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, 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 prestidigitateur, 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 natürlichen Asphalttheeres und Asphaltmastrix aus den Asphaltsteinen und bituminösen Schiefern, sowie Verwerthung der Nebenproducte. Von Dr. Georg Thenius. 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.

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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.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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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 asphaltum varnish. 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 4½ 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 1½ 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 bulbs 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 Recepts" 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. B. 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 laws and practice on both continents, and to possess unequaled 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.

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JANUARY 31, 1899,

AND EACH BEARING THAT DATE.

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