as more remarkable than my own. That of a young lady, who had been paralyzed by fright or contusion when her horses ran away and her carriage was destroyed; and to whose father Dr. Starkey, after examining the case, said she was beyond the reach of human agency. I know her now as a happy wife and mother, restored to most excellent health.

"You may judge of my restoration to health by the contrast between the results of some of my recent Congressional debates, compared with what they were in 1874. In that year when I spoke in the House in favor of the grant by the Government to the Centennial Exhibition, I was so prostrated by the exertion, that my dear friend, the late Col. John W. Forney, left the gallery, in which he had been sitting, in order to come to the door of the hall to assist in relieving me when I should fall. I found, on quitting the floor, that there had been a general fear that in my zeal I was passing beyond the bounds of prudence.

"But on the fifth of May, 1882, when submitting an argument in favor of a Tariff Commission, I held the floor for nearly three hours, though parts of the debate might be characterized as a wrangle between myself and others; and as I did not obtain the floor until the afternoon, I surrendered it, because the close of the day had come, when members' appetites told them that dinner was on the table. The evening was passed in my rooms, with a high degree of sociability, in which a number of young ladies and gentlemen from my district, who happened to be in the House during my speech, participated.

"On a recent occasion I addressed five thousand people in the Philadelphia Academy of Music, without feeling any exhaustion. I have a hearty appetite, and am able to take abundant exercise. I sleep well, and have a far better color in my cheeks than I had ten years ago.

"You ask if I still continue the treatment. Whenever I am in Philadelphia, and feel a fresh cold, or suffer from the nervous exhaustion which follows excessive labor, I go to the office of Drs. Starkey & Palen, and resort to the treatment, and am never without the 'home treatment' in Washington. I have the highest confidence not only in the treatment itself, but in Drs. Starkey & Palen as gentlemen of skill, integrity, and good judgment."

To learn all about COMPOUND OXYGEN, write to Drs. Starkey & Palen, 1109 Girard Street, Philadelphia, for pamphlet setting forth full particulars.

NEW BOOKS AND PUBLICATIONS.

THE AIR WE BREATHE, AND VENTILATION. By Henry A. Mott, Jr., Ph.D., E.M. John Wiley & Sons, New York.

In this book are briefly presented some elementary truths, with a practical dissertation on ventilation by the aspirating system, or that which undertakes to withdraw the foul air, leaving the fresh air to take care of itself.

THE AMERICAN FLOUR MILL AND MILL FURNISHER'S DIRECTORY. E. Harrison Cawker, Milwaukee, Wis.

It is said a Washington Solon was recently "posed" on the question as to what manufacturing industry represented the most money in the United States, when his interrogator "enlightened" him by saying it was the milling industry. Now, the products of flouring and grist mills, by the census of 1880, were $505,185,000, representing, of course, more than the manufactures of any other industry, but the materials which these mills ground up cost them $441,500,000, which go to the credit of our agricultural production. The millers, however, do a big business; there are over 24,000 establishments, employing a capital of $177,000,000 and some 60,000 hands. To make a good directory of this great business is no small job, but this is what Mr. Cawker, of the *United States Miller*, Milwaukee, has attempted. There are over 25,000 flouring mills in the United States and Canada noted, and the book indicates in many instances the kinds of flour made, the capacity of the mills, the power used, etc. The book is evidently the result of great labor and studious attention to details.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from $1 to $5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at the office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) A. B. W. writes: I have tried several kinds of rubber cement for soling and patching rubber boots and shoes, but they have not given satisfaction, the patches and soles coming off in a week or ten days' wear. Please inform me how to make a cement that will do this work satisfactorily? A. The ordinary rubber cement which is so much used by fine shoemakers is made by dissolving a quantity of gutta-percha in chloroform or carbon disulphide until the solution has the consistency of honey. Thin down the parts to be cemented, then spread a small quantity of the cement well over the parts to be joined. Warm the parts over a flame or fire for half a minute, bring the surfaces to be united together, and hammer well or clamp firmly. The cement dries in a few minutes.

(2) C. E. W. asks: 1. Is compressed air machinery very expensive? A. Pumps for compressing air that are in the market are large and expensive, and made to run by steam pump—and engine attached. 2. Can it be used to advantage in connection with a wind engine? A. A pump for a wind mill to work as a compressor has not yet been utilized that we know of, although there has been a great deal written and published upon that subject of late. 3. Could an amateur with a good screw cutting foot lathe and a reasonable degree of inventive genius produce a satisfactory machine for said purpose? A. An amateur could make a more or less perfect compressor according to his ability. 3. Will you be kind enough to give working drawings and description of a cheap compressor and receiver, together with a pneumatic engine? A. We could not give you designs or drawings suitable for your wants. A compression pump is nothing more in design than the ordinary suction pump with order of the valves reversed. The pneumatic engine for running by compressed air is not essentially different from a steam engine.

(3) M. O. K. asks for a formula for making marine glue for putting canvas on to a small boat. One that can be applied to the wood and, after it has set the canvas ironed on with a hot flat iron? A. In SUPPLEMENT, No. 158, are given a number of formulas for glues, including marine glue. The following may also be found suitable: 3 to 4 parts India rubber, dissolve in coal tar benzine, add to the thickish fluid 65 parts powdered seedlac. This glue must be heated to about 248° Fahr. before applying.

(4) C. W. H. asks for a receipt for making a paste that will keep paper labels on tin boxes? A. Use a dilute solution (1 to 20) of white gelatine or isinglass, or Starch paste with which a little Venice turpentine has been incorporated while it was warm.

(5) H. L. O. asks: How cold would this earth become if all heat was removed, both artificial and natural? A. The earth's surface would rapidly cool down to the temperature of space, if removed from the influence of the sun. We do not know how cold space is by any experiments or observations.

(6) S. M. asks for formula for making a good quality of baking powder?

A. Powdered cream tartar.....30 oz.
Sodium bicarbonate.....15 "
Flour.....5 "

All well dried; mix thoroughly, and keep dry.

(7) C. W. S. asks: What is the salt solution—salt dissolved in the nitrate of silver? Will this process do to strip the tin from tin cans, etc.? A. Salt solution is ordinary salt dissolved in water. This solution precipitates the silver as chloride, which when fused with borax reappears in its metallic form. This process is not applicable to the separation of tin from tin cans.

(8) J. A. T. writes: In silver plating on steel and Britannia metal I found that the silver does not adhere firmly, but peels off when burnished. Can you tell me how to prevent it, or how those two metals are prepared before they are plated? A. Thoroughly clean the articles. Put on the first coating with a strong battery and strong solution (striking solution).

(9) J. S. McD. asks for a liquid that will not freeze, that can be used safely without injury to packing in hydraulic cylinders? A. Try alcohol, or water with a small percentage of glycerine added.

(10) H. B. C. asks why, if the positive pole of a sulphate of copper battery be connected with the negative pole of a bichromate of potash battery, or *vice versa*, little or no current flows between the remaining poles? A. It is simply because the current from one battery nearly or quite counteracts that from the other battery.

(11) J. W. B.—The following is given by certain authorities as the composition of Hostetter's bitters:

Calamus root.....2 pounds.
Orange peel.....2 "
Peruvian bark.....2 "
Gentian root.....2 "
Colombo root.....2 "
Rhubarb.....8 ounces.
Cinnamon.....4 "
Cloves.....2 "
Diluted alcohol.....4 gallons.
Water.....2 "
Sugar.....2 pounds.

(12) W. J. J. asks what makes the water crack and bang in steam pipes, especially in pipes for heating houses, stores, etc., when the steam is turned on? A. It is generally attributed to the condensation of the steam in the pipe. Sometimes a water hammer is produced by the current of steam driving the water before it.

(13) G. B. F. asks: What, if any, other transparent hard stone than a diamond crystallizes in dodecahedron form in which all of the natural facets are convex? Weigh of stone I refer to is 128 grains, has no shade of color, is symmetrical in form, clear as a drop of spring water, so hard that emery will not scratch it, specific gravity a little over 3½. I pronounce it a diamond, having seen many rough diamonds, and this is the most perfect in its crystalline form which I have ever seen. What would be its probable value at present rates, if the stone is such as I have described? A. From the description, the nearest mineral that it would resemble besides the diamond is the white topaz. The hardness of the latter is but 8, while the diamond is 10, and the corundum gems, such as ruby, sapphire (the same composition as emery), are 9. Its value as a diamond cannot be estimated unless examined. In England, a diamond weighing 1 carat (3·2 grains troy) and of the purest water is worth, when cut and polished, £12. From this as a starting point, the price increases with the square of the weight multiplied by 0·12.

(14) N. J. S. writes: Can you recommend any application that will render the pine floor of a hemp twine mill imperfectly combustible? Covering with sheet iron is not practicable, "fireproof" paint will wear off, and salt solutions cause too much dampness. A. Nothing will readily penetrate a pine floor to a sufficient distance to be of any service. Better give the floor a coating of asbestos fireproof paint, and renew it from time to time in the worn places.

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