NEW BOOKS AND PUBLICATIONS.

GEOLOGICAL GUIDE BOOK FOR AN EXCURSION TO THE ROCKY MOUNTAINS. Samuel Franklin Emmons, Editor. New York: John Wiley & Sons. 1894. Pp. 257 to 487. Price $1.50.

This book is excellently described by its title. It is a series of monographs on the geology of America, and it is preceded by a map giving the divisions under which the subject is treated, with the railroad routes by which the localities are reached. It was designed for immediate use on the occasion of the Geological Congress, and forms an admirable resume of the geology of America. Additional maps and illustrations are given as required to elucidate the text.

PRACTICAL LESSONS IN PHYSICAL MEASUREMENT. By Alfred Earl. London and New York: Macmillan & Co. 1894. Pp. xv, 350. Price $1.25.

In the three hundred and fifty pages of this book we have the science of measurement—for such physics has been called—treated on the meaurement basis. The entire work is devoted to measurement and similarphysical topics. It is illustrated as required, and is undoubtedly of value. The impression produced by works of this kind, however, is that too much space is devoted to too little, and the authors of these works seem to be impressed with the necessity of working with simple apparatus, while the measurement of physics should be carried out by the use of the best apparatus which can be obtained. One is a scientific study of the subject, and the other scientific gymnastics.

COAL DUST AN EXPLOSIVE AGENT. By Donald M. D. Stuart, F.G.S. New York: Spon & Chamberlain. Seven plates.

This book is the result of a thorough personal investigation by the author into the causes of an explosion at the Camerton Collieries, Somersetshire, England, which occurred Nov. 13, 1893. It was a non-gaseous mine, and the explosion was necessarily caused by an agent other than fire damp. The author finds coal dust, under some circumstances, an explosive agent, as well as a ready producer of gases which may propagate a highly dangerous and extensive explosion.

LAMPS OF THE TEMPLE. Compiled by Thomas W. Handford. Chicago: Laird & Lee. Pp. 374. Cloth, 50 cents.

This is a collection of examples of the eloquence of the modern pulpit, being short selections from the sermons or speeches of the leading pulpit orators of the present generation. They are brief discourses, which may well engage a leisure hour now and then of the most matter-of-fact men.

FORMER CLOCK AND WATCH MAKERS AND THEIR WORK. By F. J. Britten. London: E. & F. N. Spon. New York: Spon & Chamberlain. 1894. Pp. viii, 397. Price $2. No index.

This work contains in addition to the interesting text some five thousand names of clockmakers of the past and present, and numerous illustrations of antique and modern clocks and other historical features. It should certainly be commended for its interest. Clocks have formed a subject of study and reading with manynot concerned in the actual business; to such the present work will be invaluable. While it is written, to a certain extent, from the English standpoint, it will be found of value to all. The absence of a table of contents and index lays it open to a very severe criticism, as their presence would have immensely increased its utility.

MERCHANTS' BLACK LIST. For keeping a record of delinquent accounts. Detroit, Mich.: The Bookkeeper Publishing Co. 1894. Pp. 182.

This is a volume of printed forms for names, addresses, etc., of non-paying debtors. A page is devoted to each party, and it is to be hoped that any one possessing such a book will find that it will last them for many years.

FRUIT CULTURE FOR PROFIT. By C. B. Whitehead. London: Society for Promoting Christian Knowledge. New York: E. & J. B. Young & Co. 1894. Pp. 86. Price 40 cents. No index.

Fruit culture is here treated strictly from an English standpoint. Thus, in regard to tomatoes, it is stated that "it is very doubtful whether open air culture can be recommended," and it further states that "growing tomatoes under glass for market purposes has in the last few years attained enormous popularity." All this is rather strange reading for Americans.

ELECTRICITY ONE HUNDRED YEARS AGO AND TO-DAY. With copious notes and extracts. By Edwin J. Houston. New York: The W. J. Johnston Company, Limited. 1894. Pp. vi, 199. Price $1.

This very pleasant little work contains the text of a lecture delivered before the electrical section of the Brooklyn Institute. It makes excellent reading and it is very attractively printed. Many quotations from publications of the different epochs are embodied, which give much life to the subject. The book may be commended to all.

EDIBLE AND POISONOUS MUSHROOMS. What to eat and what to avoid. By M. C. Cooke. With eighteen colored plates illustrating forty-eight species. London: Society for Promoting Christian Knowledge. New York: E. & J. B. Young & Co. 1894. Pp. viii, 126. Price $1.40. No index.

The attractive subject of mushrooms is here excellently treated, with numerous colored illustrations to guide the amateur mycologist in his researches. While the author admits that his list of edible mushrooms is comparatively small, he includes all of the best, most available and essential known in the British Islands, and this information will, of course, be to a great extent applicable to the United States.

ELECTRIC LIGHTING PLANTS, THEIR COST AND OPERATION. By W. J. Buckley. Chicago: William Johnston Printing Co. 1894. Pp. iii, 275. Price $2. With index.

Mr. Buckley, in an amusing preface, describes himself as "neither electrician, engineer, nor expert, but a salesman engaged in a noble effort to deserve his salary." Although the work applies to the apparatus of the Fort Wayne Electric Corporation, it will be found very applicable to the work of all electrical engineers.

"Heat Insulation and Fire Protection in Prominent Buildings" is the title of a pamphlet just issued by the H. W. Johns Manufacturing Company, but it in no way discourses upon the asbestos pipe and boiler coverings made by the company other than to point to the buildings in which these goods have been used. And the showing is a good one. Twenty pages of beautiful half tones, showing a hundred or more of the best modern structures in the large cities, electric light and cable power stations, factories, etc., in whichthese coverings have been used, would seem to be better testimony as to their merit than could be adduced in any other form.

COAL MINING MACHINES AND AIR COMPRESSORS.—Advance sheets of the 50th catalogue of the Ingersoll-Sergeant Drill Company are received, containing valuable points on the method of mining coal by machinery, with estimates of cost of mining plants and the saving in cost of output of coal by the use of the new coal-cutting machines over the older method by hand labor alone. The figures are somewhat surprising, bringing the cost of mining coal by machinery down to 28 cents per ton for the run of the mine and 36½ cents screened and on cars at the mine. This is for soft coal, and is of great interest to Western and Southern mining interests.

SCIENTIFIC AMERICAN BUILDING EDITION.

NOVEMBER, 1894.—(No. 109.)

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The Scientific American Architects and Builders Edition is issued monthly. $2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

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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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Minerals sent for examination should be distinctly marked or labeled.

(6297) C. S. H. writes: 1. In a description of a Wimshurst influence machine, the glass disks were recommended to be one-sixteenth of an inch thick. Would it make any difference in the efficiency of the machine if the disks were made of one-eighth inch glass? A. The thinner the plates are, the better will the machine work. 2. Should the teeth of the collecting combs be allowed to touch the tinfoil sectors? A. No. 3. Can hydrogen gas be exploded if confined in a reservoir by a spark from an induction coil, and if so, what would be the explosive force compared to gunpowder? A. A mixture of hy rogen and oxygen can be thus exploded. For an instant a pretty high pressure will be produced, but not comparable with that due to the explosion of gunpowder. 4. Has any paper been published in the SCIENTIFIC AMERICAN SUPPLEMENT describing a gas engine? A. We refer you for gas engines to our SUPPLEMENT, Nos. 484, 508, 715 and 716. 5. In what proportion are nitric and sulphuric acids mixed to make pyroxyline for an electrophorus? A. For the manufacture of pyroxyline and celluloid we refer you to our SUPPLEMENT, Nos. 227, 265, 817. Also SCIENTIFIC AMERICAN, No. 18, vol. 60, No. 7, vol. 63, No. 3, vol. 67, No. 17, vol. 71. It is better to buy a piece of celluloid than to attempt to make a plate of pyroxyline.

(6298) A. C. B. asks: 1. Is gas burned through a Bunsen burner injurious to health, if supply of fresh air is sufficient in a room? A. It is not injurious if the burner is of proper construction and is in good order. 2. What is the temperature of a Bunsen flame? A. It may rise in the hottest part of the flame to over 2,700° Fah. 3. What is the temperature of a common flame? A. It may rise in the hottest part of the flame to 2,400° Fah. 4. What is the per cent of air burned with a common and with a Bunsen burner? A. Both burn the same, the amount varying with the composition of the gas; about ten of air toone of gas is a fair average for good gas. Flame temperatures depend on the composition of the gas. We have published a number of excellent papers on flame temperatures and the physics and chemistry of flames in our SUPPLEMENT, Nos. 701, 846, 848, 850, 857, 867, 892, 930, 941, 942.

(6299) L. C. K. asks: 1. Is there any waste of zinc or solution in the Disque Leclanche battery when the circuit is open? Is it the same with the Crowfoot cells? A. Practically none in the Leclanche battery; a great deal in Crowfoot cells. 2. The E. M. F. of one Disque Leclanche cell is 1·43 volts, the amperage is 6 to 8; what would be the voltage and amperage of 6 cells and how is the result obtained? A. You give too high an amperage. Such calculations are done by Ohm's law. See Sloane's "Arithmetic of Electricity," $1 by mail. 3. How can an alternating current be changed to direct current without the use of a commutator? I wish to use an electroplater in an electric incandescent circuit. A. You must have an alternating cnrrent motor, connected to a direct current plating dynamo. 4. Can India rubber such as used as corks be changed to hard rubber, and how? A. This cannot be done satisfactorily. Heating with sulphur might effect a superficial action, but it would be of no utility.

(6300) W. W. asks: 1. When zinc is forming in strong sulphuric acid, what gas is given off, and is it unhealthy? A. Hydrogen gas is almost always given off in these cases. It carries with it a quantity of sulphuric acid spray and is more or less impure. The gases are rather injurious to health, but the human system seems able to endure a great deal of these emanations without much effect. 2. In sulphuric acid battery, should the surface of the zinc and copper, or zinc and carbon, bear any certain proportion to get best results? A. There is no such proportion; in general the larger the carbon or copper the better. 3. In gravity battery, where does the gravity come into operation? A. The higher specific gravity of the solution of copper sulphate keeps it at the bottom. As soon as the zinc sulphate solution becomes of higher specific gravity, the action of the battery is interfered with. 4. In electro-magnet what would be difference in magnetic strength in the two following cases: 1. Two amperes at 10 volts. 2. Two volts and 10 amperes. A. If the wire was of the same diameter and was wound in superimposed layers, the second case would represent the stronger magnet. It is a question of ampere turns.

(6301) H. N. M. asks: Why is it that the pressure on all the contents of the chest cavity is diminished when an inspiration occurs? A. By the action of the muscles of the diaphragm in great part.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

November 6, 1894,

AND EACH BEARING THAT DATE.

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