

## NEW BOOKS AND PUBLICATIONS.

**CLINICAL MANUAL FOR THE STUDY OF DISEASES OF THE THROAT.** By James Walker Downie, M.B. New York: Macmillan & Co. 1894. Pp. xvi, 268. Price \$2.50.

This work is a clinical manual which, from the standpoint of the physician, seems to be very attractively presented. Of late years the throat has been much more an object of interest than in older days, and the bearing of throat diseases on the entire nervous system, and even on the intellect itself, are fully recognized. It is not too much to assume that this work, in view of the general interest now taken in the throat, will find a place in many libraries other than those of the physician or specialist.

**HEADWATERS OF THE MISSISSIPPI.** By Captain Willard Glazier. Chicago and New York: Rand, McNally & Co. 1893. Pp. 527. Price \$2.50. No index.

A much vexed subject, the source of the great American river, is here treated from the historical point of view as well as from the geographical one. The book is enlivened by very numerous illustrations, graphically showing the scenery and the adventures of the exploring parties in the wilderness, and the grounds for believing that Lake Itasca is not the ultimate source of the Mississippi are given in detail.

**CELESTIAL OBJECTS FOR COMMON TELESCOPES.** By the Rev. T. W. Webb. Revised and greatly enlarged by Rev. T. E. Espin. In two volumes. Vol. I. London and New York: Longmans, Green & Co. 1893. Pp. xvii, 233. Price \$1.75. No index.

The Rev. Mr. Webb's work has now reached the fifth edition. A very short biographical note of the author, now deceased, with his portrait, is a feature to be noted. By common telescopes achromatics with apertures of 3 to 5 inches are meant. The book treats of the instrument and mode of observation, and then goes on with the treatment of special objects of view in the planetary worlds as well as comets and meteors.

## SCIENTIFIC AMERICAN BUILDING EDITION.

JULY, 1894.—(No. 105.)

## TABLE OF CONTENTS.

1. An elegant plate in colors showing a half stone and half frame summer cottage erected at a cost of \$4500. Perspective views and floor plans. Mr. H. Howard, architect, New York City. An attractive design.
2. Plate in colors showing a Queen Anne dwelling at Melrose, Pa., recently erected for W. H. Miller, Esq. Perspective elevation and floor plans. Cost \$8,500. Mr. A. M. Walkup, architect, Philadelphia, Pa.
3. Full page engraving of Nonsuch Palace.
4. A half-timbered house at Rosemont, Pa., recently erected for John H. Converse, Esq., at a cost of \$11,000. Perspective elevation and floor plans. Mr. T. P. Chandler, Jr., architect, Philadelphia, Pa. A handsome design.
5. Engravings and floor plans of a cottage at Jamaica, L. I., recently completed for B. S. Waters, Esq. A popular design of American style. Cost \$5,800 complete. Messrs. Deuss & Osborne, architects, Brooklyn, N. Y.
6. Residence at Yonkers, N. Y., recently erected for Cheever N. Ely, Esq. Perspective elevations and floor plans. Mr. Augustus Howe, architect, New York. A pleasing design.
7. A dwelling at Hackensack, N. J., recently erected for Mrs. Maria Bogart. Perspective elevations and floor plans. Mr. W. L. Stoddard, architect, Tenafly, N. J. A model design.
8. A colonial cottage at Hartford, Conn., erected for W. F. Goody, Esq. An attractive design. Floor plans and perspective elevations. Cost \$4,750 complete. Mr. Henry D. Hooker, architect, New York City.
9. A residence at Edgewater, Ill., recently erected for G. F. Lange, Esq. Perspective elevations and floor plans. A pleasing design.
10. A residence at Bryn Mawr, Pa., recently erected for Prof. Herbert W. Smyth. Three perspective elevations and floor plans. Cost complete, \$6,500. Mr. J. C. Worthington, architect, Philadelphia, Pa.
11. A picturesque country cottage at Greenwich, Conn. Perspective elevations and floor plans. Messrs. A. H. Throp & W. S. Knowles, architects, New York City. An attractive design.
12. Design for a stairway.
13. Miscellaneous Contents: The passing of the carpet, illustrated.—Why not remodel the old home? illustrated.—Mott's "Sunray" steam boiler, illustrated.—Modern brick machinery.—The "Ideal" sash pulley, illustrated.—Improved wood working machinery, illustrated.—Elevators for the New Commercial building, Philadelphia.—Architectural wood turning, illustrated.—The Beverage cooker, illustrated.—The Variety wood worker, illustrated.—The "Monarch" fireproof partition, illustrated.—View of the Hotel Phenix, Winston, N. C.

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## 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 the following week's issue.

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## Notes & Queries

## HINTS TO CORRESPONDENTS.

**Names and Address** must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication.

**References** to former articles or answers should give date of paper and page or number of question.

**Inquiries** not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and though we endeavor to reply to all either by letter or in this department, each must take his turn.

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**Scientific American Supplements** referred to may be had at the office. Price 10 cents each.

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**Minerals** sent for examination should be distinctly marked or labeled.

(6153) A. H. M. asks: 1. How can shellac be thinned after it has become thick? A. Add alcohol. 2. Suppose a bullet be fired perpendicular to the surface of a flat rock. Will it rebound with as much force as it went, and what per cent? (Provided the stone fired at were considerably harder than the bullet.) A. No. The lead will flatten or go to pieces and develop heat. 3. How can iron and brass be soldered together, using common solder? I have tried the usual way, but can't make it work. A. If the iron is wrought iron, use soldering acid. If cast, you cannot make a good job of it. 4. Is it true that putting oil on the strings of a tennis racket improves the racket? A. This is considered good practice, as tending to preserve the strings. 5. I connected several small motors with the terminals of an incandescent lamp (run by an alternating current) in place of the lamp. The motors merely buzzed. I tried several methods of connection and finally hit upon the shunt method. The motors all started up violently. Why was it that the alternating current would not make them go when the shunt would? A. The relative lag of the parallel coils and cores is the cause of the working. 6. Is there such a thing as a pea sheller? A. Such have been invented. 7. What is the lifting power of the average man of 21? A. Perhaps 250 pounds. It depends on the conditions of the lift.

(6154) F. L. B. writes: I wish to pump a quantity of water into a tank about 20 feet high, using a small gasoline engine for the motive power. Please inform me which will require the more power, to have the pump on the ground and use it as a force pump or have it at the top of the tank and draw the water up by suction, the water being pumped from a pond near by. A. There will be no difference in the actual power required in either position of the pump. The convenience of always having the suction pipe fully charged, or if not charged, of easy charging by the pump alone, is always a recommendation to set the pump as near the water level as possible or convenient.

(6155) F. W. writes: On June 28, in my capacity as display man for the weather bureau, I hoisted two marine signal lights, one white and one red. In the morning on taking the lights down I noticed that the white light had attracted thousands of small insects, the lower part of the lantern being covered, while the red light which hung only two feet below had attracted none. When the red light hangs alone it is usually covered with insects in the morning, as the white light was on the above occasion. A. It has been noticed that insects that are attracted by bright lights in the open air circulate

around and above the light before coming in contact with it or its lantern. The glare of the white light would partially blind them as to the presence of the red light above, and the insects would lodge against it in their erratic flight above the white light.

(6156) V. G. A. asks why it is that copper runs free from blow holes from the smelting furnace into the ingot, and then when you remelt and cast it, it is full of blow holes. A. Copper vaporizes or boils at temperatures above its high melting heat. In casting ingots a lower temperature is used, on account of the easy flow of the copper into the open ingot mould. The open top and iron body of the mould allows the copper to solidify from the bottom and the vapors to readily free themselves at the liquid surface, which is the last to solidify. On the contrary, when casting copper in sand or other close moulds, the whole surface of the casting commences to solidify at the instant of contact with the surface of the mould, and thus imprisons the vapors or gases within the body of the metal. Two to three per cent of tin added to the copper just as the metal begins to melt makes the copper more fluid and reduces the melting temperature. This allows the metal to flow more freely into the sharp parts of the mould and gives better vent to its contained gases. Such castings have the value and properties of pure copper for most purposes, with the additional quality of solidity.

(6157) F. O. W. says: Would you kindly tell how to remove freckles from one's face and hands? A. The following is quoted by *New Remedies* from a German medical journal: Sulphocarbonate of zinc, 2 parts; glycerine, 25 parts; rose water, 25 parts; spirits, 5 parts. Dissolve and mix. The freckled skin is to be anointed with this twice daily, the ointment being allowed to stay on from one-half to one hour, and then washed off with cold water. Anæmic persons should also take a mild ferruginous tonic. In the sunlight a dark veil should be worn.

(6158) A. H. L. asks: 1. What horse power are the motors on the trolley cars usually? A. They vary. Two 25 horse power motors are often used. 2. How many amperes current would they require to operate them on a ten mile road, the road being wired in the most economical manner possible without losing energy, with either the three voltages, 500, 1,000 and 1,500? A. Your conditions are incompatible. If there were as you stipulate no loss of power, the amperage asked for would

for 50 horse power be respectively  $a = \frac{50 \times 746}{500}$  and  $b = \frac{50 \times 746}{1000}$ . But the cars are really run at such high

power and there is always a loss on the line. 3. What size wire, and also what would be the most economical manner of wiring 10 miles of road (taking into consideration the cost of wire, and the amount of power lost through resistance) at the three voltages 500, 1,000, and 1,500? A. It depends on the number of cars to be run. The wires must be made larger, as more cars are used for the same loss of energy.

(6159) D. writes: It is reported in the technical papers that about 160,000 cubic feet of gas is converted from one ton of average coal, but we find that only 7,000 to 10,000 cubic feet of illuminating gas is made available in gas works for commercial supply. Will you please inform me if these figures are correct and what becomes of this large difference of gas product? A. The large yield quoted refers to producer gas. This is made by blowing a mixture of air and steam through coal, which is thereby kept incandescent and burns. The products of combustion include hydrogen, carbon monoxide and some carbonic acid gas and all the nitrogen of the air used. Such gas is of very low quality and only available in metallurgical and similar processes.

(6160) E. F. C. asks: How many amperes pass on a 500 volt lamp circuit with nine 54 volt lamps in the series? A. It depends on the size of the lamps. Assuming them to be 450 watt lamps, then a current of 8½ amperes is required.

(6161) W. E. C. asks: Will steam heat at 100 pounds pressure draw the temper from steel or brass springs, supposing that the springs are working in the steam? What is the temperature of steam at 100 pounds pressure? A. Yes. Steel springs, if made somewhat harder than the usual spring temper, will last a year or two, depending upon their work. With considerable movement they soon lose their tension, and after a few times setting up, lose their strength. Brass springs are of little value at the temperature of steam heat. Steam at 100 pounds pressure has a temperature of 338° Fah.

(6162) C. E. P. says: Kindly inform me how to make an amalgam for the rubbers for an electrical (frictional) machine. A. The rubbers of glass electric machines are coated with amalgam, consisting of equal weights of tin and zinc melted together, with twice their joint weight of mercury added during fusion.—*Kienmayer*. Another amalgam is tin 1, zinc 2, mercury 4. For ebonite disks the amalgam should be softer than for glass. Grease is mixed with the powdered amalgam to give it softness and make it stick. In France bisulphide of tin is used.

(6163) A. N. M. asks: If wood weighing 395 pounds per cubic foot is under water a great length of time, how much will its buoyancy be decreased, caused by water soaking? Is there any way to prevent this absorption, as by treating with pitch, creosote, etc.? What timber would be the best for use for buoyancy on floating pipes in a river, considering cost, weight, durability, etc.? How would you construct the piston and packing of a hydrostatic machine (mercury being the fluid), so as to prevent any leakage of mercury with a pressure on piston of 40 pounds per square inch? A. The time for becoming non-buoyant varies very greatly with different woods, depending somewhat upon their porosity and resinous nature. The commonly called hard woods may lose their buoyancy in from one to five years, according to their porosity. The flotation can only be maintained by thoroughly pitching the dry wood, thereby closing the air cells from the entrance of water. The best wood for flotation is yellow and white pine, cedar and hemlock, dry and thoroughly coated with hot pitch. Cupped packing rings of rawhide kept moist with glycerine are suitable for a mercurial pressure pump.

## TO INVENTORS.

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## INDEX OF INVENTIONS

For which Letters Patent of the  
United States were Granted

July 10, 1894,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Air brake, F. L. Clark.....	522,925
Alkali apparatus for manufacturing caustic, I. L. Roberts.....	522,617
Amalgamator and settler, G. W. Strong.....	522,807
Animal trap, A. J. Knapp.....	522,802
Asphaltum pipe, machine for the manufacture of, J. & D. J. Shultis.....	522,946
Awning frame, door, J. Zervas.....	522,817
Bag frame, F. W. Heilmann.....	522,832
Batteries, sectional cam for ore, M. I. Cortright.....	522,880
Battery, see Galvanic battery.	
Beam, rider, etc., metallic, A. E. Krause.....	522,738
Bearing, roller, F. S. Church.....	522,796
Bearing, roller, J. D. Mattison.....	522,796
Bedstead fastening, W. F. Bernstein.....	522,821
Beehive, Alkin & Knight.....	522,772
Belt, electric, W. E. J. Lawlor.....	522,844
Bicycle, H. W. Libbey.....	522,808
Bicycle, T. Miller, Jr.....	522,610
Binder, metallic, J. F. Kelsey.....	522,734
Blind operator, window, R. E. Hall.....	522,592
Blind slot holder and fastener, A. Harley.....	522,593
Boiler, see Steam boiler.	
Boiler, Smith & Goldrick.....	522,596
Bolting machine, L. C. Bonnet.....	522,702
Bottle corking machine, A. Tagliabue.....	522,708
Bottle elevating device, F. McLaughlin.....	522,698
Bouquet holder, A. L. Marston.....	522,910
Box, see Electric distribution box. Miter box.	
Brake, see Air brake. Car brake.	
Brake, F. D. Verran.....	522,682
Brush making, method of and means for preparing bristles for, A. S. Miles.....	522,609
Buckle and trace support, harness, W. Brady.....	522,876
Building construction, T. O'Shea.....	522,613
Butt-hole repair patch, E. P. Roche.....	522,708
Calcine furnace, J. Prudhomme.....	522,853
Calcutting, manufacture of material for, E. Watson.....	522,634
Camera, see Photographic camera.	
Can, see Oil can. Shipping can.	
Cane weaving machine, diagonal, H. B. & E. Morris.....	522,740
Can anti-oscillating attachment, street, B. F. Chollar.....	522,929
Car brake, G. W. Kramer.....	522,665
Car chair revolvable reclining, A. B. Macklin.....	522,608
Car coupling, W. K. Kight.....	522,940
Car coupling, J. M. Stark.....	522,854
Car fender, L. O. C. Lamar.....	522,745
Car pilot, R. A. Crawford.....	522,932
Car wheels, making composite, N. Wasburn.....	522,638
Carbonating apparatus, fluid, L. W. Puffer.....	522,673
Carburetor, O. Vanorman (r).....	11,430
Cartridge packet, J. P. Lee.....	522,603
Cartridge packet holder, J. P. Lee.....	522,604
Case, see Cigar case.	
Cash carrier, J. R. Pollock.....	522,917
Cash register, C. J. Carroll.....	522,623
Caster, W. H. Tucker.....	522,810
Catch plate or striker, J. K. Clark.....	522,878
Chair, see Car chair. Dental chair.	
Chair, P. H. Costello.....	522,652
Chart for hotel room, A. H. Leach.....	522,793
Chocolate dip or coating tray, D. F. Gerbereux.....	522,788
Cigar case, pocket, F. Cronenwett, Jr.....	522,881
Cigar lighter, electric, Eberhard & Schimkatt.....	522,934
Cigar lighter, electric, Keiff & Munk.....	522,919
Cigar mould, C. M. Miller.....	522,857
Cigarette machine, F. J. Hagau.....	522,995
Cigarette machine, A. P. & E. P. Scaramanga.....	522,620
Circuit closing device, P. J. Walsh, Jr.....	522,632
Clamp, see Rope clamp.	
Clamp, A. M. Cole.....	522,651
Clasp, E. S. Smith.....	522,722
Clip, C. Ball.....	522,704
Clipping machine, hair, O. Olsen.....	522,745
Clocks, electric synchronizer for, L. Von Orth.....	522,724
Cloth napping and brushing roller, L. Clarenbach, Jr.....	522,728
Clothes drier, F. J. Bailey.....	522,576
Clutch, frictional and positive, W. E. Chaifant.....	522,587
Coal dump, J. J. Lane.....	522,840
Coin carrying envelope, Fison & Illingworth.....	522,758
Coin holding and delivering device, C. C. Earnist.....	522,833
Coin package, W. F. Beasley.....	522,643
Coin package delivery device, C. H. Wood.....	522,816
Collar, horse, M. Cunningham.....	522,866
Conveying apparatus, for material, A. L. Rufford.....	522,854
Cooker, jelly, L. G. Hughes.....	522,731
Cooking device for fruit canning, F. M. Anderson.....	522,748
Cooler, see Liquid cooler.	
Corker, C. Fugatefoot.....	522,672
Corn sheller, see Corn Packer.	
Coupling, see Car coupling.	
Cradle, child's swinging, W. Dewey.....	522,783
Cranberry picker, J. M. & S. B. Moody.....	522,942
Crane, electric, E. Hopkinson.....	522,835
Crane, overhead traveling, J. R. Moran.....	522,913
Cultivator, garden, E. Wood.....	522,868
Current interrupter for high potential circuits, E. Thomson.....	522,665
Current motors, means for regulating alternating, E. M. Bentley.....	522,820
Current separator, L. F. Johnson.....	522,837
Currycomb, C. H. Bartlett.....	522,578
Cutter, see Veterinary tooth cutter.	
Davit, automatic boat, F. Enoch et al.....	522,787
Dental chair, D. Stuck.....	522,922
Desk, T. McCarthy.....	522,949
Detector, see Time detector.	
Detergent, A. Froeldevaux.....	522,706
Die and machine, A. J. Bradley.....	522,885
Disinfecting device, P. De Murguio do.....	522,847
Disinfecting device, S. & E. Tausig.....	522,863
Door opener, electric, H. F. Kell.....	522,733
Door opener or closer, folding, I. Engel.....	522,936
Door plate, D. M. Scott.....	522,677
Drier, see Clothes drier. Fruit drier. Rotary drier.	
Drying machine, F. E. Burlingame.....	522,646
Dust arrester, C. F. Verrell.....	522,823
Dust collector, Thompson & Van Gelder.....	522,769
Dust or soot collecting machine, Van Gelder & Thompson.....	522,780
Dye, blue, Henberg & Weber.....	522,907
Egg beater, etc., A. J. Saltzman.....	522,944
Electric distribution box, O. D. & M. A. Kleinstaubner.....	522,684
Electric beater, H. W. Leonard.....	522,718
Electric machine, dynamo, L. Bell.....	522,580
Electric meter, G. A. Scheffer.....	522,674
Electric motor controller, J. B. Blood.....	522,641
Electric switch, J. Hutchinson.....	522,597
Electrolysis of salts, apparatus for, I. L. Roberts.....	522,618
Electrolytic apparatus, I. L. Roberts.....	522,615
Electrolytic decomposition of salts, I. L. Roberts.....	522,616
Electrolytic decomposition tanks, I. L. Roberts.....	522,619
Electrolytic diaphragm, I. L. Roberts.....	522,614
Electrolytic apparatus, I. L. Roberts.....	522,599
Engine, see Gas engine. Locomotive engine.	
Pumping engine.	
Engines, variable exhaust for, G. L. Thiel.....	522,584
Entomological specimens, device for mounting, E. F. Denton.....	522,883
Excelsior apparatus, E. Grauert.....	522,891
Fagots or piles, apparatus for forming, J. F. Burke.....	522,645
Feed mechanism, automatic, J. Roger.....	522,935
Fence machine, wire, J. P. Platt.....	522,899
Fence post, metallic, M. H. Baer.....	522,818
Fencing wire, J. B. Cleveland.....	522,826
Fender, see Car fender.	
Ferrule machine, W. Cannell.....	522,647
File or bill book, W. D. Slaton.....	522,860
Filter, Ball & Gordon.....	522,819
Fire escape, S. R. Briggs.....	522,693
Fire escape, A. G. White.....	522,683
Fire extinguisher, automatic, E. C. Gammon.....	522,856
Fire kindler composition, J. D. Le Bel.....	522,696
Folding gate, W. R. Pitt.....	522,901
Food product and apparatus, J. W. H. Campbell.....	522,822