses for Fire and Red Brick. 309 S. Fifth St., Phila., Pa. S. P. Miller & Son.

The Baker Blower ventilates silver mines 2,000 feet deep. Wilbraham Bros., 2318 Frankford Ave., Phila., Pa.

To stop leaks in boiler tubes, use Quinn's Patent Ferrules. Address S. M. Co., So. Newmarket, N. H.

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.

Wright's Patent Steam Engine, with automatic cut-off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

For Solid Wrought Iron Beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Presses, Dies, and Tools for working Sheet Metal, etc. Fruit & other can tools. Bliss & Williams, B'klyn. N. Y.

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Buffing Metals. E. Lyon & Co., 470 Grand St., N. Y.

Bradley's cushioned helve hammers. See illus. ad. p. 45.

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

Noise-quieting Nozzles for Locomotives and Steamboats. 50 different varieties, adapted to every class of engine. T. Shaw, 915 Ridge Avenue, Philadelphia, Pa.

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

Sheet Metal Presses. Ferracute Co., Bridgeton, N. J.

Solid Emery Vulcanite Wheels—The Solid Original Emery Wheel—other kinds imitations and inferior. Caution.—Our name is stamped in full on all our best Standard Belting, Packing, and Hose. Buy that only. The best is the cheapest. New York Belting and Packing Company, 37 and 38 Park Row, N. Y.

Forges, for Hand or Power, for all kinds of work. Address Keystone Portable Forge Co., Phila., Pa.

Eclipse Portable Engine. See illustrated adv., p. 30.

Portable Railroad Sugar Mills, Engines and Boilers, Atlantic Steam Engine Works, Brooklyn, N. Y.

Silent Injector, Blower, and Exhauster. See adv. p. 46.

The Paragon School Desk and Garretson's Extension Table Slide manufactured by Buffalo Hardware Co.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien M'rs, 23d St., above Race, Phila., Pa.

Diamond Planers. J. Dickinson, 64 Nassau St., N. Y.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Hudgson, 24 Columbia St., New York.

For Superior Steam Heat. Appar., see adv., page 46.

For Pat. Quadruple Screw Power Press, see adv., p. 45. Valve Refitting Machine. See adv., page 46.

Holly System of Water Supply and Fire Protection for Cities and Villages. See advertisement in SCIENTIFIC AMERICAN of last week.

The E. Horton & Son Co., Windsor Locks, Conn., manufacture the Sweetland Improved Horton Chuck.

Engines repaired without loss of time. L. B. Flinders Machine Works, Philadelphia, Pa.

Special Wood-Working Machinery of every variety Levi Houston, Montgomery, Pa. See ad. page 405.

Power Hammers. P. S. Justice, Philadelphia, Pa.

For Reliable Emery Wheels and Machines, address The Lehigh Valley Emery Wheel Co., Weissport, Pa.

Wm. Sellers & Co., Phila., have introduced a new injector, worked by a single motion of a lever.

Steam Engines; Eclipse Safety Sectional Boiler. Lambertville Iron Works, Lambertville, N. J. See ad. p. 406.

Combined Step Ladder, Ironing Table, Clothes Frame. Good thing sure. See adv. at bottom of page 29.

Deoxidized Bronze. Patent for machine and engine journals. Philadelphia Smelting Co., Phila., Pa.

Hand Fire Engines, Lift and Force Pumps, for fire and all other purposes. Address Rumsey & Co., Seneca Falls, N. Y., and 93 Liberty St., N. Y. city, U. S. A.

For Shafts, Pulleys, or Hangers, call and see stock kept at 79 Liberty St., N. Y. Wm. Sellers & Co.

Planing and Matching Machines, Band and Scroll Saws, Universal Wood-workers, Universal Hand Jointers, Shaping, Sand-papering Machines, etc., manufactured by Bentel, Markedant & Co., Hamilton, Ohio. "Illustrated History of Progress made in Wood-working Machinery," sent free.

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

**NEW BOOKS AND PUBLICATIONS.**

THEORIE DES FACHWERKS VON A. FÖEPL. Leipzig: Arthur Felix. 1880. 8vo, pp. 135.

This work treats of the theory of the formation of trusses, and is divided into the following two chapters: 1. The general theory of the formation of trusses; and 2. The special theory of certain defined trusses. In the first chapter the author has very elaborately described the geometrical theoretical formation of trusses and the forces acting upon the same, and shows that the main object of the theoretical calculations is to obtain the values of the pressures and strains in the several joints of a truss. The first chapter closes with a carefully prepared classification of the several types of trusses. The second chapter begins with instructions in regard to the most reliable and most simple methods of calculating the strains in the trusses, the position of the separate loads, and the most unfavorable position of the entire load. Great care has been given to the calculation of the strains in horizontal and arched trusses of well known construction, and of new combinations of the elements, which, although they have not been practically carried out, theoretically surpass all others. The work is carefully illustrated with numerous wood cuts and engravings.



**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 a 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 SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

(1) W. B. P. asks how to make a "planchette" board. A. A planchette board is simply a small thin board of any desired shape, supported upon three small easily moving casters, and carrying a pencil capable of marking on the surface upon which the casters rest.

(2) G. R. B. asks what is gasoline. It is burned in lamps like gas. I claim it is a dangerous article to use. My neighbor says not; he has a barrel in his cellar. A. Gasoline is one of the lighter distillates from petroleum. It is a very dangerous article to have about the house, as it forms vapor at ordinary temperature, which, when mixed with air, is likely to explode when near a fire.

(3) E. S. asks: What is the best temper for coal picks and drills? A. Heat them to a cherry red, and draw them down to a purple.

(4) J. W. B. asks (1) how to make a whitening solution for silver plating. A. Dissolve 3/4 troy pounds cyanide of potassium, 8 ounces carbonate of soda, and 5 ounces cyanide of silver in 1 gallon rain or distilled water. This solution should be used with a compound battery of 3 to 10 pairs according to the size of the work to be plated. The use of this solution will insure the adhesion of silver to all kinds of brass, bronze, type metal, etc., without employing mercury, the frequent use of which is injurious to the operator. 2.

How can I make a finishing solution? A. Dissolve 4 1/4 troy ounces cyanide of potassium and 1 1/2 ounces cyanide of silver in 1 gallon rain or distilled water. This solution should be used with one large cell of Smee's battery, observing that the silver plate is placed as near the surface of the articles to be plated as possible.

(5) O. R.—Oil stone powder is preferred to pumice stone powder for polishing fine brass work.

(6) N. A. asks: How can I case-harden small articles of iron? A. Case-hardening, to be quickly performed, is done by the use of prussiate of potash. This is powdered and spread upon the surface of the iron to be hardened. After the iron is heated to a bright red, it almost instantly fluxes and flows over the surface; and when the iron is cooled to a dull red, it is plunged in cold water. Some prefer a mixture of prussiate of potash, 3 parts, sal ammoniac, 1 part; or prussiate, 1 part, sal ammoniac, 2 parts, and finely powdered bone dust (unburned), 2 parts. The application is the same in each case. Proper case-hardening, when a deep coating of steel is desired, is done by packing the article in an iron box with horn, hoof, bone dust, shreds of leather or raw hide, or either of these, and heating to a red heat for from one to three hours, then plunging the box into water.

(7) P. T. asks how to bronze small articles of hardware. A. Brown bronze dip, for coating hat hooks and similar small hardware articles, is made of iron scales 1 lb., arsenic 1 oz., muriatic acid 1 lb., zinc solid 10 oz. The zinc should be kept in only when the bath is used. The castings must be perfectly free from sand and grease.

(8) C. P. W. asks how to polish and restore the luster to tortoise shell that has lost its brightness through use. A. First apply rotten stone and oil with a felt wheel or rubber. Finish with the hand.

(9) C. E. B. writes: 1. Suppose a gun is placed in a vertical position so that when it is fired the ball, after having spent its force, will return to the muzzle of the gun on its downward course, will its velocity be the same when it reaches the muzzle as when it left it? A. Nearly so; it will be less by the amount of retardation due to the friction of the atmosphere. 2. Suppose we have two reservoirs, one of which is 1,000 feet in diameter and the other 100 feet in diameter, each round and three feet high and full of water (still water), which will require the strongest walls to hold, or which has the greatest pressure on its walls? A. The larger; the pressure on the walls for unit of surface is the same in both, but the larger has ten times the surface. 3. My friend asserts that base ball players can pitch or throw a perfectly round ball in such a manner as to cause it to curve to the right or left as they please; the same with billiards. I say no. I assert that a perfectly round ball cannot be made to curve in that manner in still air. Who is right? A. Your friend. See page 313, Vol. 37, SCIENTIFIC AMERICAN.

(10) W. C. asks: Will any substance that will sink in water sink to the bottom regardless of depth? A. Yes; on account of the slight compressibility of water, the variation of density with the depth is scarcely sensible.

(11) J. W. L. asks if there is any device by which the speed of a pulley can be increased or decreased without changing the speed of the drive wheel, or using the cone shaped pulleys. A. You may use plain cones arranged in a manner similar to cone pulleys. There is a kind of friction gearing sometimes used for the purpose.

(12) D. B. asks: 1. Does speed increase in the same ratio with power? Suppose the power necessary to propel a steamer fifteen miles per hour is represented by 34,540, what would be the speed attained by 1,476,632? A. The power increases approximately as the cube of the speed, hence the speed will be as the cube root of the power. Your speed will be as the cube root of the numbers given representing the power. 2. Is a pressure of 350 lb. per inch practicable? A. Yes.

(13) C. G. D. asks: From which of two engine cylinders can the most power be obtained, one measuring 14 inches by 22 inches, the other 22 inches by 14 inches? A. 22 inches diameter of cylinder by 14 inches stroke, if the figures given are intended for diameter and stroke.

(14) D. G. B. asks: Can you give me a minute description of the construction of the receiving telephone seen in the bottom central figure on page 15 of current volume of the SCIENTIFIC AMERICAN? A. The telephone is the same in principle as Bell's, which has been frequently described in these columns. (See SUPPLEMENT 162.) The only difference is that the magnet in the telephone referred to is curved, and the soft iron core of the helix is screwed into the side of the magnet; and the end which faces the magnet is concaved or made in a cup shape.

(15) "Young Subscriber" writes: 1. The principal of our school says that snow cannot be cooled below 32° F. I don't believe it. Which is right? A. There is no reason why the snow may not be as cool as the surrounding atmosphere, or nearly so. If the temperature of the air is less than 32° the temperature of the snow will also be less. 2. On page 173 of Appleton's "Cyclopedia of Applied Mechanics," it says: "The injector considered as a pumping engine is not an economical machine." Then it says: "As a boiler feeder, however, it is more economical than a steam pump." Is the last of this true? A. The injector is the more economical as a boiler feeder, because the heat of the issuing steam is taken up by the feed water and delivered back to the boiler. 3. How many cubic feet of water an hour, per horse power, does the average steam boiler require? A. Average from 23 to 26 lb. of water.

(16) J. B. writes: I wish to know about raising water to run it by a pipe over a bank. From the water to the top of the ground is, say, 50 feet, and some say it cannot be done over 30 to 33 feet at most. I have never had it explained about the limit of raising only 33 feet. A. There is a possibility of drawing it over a bank 30 feet high from the surface of the water.

but you cannot do it practically over 25 or 28 feet. The pressure of the atmosphere raises the water, and that with your apparatus perfectly tight could not raise it over about 32 feet. You may so arrange your pump as to draw the water 26 feet and then force it the rest of the way.

(17) R. M. S. writes: 1. I want to drive the boat by foot power similar to velocipede motions and to have gears connecting the propeller shaft. I want to know how large a propeller a man weighing 150 lb. can drive without much fatigue, also what pitch it should have. How many revolutions should the propeller make to the foot wheel? A. Make your propeller about 18 inches diameter. It should make 2 revolutions to 1 of the foot wheel. Pitch of propeller from 20 to 24 inches. 2. Can you estimate how fast the boat will go in slack water? A. The speed will depend upon the power applied. 3. Which would be best for the wheel, cast iron, brass, or sheet metal, to be light yet strong? A. Use brass or gun metal.

(18) J. A. F. asks: 1. Can crude petroleum be burned in a thrashing engine without altering the fire box? A. You need not alter your fire box, but place your apparatus for burning the oil at a proper height. 2. Would it not rid me of the trouble with sparks? A. Yes. 3. About what would be the difference in cost of fuel compared with wood? A. In some experiments compared with coal, it was found to be twice as expensive as coal. You can from this estimate the relative cost of petroleum as compared with wood.

(19) C. H. N. asks: 1. Is "Rose's Machinist," advertised in a recent issue, such a work as you would advise for a young machinist? A. Yes. 2. What railroad office would be the proper one to apply to for a position as assistant civil engineer in construction work? A. The chief engineer of the railroad.

(20) C. L. W. asks whether iron wire can be insulated by coating it with varnish, and if not how can it be insulated? A. It may be insulated with varnish, but a coating of kerite or gutta-percha would be far better. If it is to be used in a dry place it will be sufficiently insulated if covered with cotton thread.

(21) J. B. asks: 1. How can I make a small mould from plaster of Paris? I want the casting to be very thin and small. A. SCIENTIFIC AMERICAN SUPPLEMENT, No. 17, contains full instructions for making plaster moulds. 2. How can I make a battery to do silver plating? A. Use a Bunsen or a Smee battery. See directions for making galvanic batteries in SUPPLEMENTS 157, 158, and 159.

(22) V. E. M. asks: Are there as many square feet, inches, and parts thereof in a square measuring 100 feet around (25 feet on each side) as in a circle measuring 100 feet around? If there is a difference please give it. A. To get the area of the square multiply together the length of the two sides, 25 by 25=625. To get the area of a circle multiply the diameter by itself and the product by 0.7854. A circle 100 feet circumference is  $\frac{100}{3.1416} = 31.875$  diameter, and  $31.875 \times 31.875 = 1016.0156 \times 0.7854 = 797.966$ . So the area of the circle is the greatest.

(23) R. C. writes: 1. I have a well 20 feet deep, with 8 feet of water. My house is 800 feet from the well, with a fall of 4 feet. Can I draw the water with a good pump attached to a windmill at my house and then force it into a tank 20 feet high? A. Yes. 2. Can I lay a pipe from the tank, passing the pipe around the fire box inside of my cooking stove, to supply the kitchen with hot water, without danger of bursting the pipe when the fire is hot and water not being drawn off? A. Yes, if your pipe is large enough to permit a double current. A better plan would be to use a house boiler and connect the pipes to it as in water back ranges.

(24) H. N. R. writes: My main line of shafting makes 300 revolutions a minute. I wish to run a small circular saw mill that requires exactly a reverse motion. Would the use of a gear on main line connecting with one on counter shaft be in any manner objectionable? Is it practicable to run the sawmill with an 8 inch belt with two idle pulleys so as to avoid crossing the same? A. Gearing would be objectionable at so high velocity. If you use belts, it will be necessary to have one crossed, and this should be the one having slowest motion, and it should have a good length. Belts are to be preferred.

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

E. B. R.—No. 1 is finely laminated micaceous schist associated with a small quantity of steatite. No. 2, heavy spar or barite. The specific gravity of the specimen is 4.4. No. 3, limonite, containing about 80 per cent of oxide of iron. No. 4, magnetite, an excellent iron ore.—E. P. L.—No. 1 is not a hydraulic limestone; it might, however, yield a good agricultural lime if properly burned. No. 2, fibrous gypsum.—S. A. M.—No. 1 is iron pyrites. No. 2, hepatic pyrites, in which the sulphuretted hydrogen has been converted into oxide of iron. No. 3, the powder compares very favorably with that of bath brick.—J. R. B.—No. 1 is a readily fusible amphibole. Nos. 2 and 3, specular iron ore, the latter embedded in quartz.—W. M. F.—The powder consists of common salt and a number of other substances in small quantities. It is utterly useless for the purposes for which it is sold. It does not in any way prevent the explosion of light oils.—S. (Denver). Sample No. 1 is a mixture of argentic ferrous sulphide and carbonate of lead. No. 2 consists of porphyry associated with quartz which carries both silver and gold, probably a San Juan ore. The water in bottle marked F. W. & C. R. B., is of very good quality for potable purposes.

**COMMUNICATIONS RECEIVED.**

On the Relation of Springs and Barometric Variations. By M. G.  
On Planets. By D. S. P.  
On Edison's Carbons. By H. B.  
On Ice Boats. By W. F. L.  
On Life Preservers. By T. B. McC.  
On Ice Yachts. By E. O. D.