NEW BOOKS AND PUBLICATIONS.

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The Clark & Longley Co., of Chicago, have issued a useful dictionary for architects, builders, and others. Mr. George O. Garnsey is the author and compiler, and the work contains the definition of over 3,000 terms used in the building trade, some of which are accompanied with well executed engravings. This work is furnished in a substantial and ornamental leather binding, and will no doubt meet with a large sale among architects.

TRANSACTIONS OF THE WAGNER FREE INSTITUTE OF SCIENCE. VOL. I. EXPLORATIONS ON THE WEST COAST OF FLORIDA AND IN THE OKEECHOBEE WILDERNESS. By Angelo Heilprin. Philadelphia, 1887. Wagner Free Institute of Science. Pp. vi., 134.

The late William Wagner, a citizen of Philadelphia, is the founder of the institute that bears his name. Since 1855 it has been incorporated. During Mr. Wagner's life his interest in it was personal and unceasing, and dying, he left it well endowed as a permanency, to carry on the work of giving free lectures and carrying on original researches in science. Professor Heilprin, who, by his contributions to recent geological history, notably in the International Science Series, has won considerable reputation, was intrusted with the charge of an expedition to the Florida peninsula. In the present report the account of his work is given, together with illustrations and identifications of the fossil shells. The plates of the shells are produced by autotype, and are beautiful examples of such work. The entire report, on heavy paper with wide margins, has the aspect of an *edition de luxe*. The general conclusions as to the history of the Florida peninsula are of much interest and novelty. Professor Heilprin pronounces it to belong exclusively to the tertiary and post-tertiary periods, and hence to be the youngest portion of the United States. Its growth he declares to be almost entirely due to sedimentary causes and upheaval. The hypothesis of a coral formation of the entire peninsula is unhesitatingly rejected. The northern half of the State represents a deep-sea formation, while deposition from shallower waters is indicated for the southern territories. Upheaval seems to have been very gradual and even, as little disturbance of the strata can be discerned. A plea for evolution is drawn from the fossils discovered, and relics of ancient man are noted as having been found on Sarasota Bay. In addition to the plates of shells, a few landscape plates of the regions explored give variety to the book. It is altogether, both in matter and form, a credit to Professor Heilprin and to the Wagner Institute.

* * Any of the above books may be purchased through this office. Send for new catalogue just published. Address Munn & Co., 361 Broadway, N. Y.

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.

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.

(1) F. E. O.—Enameled writing pads are made by using bleached shellac and borax dissolved in water. Kremnitz white is then rubbed up with a little water glass, and the whole worked into a thin paste, which is spread upon the paper with a stiff brush. The paper is then steamed in a chamber at a temperature of 248°, or a pressure of 15 lb., which fuses the shellac and makes the surface waterproof. To make the surface smooth, it should be passed through a steam calender.

(2) W. N. G. asks: What is the thickness of the metal around the powder chamber of a 15 inch gun? And what pressure per square inch would throw a 100 lb. projectile one mile? Also, what amount of powder would produce the above result? A. The thickness of metal of guns depends largely upon the material used and the power required. In steel guns the thickness is about equal to the diameter of bore. The elevation of the gun and strength of powder, whether quick or slow burning, and the length of the gun are all elements in computing pressure and amount of powder required. We refer you for further information to a valuable table of the weight and power of modern guns, in SCIENTIFIC AMERICAN SUPPLEMENT, No. 583, and on steel guns, gunpowder, etc., in SCIENTIFIC AMERICAN SUPPLEMENT, No. 589; also on the new 110 ton guns, in SCIENTIFIC AMERICAN, April 16, 1887. You will find in Chambers' "Practical Mathematics," under the head of projectiles, simple and easy computations for all conditions of gun practice.

(3) G. O.—There is no satisfactory method of camera or polyopticon projection with objects in same position with image. The double glasses interfere with the field and the brightness of the image. For illustrations of camera lucida, see SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 393, 380, 420.

(4) R. W. S.—A test of 300 lb. pressure on linen hose, determined by plugging a 50 ft. length at one end and applying a gauge, is not high for the best qualities of such hose. You might easily have reached such a pressure in your hose with 190 lb. of steam in the engine, the pump cylinder having a corresponding smaller area than the steam cylinder. We cannot say how far small leaks might have indicated that less pressure was exerted in the hose than that shown by the gauge, without more exact details; but if the leaks were trifling, you probably had substantially the pressure indicated by the gauge.

(5) R. J. K. desires: 1. A receipt for making a varnish to be used on a paper check. Something that will dry quickly, and will protect the signature. A. The only satisfactory varnish for your purpose is naturally a shellac varnish; but, judging from the specimen sent, a poor quality has been used. You can only obtain better results by the purchase of some good white shellac. 2. How to remove mildew and dirt spots from a rattan carriage body. A. Try Labarraque's solution or bleaching fluid for this purpose. 3. What kind of varnish can I use on it protect it? A. Use a good wearing body varnish, and give it plenty of time to dry.

(6) O. M. H. writes: 1. In drilling a hole in the earth for oil or natural gas, the drill and all irons attached thereto become strong magnets, so that a common pocket knife will adhere and hang suspended. What is the cause? A. It has long been known that striking a steel rod endwise will magnetize it. If it is hard, it will retain its magnetism. The old fashioned fire irons, when constantly handled and thrown into the corner of the fireplace, have been known to become magnetic. The drill point of your boring tool is of steel, hardened. The rod becomes magnetic by the end shock, and the steel end tends to retain it. 2. Can steel cast into tools like the blades of house shears be tempered after they are finished and ready to be put together? If so, how is it done? A. Steel cast into articles of cutlery, if of the proper carbon temper, may be hardened in the usual way. You cannot tell the hardening properties of an otherwise unknown quality of steel without a trial. If the steel is too low in carbon, it can be casehardened.

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