

NEW BOOKS, ETC.

ON THE SPRINGING AND ADJUSTING OF WATCHES. By F. J. Britten. London: E. & F. N. Spon. New York: Spon & Company. Pp. 152. 12mo.

This volume contains a description of balance springing and the compensating balance, with directions for applying the springing and adjusting for isochronism and temperature. It is intended for those tolerably conversant with watch-making and those who desire guidance in this particular branch, rather than for beginners, and therefore a knowledge of the many elementary branches is assumed. While we are not particularly familiar with watch-making, we can see that the book is a fairly practical one for those who are engaged in this form of mechanics on a small scale.

A PRACTICAL ENGINEERING POCKET BOOK FOR 1899. Manchester, England: Practical Engineering Company, Limited. New York: D. Van Nostrand Company. 1898. Price 60 cents.

This annual compilation is an interesting little pocket book and contains considerable information not found elsewhere. If an engineer nowadays should have all the pocket books which are published, he would have a foundation for a fine engineering library. It is remarkable to see what excellent matter is contained in the different pocket books. The little volume before us is no exception to this rule.

PORTLAND CEMENT. ITS MANUFACTURE AND USE. By Charles D. Jameson. New York: Van Nostrand & Company. 1898. Pp. 192. 8vo. Price \$1.50.

This monograph is the outgrowth of a short course of lectures delivered each year to the junior engineer students of the State University of Iowa, upon limes, mortars, and cements. The book deals in a clear and logical manner with the making of Portland cement, including the selection of raw materials, their proper treatment by the different methods, the burning of this material with the types used, the testing of Portland cement, the comparative value of different cements, the use of Portland cement as a material of construction, the proper methods of manipulation, estimates of quantities, costs, etc. The book is eminently practical and scientific and is well illustrated by engravings which elucidate the text.

TWENTIETH CENTURY MAGIC AND THE CONSTRUCTION OF MODERN MAGICAL APPARATUS. With the Introduction of New Experiments. Mechanical, Chemical, Electrical, etc. By Nevil Monroe Hopkins. New York and London: George Routledge & Sons, Limited. 1898. 12mo. Pp. 160, 100 illustrations. Price \$1.

The volume before us is a collection of magical tricks divided into mechanical, chemical, and electrical tricks. It is written by an amateur and is dedicated "To the Amateur Conjurers of America and England." It should be said in the beginning that it is an entirely different work in scope from "Magic: Stage Illusions and Scientific Diversions, Including Trick Photography," of our Mr. A. A. Hopkins. "Twentieth Century Magic" deals rather with clever tricks devised in the laboratory, while our "Magic" concerns rather the actual tricks of the prestidigitator, which were in many cases furnished by the magicians themselves, or by their master machinists. Having noted the marking distinction between the two books to prevent confusion, we have no hesitation in saying that "Twentieth Century Magic" is an admirable collection of new and clever tricks, and, as the author says, it is primarily designed to furnish an additional field for the amateur to operate in as well as constructive occupation, if he has a mechanical turn of mind. As such it will undoubtedly prove of value to the amateur, and the professional conjurer may also glean some valuable hints which will doubtless prove useful to him. The illustrations are very largely in the line of working drawings and serve to admirably elucidate the text. It is tastefully printed and bound.

PROCEEDINGS OF THE TENTH ANNUAL MEETING OF THE ASSOCIATION OF ECONOMIC ENTOMOLOGISTS. Washington: Government Printing Office. 1898. Pp. 104.

The work which is done by the government alone in practical entomology is simply enormous and is highly creditable to Dr. Howard and his assistants. The present pamphlet is the proceedings of the meeting which was held in Boston, August, 1898, and contains a number of papers of interest to all who are in any way connected with practical entomology.

DIE TECHNISCHE VERWERTHUNG DES STEINKOHLENTHEERES. Nebst einem Anhange: Ueber die Darstellung des natuerlichen Asphalttheeres und Asphaltmasticx aus den Asphaltsteinen und bituminosen Schiefern, sowie Verwerthung der Nebenprodukte. Von Dr. Georg Thienus. Vienna: A. Hartleben. Pp. viii, 216. 8vo. Price 60 cents.

The rapid development of organic chemistry within the last forty years has been largely due to the particularly exhaustive study of certain organic bodies. The thorough examination of comparatively few compounds has been sufficient to bring about radical changes in chemical theories. Among these organic bodies should be mentioned the products of the distillation of coal tar, many of which have played a not unimportant part in technical chemistry. Substances such as benzol, phenol, naphthalin, anilin, and the other derivatives of coal tar, have been extensively used in many industries. For many years the author of this work has been engaged in the manufacture of benzol, nitrobenzol, phenol, anilin, and other coal tar products, and of asphalt and asphalt cements; for this reason the second edition of the "Steinkohlentheere," containing as it does information obtained from the experience of years, should be of more than usual interest to chemists engaged in the making of coal tar.

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.

Marine Iron Works. Chicago. Catalogue free. For boisting engines. J. S. Mundy, Newark, N. J. "U. S." Metal Polish. Indianapolis. Samples free. C. E. Sontum & Co., Christiania, Norway, Mfrs. Agts. Gasoline Brazing Forge, Turner Brass Works, Chicago. Yankee Notions. Waterbury Button Co., Waterbury, Ct. Bee keepers, send for 1899 catalogue of supplies. J. H. M. Cook, 60 Cortlandt St., New York.

Gear Cutting of every description accurately done. The Garvin Machine Co., Spring and Varick Sts., N. Y. New volume Model Engineer begins now. Annual sub. 75c. Spon & Chamberlain, 12 Cortlandt, New York. The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. For of East 138th Street, New York.

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.

Roche's "New Standard" Electric Necktie Pin. Works like a charm. Midget Battery. The electric light is a beauty and a wonder. Sent postpaid for \$1.00. Agents wanted. Wm. Roche, 259 Greenwich St., New York.

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

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. 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.

(7587) A. C. S. writes: I have several cells of bichromate of potassium battery, so arranged that the zincs can be raised from the solution when not in use. The rods and zinc holders are made of brass. After being charged a few days a salt begins to cover the parts mentioned and I fear will, after a time, destroy them. With what shall I coat the brass parts to properly protect them from the action of the acid? A. To prevent the acid of a battery from climbing and reaching the brass fittings, proceed as follows: Dip the upper end of the carbons in melted paraffine till they are completely saturated for an inch with paraffine. Coat the upper end of the zincs with asphaltumvarnish. Of course, the cells must be taken to pieces and the plates thoroughly washed and dried before treating them.

(7588) F. A. B. asks: 1. Would four cells of battery, each giving 1.75 volts and 6 amperes, when connected in series give a total of 7 volts and 6 amperes? A. Yes. 2. Would this light six 7 candle lamps (connected in parallel), each of 7 volts and 1 ampere? A. Yes, theoretically, but practically, no. 3. About how long would an ordinary battery of this size run that number of lamps? A. Any battery used in this way would run down very rapidly. It is like taking the dam of a reservoir away all at once for the purpose of drawing out the water to turn a mill. The water runs out all at once. The cell is used up all at once.

(7589) G. S. Y. asks: How is rubber dissolved for the use of moulding tips for crutches, shoes, etc.? A. Rubber is not dissolved, but is vulcanized into shape. We can send you an important series of papers on rubber manufacture on receipt of 30 cents, which will give you full information regarding the manufacture of such articles as you mention.

(7590) "Subscriber" describes a dynamo casting which he has, and asks how to wind it for series and for compound winding, both of field and armature, both for battery current and for 100 volt circuit. He finally asks what would be candle power generated by it. The whole frame is only 4 1/2 inches long. A. The machine is a toy of no real use. Wind it up with No. 26 or 28 magnet wire. A cell or two of battery will make it turn. SCIENTIFIC AMERICAN SUPPLEMENT, No. 600, price 10 cents, contains drawings of connections, armature, etc., to show you how to proceed.

(7591) A. A. C. writes: I wish to stain a number of glass electric light globes. What chemicals shall I use, and how use them? Red, blue, and green are the colors I wish to use. A. 1. Prepare the glass by thoroughly washing in soap and water and drying. Then dip in bath made by beating up the whites of two eggs in 1 1/2 pound or pint of water and filtering, and hang up to dry. Dissolve the aniline color in photographer's common collodion. 2. Red or blue aniline will form clear solutions, while the green solution will require filtering. 3. Yellow aniline forms a handsome color, but the surface of the glass presents a frosted appearance after the application. 4. Violet and purple colors may be obtained by combining red and blue in different quantities. When the solution is ready, dip the prepared glass bulb therein, hang up to dry, and finally pass a current through the bulb for half an hour, that the heat thus generated may harden the coating of the collodion, or place in a current of air. 5. The preparation can easily

be removed with alcohol or sulphuric ether, but is not affected by water. Experience has shown that the best results are obtained by not using too much aniline. Make the color light rather than deep, and apply two or three coats.

(7592) L. P. asks: 1. What are the methods for making the different kinds of imitation woods? A. Imitation woods are made by staining and by the grainer's art. See our "Cyclopedia of Receipts" for a full account of staining and graining imitation of all kinds of wood, \$5, by mail. 2. Why is it that the lowest part of music sung by female voices is the alto, while if played on an instrument it is the tenor? A. We cannot agree with your statement concerning the parts in music as sung and as played. Alto as sung does not become tenor when played, though the ranges of the alto and of the tenor have many notes in common. The usual range of the parts in music, as given in the "Encyclopedia Britannica," vol. 24, is as follows: Bass, from F below bass C to include middle C; baritone, from A below bass C to include E above middle C; tenor, from bass C to include G above middle C; alto or contralto, from E below middle C to include B above middle C; mezzo soprano, from G below middle C to include D of octave above middle C; soprano, from B below middle C to include F of octave above middle C. By this table you will see that even bass and soprano have two notes in common, B and middle C, but a bass voice does not become soprano by singing middle C.

(7593) J. H. H. asks: Has any substance, either animal, vegetable, or mineral matter, either liquid or solid, ever been discovered or manufactured which can resist and is not penetrated by the electric waves which pass through the ether? A. We suppose that electric waves to some extent penetrate most substances, but not with equal ease. Electric waves are also reflected by sheet metal, refracted by a lens of pitch, and polarized by gratings of parallel wires. All these changes suggest a degree of resistance to the waves which retards them, and in the end would stop them. See SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 718, 720, 734, 967, 968, 969, price 10 cents each, for the work of Hertz; "Elementary Lessons in Electricity," Thompson, price \$1.40, and Lodge's "Modern Views of Electricity," price \$2.

TO INVENTORS.

An experience of fifty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the law 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

JANUARY 31, 1899.

AND EACH BEARING THAT DATE.

(See note at end of list about copies of these patents.)

Table listing inventions and their patentees with corresponding page numbers. Includes items like Acetylene generating apparatus, Air register, Alarm, Alkali aluminate, Amidophenols, Animal trap, Armature for dynamo electric machines, Assay furnace, Auger, Awl, Ax and cutter, Back pedaling brake, Baking and cooking vessel, Bales with wire, Battery, Bearing, Bed attachment, Beehive, Beer, Belting, Bicycle, Bicycle alarm lock, Bicycle brake, Bicycle driving gear, Bicycle holder, Bicycle saddle, Bicycle support, Bicycle support and lock, Billiard cushion, Binder, Blind roller, Bobbin carrier, Boiler, Boiler, Broom handle, Brush, Buckle, Buckle, Cabinet, Cabinet, Camera, Can opener, Can wiping machine, Candy machine, Car coupling, Car door lock, Car pipe connection, Car record apparatus, Card feeding mechanism, Card or picture mount, Card or picture mount, Card or picture mount, Carriage, Car railway, Cash register, Casting plant, Centrifugal machine, Centrifugal machine, Chandelier, Channeling, Chart holder, Chlorin, Zinc, etc., Clock, Clock, Clock, Clock, Clock, Clock, Coin carrier, Collar and cuff dampener, Collar crimping machine, Commutator short circuit, Confectionery ornamenting machine, Cooker, Cooking and drying apparatus, Cornice and gutter, Cotton to openers, Counter cutting machine, Coupling, Crate, shipping, Crasher, Cuff attachment, Cultivator, Cultivator and harrow attachment, Cultivator attachment, Cultivator implement, Current motor, Curtain fixture, Curtain pole hanger, Curtain ring and holder, Cutting square holes, Cycle saddle, Dental appliance, Dies, hydraulic holder for rotating, Discharge lamp, Dish washer, Display card, Door check, Door closer and check, Door or gate closer, Door, sliding, Draught equalizer, Draught equalizer, Draught equalizer, Draught equalizer, Draughting apparatus, Drilling, Dust guard, Dye, basic dyes, Elastic wheel, Electric battery, Electric furnace, Electric furnace, Electric furnace, Electric motor, Electrical protector, Elevator door, Embroidering machine, Engine, rotary, Engine, rotary, Engine, rotary, Engine, rotary, Engine, rotary, Envelop, Eraser, Exhibitor, Explosive motor, Eyes, spectacles, Fair leader, Feather renovator, Feeder, boiler, Fence, iron, Fifth wheel, Fifth wheel, Fire alarm, Fish book, Fishing reel tension attachment, Floor clamp, Folding tub and similar vessel, Fountain, Frogless switch, Furnace, Metallurgical furnace, Furniture, composition for cleaning and polishing, Gage, See Thermometer gage, Gas burner, Gas engine, Gas generator, Gas generator, Gas generator, Gas generator, Gas generator, Gas meter, Gate, D. S. McMullen, Gate, C. Rice, Gate, H. J. Ritter, Gear, reversing, Glass, decorated, Glass, decorated, Glass pressing machine, Governor and speed indicator, Governor, steam engine, Grain drying and cooling apparatus, Grate attachment, Grinding machine ball, Gun, gas operating machine, Hair crimper, Name strap, Handle, Handle bar fastening, Hanger, See Curtain pole banker, Harvester, Harvester, corn, Harvester, grain, Harvesting machine, Heating apparatus, Hemp cleaning machine, Hides or skins, apparatus for shaving, Hinge, W. H. Hart, Hinge, spring, H. Hyde, Holder, combined, Hook, See Fish hook, Horse detacher, Horse detacher and vehicle guide, Hose, cutoff valve, Hose reel, Hot air register, Hub, vehicle wheel, Ice cream freezer, Ice creper, Ice combs, Ice combs, Indicator, Insect exterminator, Insulating properties, Ironing table, Knife, See Pocket knife, Knitting machine, Lace making machine, Lamp, E. & E. Gray, Lamp, acetylene gas, Lamp, acetylene gas generator, Lamp chimney, Lamp chimney, Lamp, electric, Lamp filaments, apparatus for manufacturing electric, Lamp filaments, manufacturing electric, Lamp gas, Lamp, incandescent, Lamp, street, Lanteau, Lard press, Latch, B. F. Merwin, Lathe center rest, Leather dressing apparatus, Leather manufacture, Leather softening machine, Linotype machine, Linotype machine, Liquids for combustion, etc., raising and supplying, P. A. N. Winand

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