

NEW BOOKS AND PUBLICATIONS.

EIGHTEENTH AND NINETEENTH ANNUAL REPORTS OF THE TRUSTEES OF THE PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY. Cambridge, 1886. Pp. 128.

The Peabody Museum is established on a small foundation, but by careful husbanding of its resources and by receiving subscriptions in aid of its work, has amassed a very valuable collection. The labors of its officers are well illustrated in the Curator's annual reports. Two of these are given, one for 1884 and one for 1885, in the present pamphlet. The system has been to collect as far as possible connected relics, in order to preserve the associations of different objects, and not merely to accumulate surface relics. This is really the key of their work. In the Curator's report for 1884, an interesting document is presented in a copy of a letter from Miss Alice C. Fletcher that accompanied her commitment to the care of the Museum of the belongings of the sacred tent of war of the Omahas. A report by Dr. William F. Whitney on the diseases of the bones of the aboriginal races, as revealed by their remains, is quite a curious document, treating the subject of the diseases of these long extinct natives of our country. An illustrated description of explorations in Ohio, by C. L. Metz and F. W. Putnam, is of great interest, especially in its account of the curious ear ornaments of the early aborigines, a species of rude jewelry composed of native copper and silver, and found in tombs with the Indians' remains. The indications of woven fabrics in the same tombs are very curious and reasonably certain. A second report for 1885 of the Curator comes next, in which the systematic system is again forcibly insisted upon. Notes of the Curator's own explorations in the interest of the Museum are given. His allusion to the specimen cases of the Museum is interesting. They are built of cherry and simply oiled. Their interiors are painted light blue, with the happiest results as regards saving the eyes of the student from the white glare usual in museum cabinets. So successful have been these cases that many institutions have copied from them.

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 This is for our information, and not for publication.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. **Queries** 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) **Oriental asks:** If a certain coal yields by analysis, say 10,000 feet of gas per ton, will the large meter at a gas works register that amount in actual practice, and, if not, about what percentage less? A. If analysis is correct, it should give the same result on the manufacturing scale measured by the station meter.

(2) **M. C. A. asks:** Will you kindly answer in your valued paper, *SCIENTIFIC AMERICAN*, if the burning of casks that have contained bleaching powders (hypochlorite of lime) or soda ash would be detrimental to the ordinary boiler, or the iron stacks with which the boiler is connected? Sometimes the casks are left exposed to the weather for a week before burning. A. We would advise you not to use bleaching powder casks. The soda ash casks would do harm if they formed incrustations on the tubes or fire sheets, which, when the boiler was cold, would attract moisture and corrode it. It would be better policy to use neither.

(3) **W. C.—A good way to line a long shaft** by the boxes is to set up a true carpenter's level on a couple of light yokes or frames nailed to the beams, so that the top of the level will be at the proper level of the center of the shaft. Cut a card board disk the size of the shaft and place in the box of the end hanger and adjust the hanger to the sight range across the level, then adjust the hanger at the other end in the same manner. The end hangers being on a level and in their proper horizontal position, all other hangers may be readily adjusted by a sight range through the boxes. A stretched line is proper for horizontal adjustment. The spirit level adjustment along a line of shafting already in place is proper, but rather tedious. A set of 3 or 4 hooks to hang on the shaft, all of exactly the same length and projecting below the pulleys, one at each end, the others moved along to different sections of the shaft, with a line sight along their ends, is a quick way of bringing each section to its proper level. A line shaft may be connected to the engine shaft with a flexible link with propriety, where there is requirement for such connection, and the line shaft is subject to flexure.

(4) **C. F. W. asks a recipe for Florida water.** A. Take 2 drachm each of the oils of lavender, bergamot, and lemon, 1 drachm each of tincture of turmeric and oil of neroli, 30 drops oil of balm and 10 drops oil of rose, mix the above with 2 pints deodorized alcohol.

(5) **C. A. H. asks:** What are the ingredients and the method of making a fulminate that will explode from a sharp blow. The article was used a few years ago to cover over a target ball, which, when hit with shot, exploded, emitting a flash and smoke. Could it be made and kept in a liquid form, to be used when required? Where can we learn more regard to this matter? A. Such a mix-

ture might be prepared with chlorate of potash and sulphide of antimony or copper. The proportions would vary, and we would advise you to examine some of the numerous receipts given for the preparations used in the manufacture of parlor matches. A number of these you will find in the "Techno-Chemical Receipt Book," which we can send you for \$2.00. The color can be imparted by using the materials generally employed in the manufacture of colored lights. Such a mixture could be made in paste form, like paint, so that it would be available when desired.

(6) **H. L. F. desires (1) a recipe for a compound** that will harden wood, preventing it from splitting or cracking. A. Wood steeped in a solution of iron sulphate or copperas becomes very hard and almost indestructible. 2. What will permanently and without injury remove superfluous hairs on a lady's face? A. There are numerous depilatories, such as a strong solution of barium sulphide made into a paste with powdered starch. We believe all depilatories likely to prove effectual are liable also to injure the skin. See also "Removal of Hair by Electricity," in *SCIENTIFIC AMERICAN SUPPLEMENT*, Nos. 176 and 353.

(7) **J. A. S. asks the preparation used** by dentists in cleaning tartar from the teeth and the mode of using it. A. Take of dry hypochlorite of lime $\frac{1}{2}$ drachm, red coral 2 drachms, triturate well and mix thoroughly. This powder is employed in the following manner: A new brush is slightly moistened, then dipped in the powder, and applied to the teeth. A few days' use of this powder will produce a marked alteration in the appearance of the teeth.

(8) **L. W., Jr., desires receipt for making** solder that will mend tinware without the use of acid or the soldering iron. A. This is probably what is called bismuth solder, and may be made by melting and mixing 40 parts tin, 20 parts lead, 40 parts bismuth by weight, and run into small bars by pouring from a perforated ladle while drawing the ladle across a flat piece of iron, stone, or board.

(9) **H. J. W. asks: 1. Why does oil** lubricate machinery? A. Because the oil keeps the surfaces from touching each other. 2. My showcase has become worn by contact with articles passing over it. Is there anything that will restore its brilliancy? A. You can partially repolish the glass by rubbing it with rouge on a piece of buckskin. Wet the rouge.

(10) **B. O. G. asks how to polish** tortoise shell. A. After the tortoise shell is scraped perfectly smooth and level, rub it with very fine sandpaper or Dutch rushes; repeat the rubbing with a bit of felt dipped in very finely powdered charcoal with water, and, lastly, with rotten stone or putty powder; and finish with a piece of soft wash leather, dampened with a little sweet oil; or still better, rub it with subnitrate of bismuth by the palm of the hand.

(11) **L. B. H. asks:** Will a pump lift as large a quantity of water from a well 20 feet deep as it will force 20 feet high? In the latter case the water is supposed to flow into the pump. A. Other things being equal, the difference will be in favor of forcing the water 20 feet with no suction. Water contains more or less air, which is liberated in the partial vacuum formed in the pump suction. This air enters the pump in a rarefied state and displaces some of the water; consequently, the pump is unable to deliver an amount of water equal to the actual displacement of the piston. If the suction pipe leaks even a small quantity, the difficulty will be increased. When the water is delivered to the pump and no vacuum is formed, the cylinder will be entirely filled with water, which must be displaced at each stroke of the piston. Consequently, the full capacity of the pump will be realized.

(12) **C. L. B. asks a receipt for softening** steel, so it can be worked up easily (to make letters, figures, and all such tools). A. Steel can be decarbonized by placing it in an iron box of pulverized hematite and heating to a low red for a few hours, and may afterward be recarbonized by again heating in the iron box filled with horn, leather, or shavings, and pulverized charcoal. We do not recommend the process for letter or figure punches, and unless you have experience in such work you may make discouraging failures.

(13) **D. L. P.—There is no difference in** value of the readings of an aneroid and mercurial barometer with their corrections applied. English barometers of both kinds are marked in inches. The French barometers are marked in millimeters. You have possibly confounded millimeters and French lines in your reading. Aneroid barometers are not reliable.

(14) **F. E. O. asks (1) how to protect an** iron abutment of a bridge from rusting in contact with the earth above the water line, below water, and when alternately wet and dry. A. Cover with a coat of asphalt or coal tar, and then surround with pure Portland cement. The part of the post that is subject to wet and dry should be thoroughly cleaned and painted with two coats Prince's metallic paint in boiled linseed oil. 2. A simple way of repairing a rubber boot that has half an inch square of the rubber coating peeled off the linen. A. Use rubber cement to cover the peeled patch, two or three coats.

(15) **K. B.—We know of no better way** of cutting marble than that practiced by the marble sawing trade. Make your saw of thin sheet iron, no teeth, size of a common wood saw, and fit it into a wood saw frame and work the saw forward and back on the marble, with fine sharp siliceous sand and water, plenty of each. It is slow work, but the best that we can do.

(16) **D. F. writes:** In your issue of July 31, in answer to my question as to what steam pressure on a boiler was equivalent to a cold water pressure of 120 pounds, you reply "75 pounds allowed." A boiler maker insists that although but 75 pounds pressure is allowed, the 120 pounds cold water pressure is equal to 240 lb. pressure. He says that water is not as elastic as steam, and that cold water pressure is equal to double the same number of pounds steam pressure. Will you answer more fully? A. Your boiler maker

labors under a very erroneous and dangerous impression. The pressure is exactly the same, whether produced by water or steam, but water or hydrostatic pressure is not dangerous in case of rupture, while steam pressure is.

(17) **S. M. Mc. C. asks how much crude** cottonseed oil weighs a gallon. We calculate it at 7½ pounds, but at what temperature should it be, as oil expands and contracts as it heats or cools? A. For the summer yellow cottonseed oil, the actual weight at 60° Fah. is 7.6592; and for the crude, 7.6683.

(18) **H. A. F. asks:** How can I make canvas perfectly waterproof so as to be suitable for a canoe covering, and also that it will not crack when folded in small space? A. Use a solution containing equal parts by weight of gelatine and bichromate of potash. It is not advisable to mix more of the solution at once than is sufficient to give the canvas one coat, as, if the mixture once sets, it cannot be reliquified like a plain solution of gelatine; and hence, if the quantity of canvas to be waterproofed is small, it would be preferable to coat with plain gelatine solution until quite impervious to cold water, and then to thoroughly soak, say for 24 hours, in a strong solution of bichromate of potash. You might try melted paraffine applied to perfectly dry canvas.

(19) **G. M. P. writes:** I have a heating stove, the body of Russia iron. It is spotted with rust. Can I use nothing better than common stove polish on it? A. Use the following: Take of asphaltum 2 pounds, boiled linseed oil 1 pint, oil of turpentine 2 quarts. Fuse the asphaltum in an iron pot; boil the linseed oil and add while hot, stir well and remove from the fire. When partly cooled, add oil of turpentine. Some makers add driers.

(20) **T. A. S. asks:** What is the best mode of removing the strong odor from meerschaum without destroying the color? A. The stem of the pipe may be cleaned by passing alcohol through it. Care must be taken, however, to prevent the solution from getting on the outside of the pipe, as it tends to destroy the coloring.

(21) **W. H. S. asks:** What can I mix with turpentine, or what liquid can I mix with good drier, to bronze? A. Apply a coat of good copal varnish, and, before the latter is entirely dry dust over the bronze powder by means of a soft brush. To avoid unnecessary loss, place the article on a sheet of clean white paper, so that superfluous bronze powder can be saved.

(22) **C. F. S. writes:** Can you give me a receipt for a cheap, dark green stain suitable for roofs? Must contain nothing that would render the water unfit for use. Also dark red stain possessing the same properties. A. For the green stain, use turpentine with a very little raw linseed oil colored with yellow ochre and black; for red, use any oxide of iron paint. You may try crude petroleum instead of turpentine and oil.

(23) **E. F. H. asks (1) how to make that** yellowish kind of lacquer, such as opticians use on lenses and like instruments. A. Take equal parts of gum mastic and white shellac, and dissolve in alcohol, then add half a teaspoonful of glycerine to a pint of the mixture. Then color, by adding, drop by drop, aniline yellow, soluble in alcohol, until the proper shade is obtained. 2. The process by which the brass of same is blacked so as not to be rubbed off by friction. A. Make a strong solution of nitrate of silver in one dish and of nitrate of copper in another. Mix the two together, and plunge the brass in it. Now heat the brass evenly until the required degree of dead blackness is obtained.

(24) **J. D. W. C. writes:** I have a military decoration, in the shape of an iron cross with silver trimmings. Will you tell me what I can do to the iron to prevent rusting, without disguising the material or injuring the silver? A. A thin coat of copal varnish will probably accomplish your object. Linseed oil is also used for this purpose.

(25) **C. H. F. asks for a method of** polishing ivory. A. Rub first with fine glasspaper, and then with a piece of wet linen cloth dipped in powdered pumice stone. The final polish may be produced by washed chalk or fine whiting applied by a piece of cloth wetted with soap suds.

(26) **G. C. W. asks:** 1. What will soften hard water and not damage clothes? A. If the water is not permanently hard, the hardness can be removed by the addition of milk of lime or by boiling. 2. What is the best method to wash real lace curtains? A. Soak and then gently agitate them in tepid soap suds, two or three different waters if necessary; then rinse in cold water, and gently open out to dry on a white tablecloth in the open air. 3. Can you refer me to any authority upon table setting and serving? A. See Miss Parlos's New Cook Book, which we can send you for one dollar.

(27) **J. F. H. writes:** A cast iron weight has accidentally fallen into a cask of pure cider vinegar, discoloring the same. What shall I do? A. Place some charcoal in your cask, and stir from time to time. We doubt if you will satisfactorily accomplish your end.

(28) **Gyp would like to know (1) how** to make a good, hard cement for bone and ivory. A. Use white wax, resin, and oil of turpentine, melted together at a moderate heat, so as to form a thick, fluid mass. If the cement is to be colored, finely powdered coloring substances, as red lead, ultramarine, etc., are to be added. 2. How to polish amber. A. By friction with whiting and water, and finally with a little olive oil laid on and well rubbed with a piece of flannel, until the polish is complete.

(29) **C. N. desires a receipt for making** koumiss—one that can be used for making it at home. A. Koumiss is prepared by dissolving 4 ounces of white sugar in one gallon of skimmed milk, and placing in bottles of the capacity of 1 quart; add 2 ounces of baker's yeast or a cake of compressed yeast

to each bottle. Cork and tie securely, set in a warm place until fermentation is well under way, and lay the bottles on their sides in a cool cellar. In three days' fermentation will have progressed sufficiently to permit the koumiss to be in good condition.

(30) **C. G. C. asks:** Is there any way to preserve insects in a dry state, such as beetles, flies, spiders, etc., for microscopic purposes? A. They may be preserved by dipping in a solution of corrosive sublimate. This is, however, extremely poisonous, and great care must be taken in its use. Dipping them in melted paraffine would preserve them from contact with air.

(31) **F. P. says:** I have a sugar mill (cylinders 27 inches by 42 inches) now running eight revolutions per minute; can change to four with little cost. Shall I get more saccharine matter out of the cane, running slow? If so, please say why, and how. The slower motion would give greater compression to the cane, and would no doubt add to the product of the cane juice by allowing more time for expression, as it is a well known principle that time adds to the product, as practiced in the production of linseed and cottonseed oil, also in the expression of fruit juices. How much we could not say, as we have no practical experience here with sugar mills.

MINERALS, ETC.—Specimens have been received from the following correspondents, and have been examined, with the results stated.

E. B.—Both specimens are ordinary clays, colored with oxide of iron, and in the vicinity of New York such material is known as Jersey mud.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted,

September 14, 1886,

AND EACH BEARING THAT DATE.

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

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