

dition of these important architectural remains. We are glad to be able to say that recent advices from Athens state that the work of preservation, if not of restoration, will not be delayed. As it takes a long time for white Pentelic marble to weather to the present shade of the remains, it is to be hoped that the restorations will be light.

ALGEBRA FOR BEGINNERS. By H. S. Hall and S. R. Knight. Revised and adapted to American schools by Frank L. Severn, A.M., M.D. New York and London: Macmillan & Company, 1895. Pp. 188. 16mo. Price 60 cents.

This excellent work will be found to meet the wants of all who do not require a knowledge of algebra beyond quadratic equations—that portion of the subject usually covered in the examination for admission to the classical course of American colleges.

MATRICULATION DIRECTORY. No. XVIII. June, 1895. London: University Correspondence College, 1894. Pp. 132. 16mo. Price 1s.

This pamphlet belongs to the University Tutorial Series and gives the general method of work by which specially prepared courses of lessons are given for the examinations of the University of London in Arts, Science, Laws, and Music. These courses "embrace all that is requisite for success, yet entirely relieve candidates from superfluous work, the special syllabus of each examination being always kept in view." We have several times called attention to this pernicious system of limiting education to those subjects required for degrees and certificates. The correspondence system of education might be introduced in the United States with advantage to a much larger extent than it has already been. The present Matriculation Directory is of course of little value to the American student, the text-books and methods of instruction being different.

DESIGNING AND PAINTING VITRIFIABLE COLORS ON GLASS MADE ACCESSIBLE TO ALL. By H. P. Saucere. Translated and adapted by Favor Ruhl & Company, New York City. Pp. 53. 16mo, illustrated. Price 60 cents.

This valuable little book is authorized by Lacroix, of Paris, the well known manufacturer of vitrifiable colors, and with the aid of the clear descriptions any one who can paint at all should be able to turn out excellent work. The newest methods of work are described.

THE CATHEDRALS OF ENGLAND AND WALES. "The Builder" Series. London: Published by "The Builder," 46 Catherine Street, London, W. C. 1894. Elephant folio. 62 plates and plans on plate and India paper. Detail cuts and descriptive letterpress. Library edition limited to 250 copies. Price, unbound in portfolio, £3 13s. 6d. Bound in whole buckram, £4 4s. American price, \$29.40 and \$33.60 respectively.

The cathedrals of England are the richest architectural heritage of the English people, and any work devoted to them is sure of attention. We already have many works devoted to them, treating them from the popular and historical side and occasionally from the side of the professional architect as well. They all, no doubt, fulfill a useful purpose, but the present work appears to have been designed on different lines, as at the same time it appeals to the practical architect, the amateur, and to the section of the general public who care for cathedral history and buildings. The views are all entirely new ones, and in many cases the stereotyped "view" which has come down from the time of Winkley's "Cathedral Churches" has been abandoned. Unlike most series of illustrations of this kind, the method of execution is various. The drawings are reproduced according to the modern methods of photo-mechanical work. To architects, the plans will form the most valuable part of the book, as they are drawn on a large scale; in some cases they occupy two pages of the portly volume. The plans are, of course, drawn to scale, and the dates of various portions of the edifices are distinguished by shading, etc. The plans are exceptionally clear, with the possible exception of the Canterbury plan, and give a splendid idea of the arrangement of the cathedral and conventual buildings. It is pleasing to note that many of the smaller cathedrals, which are usually omitted in works of this class, have been adequately treated, as St. David's, Bangor, and St. Asaph. The detail drawings are new, and will prove interesting to both the professional and the amateur. The letterpress is republished from "The Builder." On the whole, the work reflects great credit on those who have had in hand its production and publication, and the meritorious volume is deserving of a large sale.

AN ELEMENTARY TEXT BOOK OF MECHANICS. (The University Tutorial Series.) By William Briggs, M.A., and G. H. Bryan, M.A. London: University Correspondence College Press, 1895. 16mo. Pp. 336, 167 illustrations. Price \$1.40.

In preparing the present book it has been the aim of the authors to afford beginners a thorough grounding in those parts of dynamics and statics which can be treated without assuming a previous knowledge of trigonometry. The definitions are excellent and examples are fully worked out. The problems are numerous and the answers are given in the appendix. On the whole, it appears to be an admirable text book.

THE PRINCIPLES OF PHYSICS. By Alfred P. Gage, Ph.D. Boston: Ginn & Company, 1895. 12mo. Pp. 493, illustrations. Price \$1.55.

The author published a text book on physics some thirteen years ago entitled "Elements of Physics." The present volume is, however, an entirely new work. The author's views regarding the smallness of text books and the mutilation of the science of physics could be read with advantage by many English educators who are bound down to the syllabus limitation of studies. In

arrangement the book does not differ materially from the general run of books on the subject. The method of presentation is clear and logical and a large number of footnotes add to the interest of the work. The exercises, questions, problems and experiments are excellent. The illustrations are a striking feature of the book and it is satisfactory to note that at last a modern telescope (the Lick) and the transformer have got into a text book.

THE MANUFACTURE OF EXPLOSIVES. A Theoretical and Practical Treatise on the History, the Physical and Chemical Properties and the Manufacture of Explosives. By Oscar Guttman. London: Whittaker & Company, 2 White Hart Street, Paternoster Square, 1895. 2 vols. Pp. 782, xlix, 147 illustrations. Price \$9.

A really good book on explosives has been needed for a long time, and the present work seems to have been written by a person thoroughly conversant with his subject. The introduction of the dynamites for civil and of gun cotton and picrates for military engineering operations, and the general adoption of small bore magazine rifles and smokeless powders has completely revolutionized the subject of explosives, and rendered many of the old books useless. The present work is not a bare catalogue of modern explosives, but is a technical work, dealing with their manufacture on a commercial scale by the latest and most approved methods. An admirable feature of the book is that under nearly every engraving will be found the scale on which it is drawn, so that a correct idea may be obtained of the dimensions of various parts of the machine. This does not apply only to plans, but to the shaded drawings. The same idea could be carried out to advantage in most technical books. The work treats of powders of all kinds, gun cotton, nitroglycerine, fulminates, dynamite, sprengelexplosives, etc. The bibliography of explosives is very full, and is one of the most important features of the book, and even includes works published in 1895. On the whole, the work is an admirable addition to technical literature.

POSITION DIAGRAM OF CYLINDER WITH MEYER CUT-OFF AT ONE-EIGHTH, ONE-FOURTH, THREE-EIGHTHS AND ONE-HALF STROKE OF PISTON. New York: Spon & Chamberlain, 12 Cortlandt Street, 1895. Price 25 cents.

The valves may be adjusted by pulling the slips on the underside of the card. Such diagrams are of great assistance in comprehending a difficult subject.

Any of the above books may be purchased through this office. Send for new book catalogue just published. MUNN & Co., 361 Broadway, New York.

SCIENTIFIC AMERICAN BUILDING EDITION. AUGUST, 1895.—(No. 118.)

TABLE OF CONTENTS.

- 1. A Colonial house at Scranton, Pa. Perspective elevation and floor plans. Cost complete \$4,500. E. G. W. Dietrich, architect, New York City. A simple yet pleasing design.
2. A cottage at Residence Park, New Rochelle, N. Y. Two perspective elevations and floor plans. Architect, Mr. G. K. Thompson, New York City. A unique example for a cottage dwelling.
3. Perspective and floor plans of a Colonial cottage at South Orange, N. J. Built by M. E. Matthews, Orange, N. J. A neat design, with some novel features.
4. A Colonial house at Summit, N. J. Perspective elevation and floor plan. Architects, Messrs. Child & De Goll, New York City.
5. A cottage in the suburbs of Brooklyn, N. Y., erected at a cost of \$7,500 complete. Perspective elevation and floor plans. Architects, Messrs. J. C. Cady & Co., New York City. An artistic design.
6. Two perspective elevations and floor plans of "Lover's Dell," a residence recently erected in New Jersey. A pleasing example for a modern Colonial dwelling. Architect, Oscar S. Teal, New York City.
7. A residence at Sea Side Park, Bridgeport, Conn. Two perspective elevations and floor plans. An exquisite design. Architect, Mr. W. R. Briggs, Bridgeport, Conn.
8. A residence in the Colonial style, recently erected at Chester Hill, Mt. Vernon, N. Y. Three perspective elevations and floor plans. A picturesque design. Lewis M. Lucas, architect, New York City.
9. Ground plan and perspective view of Holy Trinity Church, Harlem, N. Y. Architect, Mr. Wm. A. Potter, New York City.
10. A residence at Montclair, N. J., being an additional view to those of the same house published in the May issue.
11. Miscellaneous contents: Waterbury electric heat regulator, illustrated.—A sanitary bathtub, illustrated.—Finishing floors.—Pompeian bath room.—Seasoning of stone.—Improvement in warm air furnaces, illustrated.—An improved domestic water service system, illustrated.—An improved door check and spring, illustrated.—The wood of most uses.—The hollow handle glass cutter, illustrated.

The Scientific American Building Edition is issued monthly. \$2.50 a year. Single copies, 25 cents. Thirty-two large quarto pages, forming a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates and fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

The Fullness, Richness, Cheapness, and Convenience of this work have won for it the LARGEST CIRCULATION of any Architectural Publication in the world. Sold by all newsdealers. MUNN & CO., PUBLISHERS, 361 Broadway, New York.

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.

- "C. S." metal polish. Indianapolis. Samples free.
Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.
Handle & Spoke Mch. Oberlathe Co., Chagrin Falls, O.
For mud dredging engines. J. S. Mundy, Newark, N. J.
Best Handle Mach'y. Trevor Mfg. Co., Lockport, N. Y.
Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Light and Canal Sts., New York.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa., will send Sawyer's Hand Book on Circulars and Band Saws free to any address.
The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4; Munn & Co., publishers, 361 Broadway, N. Y.
For the original Bogardus Universal Eccentric Mill, Foot and Power Presses, Drills, Shears, etc., address J. S. & G. F. Simpson, 26 to 30 Rodney St., Brooklyn, N. Y.
Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

Notes & Queries

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, page 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.
Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(6606) T. J. S. writes: Please give me a receipt for enamel for bicycles. A. Enamel black for cycles: Asphalt, 40 ounces; boiled linseed oil, 1/2 gallon; litharge, 6 ounces; powdered zinc sulphate, 4 ounces; red lead, 6 ounces; litharge, 6 ounces. Melt the asphalt, add the others; boil 2 hours, stir in 8 ounces fused dark amber gum and 1 pint hot linseed oil; boil 2 hours more. When mass has thickened remove from the fire and thin 1 gallon turpentine.

(6607) H. F. says: 1. Will you kindly inform me how I can crystallize flowers? A. Crystallized grasses and sprays are made as follows: The bunches are first arranged in a suitable manner, tied and secured; a solution of four ounces alum to 1 quart boiling water is made, and when this has cooled to about 90° or blood heat, the bunch of grass and leaves is suspended in it, in a deep jar, from a rod placed across the mouth of it; as the liquid cools, crystals of alum are deposited upon every spray, the finer and smaller, the weaker the solution is made. This deposit of crystals occurs in the cooling liquid, because hot water dissolves more alum than cold water, and as the water cools, the excess of alum forms crystals which attach themselves to any fibrous matter in contact with it more readily than to anything else. These crystals enlarge by accretion constantly, as long as there is an excess of alum in the solution. When the supply is exhausted, the solution is warmed and more alum is dissolved in it: it is returned to the jar and the bunch of grasses is replaced. When sufficiently covered with crystals it is taken out and dried and is finished. 2. How to prepare the solution for illuminating the face of a clock so the time can be seen at night? A. Use luminous paint, which you can buy ready prepared.

TO INVENTORS.

An experience of nearly fifty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted August 20, 1895, AND EACH BEARING THAT DATE.

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

- Air blast conveyer, J. M. Dodge 544,965
Air caureting apparatus, A. E. Aldrich 544,945
Air forcing device, G. W. Lord 545,023
Alarm. See Burglar alarm.
Alumens, making hematite, N. R. Finsen 544,912
Alloy manufacturing, W. Sumnerland 544,753
Amalgamator, G. H. Chick 545,011
Animal trap, T. M. Howell 544,983
Arm rest, J. W. Morrison 544,821
Automatic switch, S. A. Cooney 544,732
Axle box pedestal, car, S. J. Van Stavoren 544,701
Baking powder, J. D. Gregory 544,975
Bale tie machine, G. Johnson 544,762
Balling machine, H. White 544,841
Bank register savings, J. E. Mellor 544,819
Battery. See Secondary battery.
Bed clamp, H. J. Ney 544,823
Bedstead, steamer, W. I. Fielding 544,783
Belk attachment, E. B. Koopman 544,856
Berth, ship's, W. P. Hoskins 544,979 to 544,985
Berth sofa, W. P. Hoskins 544,985
Bicycle belt holder, W. W. Batchelder 544,653
Bicycle lock, combination, G. A. Crancer 544,809

- Bicycle mud guard, J. W. Shone 544,935
Bicycle saddle support, B. & Seaman 544,795
Bicyclist's tool, R. C. Fawcett 544,126
Bin or sample case, J. Luigert 544,517
Bit. See Brake bit.
Block. See Brake block.
Boat. See Fishing boat.
Boiler. See Marine boiler. Steam boiler. Water tube boiler.
Boiler feeder, automatic, E. L. Hall 544,976
Boiler furnace, H. H. Hungerford 544,888
Boiler tube cleaner, F. M. Clark 544,908
Book holder, M. Beyer 544,916
Boiler, distributing, E. W. Dillmore 545,012
Bottle for preventing fraudulent refilling, E. I. Lloyd 544,675
Box. See Butter box. Journal box.
Box making machine, butter, F. E. Smith 544,775
Brake. See Car brake.
Brake beams, finger guard clamp for, H. B. Rohlschung 544,690
Brake block, Sauvage & Fuqua 544,830
Bridge, R. P. Lamont 544,733
Bridle bit, C. N. Hart 544,917
Bridle bit, F. Spahr 544,777
Bridle front and wicker brace, combined, O. Ruf 544,750
Brush, wheel, C. Weibke, Jr. 545,029
Buckle, E. Manges 544,678
Burglar alarm, F. Bex 545,068
Butter box, R. A. Simpson 544,997
Butter worker, centrifugal, C. O. & J. W. Glascock 544,948
Camera. See Photographic camera.
Can. See Oil can. Vacuum can.
Can heading machine, J. B. Clot 544,722
Can testing machine, W. H. H. Stevenson 544,905
Cans, machinery for forming and soldering bodies of metal, packing, J. B. Got 544,721
Cans, plug stopper for, A. T. H. Brower 544,840
Candles, apparatus for moulding wax coated, L. J. B. Fournier 544,913
Car brake, C. F. Shoemaker 544,836
Car brake and starter, M. Eschweiler 544,888
Car coupling, car, J. Barrett et al 544,870
Car fender, J. B. Heagland 544,919
Car fender, J. J. Kirkness 544,854
Car fender, F. McJowell 544,742
Car fender, A. B. Russ 544,932
Car fender, Saitz & McKee 544,922
Car fender, J. A. Sbard 544,750
Car fender, A. Weismantel 544,873
Car fender, J. N. Wicczorek 544,779
Car, railway passenger, I. B. Gunzburg 544,892
Car safety express, H. W. Wait 544,702
Car ventilator, railway, G. T. Rogers 544,904
Cars, etc. life-saving guard and fender for trolley, Weinmann & Sharp 545,039
Carriage wheel and axle, I. Davis 544,664
Carrotting machine, J. H. Sanders et al 544,893
Case. See Pen and pencil case.
Caster, W. F. Bernstein 544,878
Certificate, manufacture of, Whiting 544,758
Certificate, H. E. McArthur 544,933
Chain link, W. H. Eisenhart 544,759
Chain link, J. W. Garland 545,037
Churn and butter worker, combined, A. M. Binghan 544,719
Clear press, J. H. G. Gore 544,870
Clear bunching machine, Adams & Bell 544,878
Cigarette machine, W. Maxfield 544,818
Cigarette packing machine, E. Noriega 544,826
Citrate of ethylenehydramin and obtaining same, A. Schmidt 544,933
Clamp. See Belt clamp.
Cleaner. See Boiler tube cleaner.
Closet. See Water closet.
Closures for vessels, device for effecting airtight, J. Day 544,967
Clothes pounder, G. & C. Karass 544,853
Coffee pot, J. K. Cummings 544,903
Combining cotton, silk or other fibers, machine for, J. Duggill 545,014
Condenser, exhaust steam, Bachman & Goeth 544,852
Conveying material, process of and apparatus for, J. M. Dodge 544,970
Conveying materials, process of and apparatus for, J. M. Dodge 545,013
Cooking vessel, domestic, K. C. Andersen 544,717
Coop, folding poultry, R. C. Meinder 544,908
Cordage machine, W. H. Avis 544,633
Coupling. See Car coupling. Rope coupling. Shaft coupling. Thrill coupling.
Crate, fruit, C. S. Chamberlain 544,881
Crate, lock joint, A. S. Sherman 544,895
Crusher. See Seed crusher.
Crushing mill, J. Walker 544,872
Cultivator, corn, R. Lyons 544,736
Cultivator, wheel, W. M. Bonnar 544,889
Curtain, J. H. Mohr 544,889
Curtain fixture, adjustable window, H. M. Sturgis 544,815
Curtain, window, J. A. Lidback 544,725
Cutter bar, B. A. Gilliom 544,818
Cutting machine, C. M. Holcomb 544,851
Cycle wheels, etc., frictional surface for, A. Fulbrook 544,688
Depositing machine, A. W. Copland 544,862
Digging machine, car or ditch, O. Hoefs 544,850
Disk shaver, J. H. Evans 544,889
Display rack, J. F. Wynkoop 544,713
Door, W. E. Kelly 544,885
Door check, J. Kennedy 544,780
Door operating device, automatic hatchway, J. M. Elzer 544,667
Doors, threshold and weather strip for, N. N. Hazelden 544,877
Drawing knife, A. Anderson 544,846
Drying apparatus, Mather & Colver 544,659
Duplicating machine, N. P. Anderson 544,648
Dye and making same, blue, Ulrich & Bampham 544,690 to 544,701
Educational appliance, H. W. Yorke 544,710
Electric circuit and mechanism for maintaining same, built by, E. & Parker 544,768
Electric elevator, N. O. Lindstrom 544,785
Electric elevator, J. C. Winters 544,780
Electric machines, carbon brush holder for dynamo, A. J. Churchward 544,844
Electric motor, J. F. Remy 544,749
Electric switch, T. H. Brad 544,781
Electricity, plant for generating, G. R. Bowen 544,854
Electroplating apparatus, F. & F. H. Engelhard 544,865
Elevator. See Electric elevator. Water elevator.
Elevator hoist, D. B. Walton 545,028
Embroidering machine, E. & R. Conroy 544,733
End gate, wagon, I. Nappin 544,822
Engine. See Gas engine. Steam engine.
Engine indicators, drum stop for steam, W. M. Henderson 544,886
Evaporator, H. G. Davis 544,785
Exhibitor, coin-operated picture, C. M. McCarty 544,790
Explosive, high, H. Maxira 544,924
Fabric. See Woven fabric.
Fabrics, device for napping textile, D. McGennis 544,682
Fan, centrifugal, S. C. Davison 544,758
Face receiver and register, J. Evans 544,973
Faucet, basin, H. J. Guicher 544,727
Feed rack and trough, combined, C. J. Bowles 544,655
Feeding device, mechanical, J. Draher 544,865
Fence, machine, wire, T. E. & C. H. Lee 544,814
Fence machine, wire, A. J. Munger 544,740
Fence post and socket, J. E. Williams 544,942
Fence, wire, D. Kaufman 544,920
Fender. See Car fender.
Fertilizer distributor, W. H. Davis 544,986
Filtering apparatus, sewage, F. G. Wiseloge 545,030
Firearm, gas operated, J. M. Browning 544,841
Fire dog, E. J. Young 544,715
Fire escape, Cotton & Miller 544,724
Fire extinguisher, W. Harkness 544,894
Fire extinguisher, automatic, W. Harkness 544,885
Fire hose supporter, J. E. Bramble 544,851
Firemen, smoke helmet for, J. Senior 544,832
Fireplace throat, Lilly 544,837
Floor cloth, etc., seasoning, F. Walton (r) 11,865
Fluid pressure motor, E. F. Williams 544,804
Fly trap, G. Schmittle 544,831
Flying machine, O. Lilienthal 544,816
Folding boat, M. U. Loree 544,676
Folding table, J. E. G. 544,834
Fruit packing press, Denotovich & Porteous 544,846
Furnace. See Boiler furnace. Ore roasting furnace.
Gage. See Sewing machine hemming gage.
Gambrel, C. A. Larson 544,858
Game board, J. L. F. & B. G. Braine 544,907
Garment hook, H. S. Brewington 544,922
Garment supporter, G. E. Adams 544,814
Gas apparatus for the manufacture of, C. W. Pinkney 544,824
Gas burner attachment, incandescent, W. F. Simonet 544,834
Gas engine and generator, D. Best 544,798
Gas producer, W. Swindell 544,800
Gas producer, W. & J. C. Swindell 544,798
Gate. See End gate.
Gate, C. E. Cardwell 544,916
Gate, R. F. Hageman 544,915
Gearing, H. F. Shaw 544,796
Generator. See Steam generator.
Gold saving apparatus, B. G. Friskie 545,015
Goods, display counter, etc., permanent salvage device for, E. H. Turner 544,871
Governor, dynamometric, W. N. Smith 544,866