

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 This is for our information and not for publication.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. 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.

(7844) J. A. C. writes: I connected the Wheatstone bridge with rheostat on one side and a small piano wire about two feet long on the other. The current used was from a small storage battery of four cells. When the piano wire is plucked or bowed so that it vibrates, giving out a musical note, the needle of the galvanometer turns in a direction indicating decreased resistance in the wire. Will you please explain the cause? I was trying to prove that the wire would be warmed by vibrating, but get the opposite result. A. We have verified the statement of this correspondent, and find the same result, with a bridge sensitive to 1000 ohm. When the wire is stretched it shows greater resistance due to its elongation, as it should. When the wire was allowed to vibrate, its behavior seemed to vary with the material. A steel wire showed a decrease of resistance while a German silver wire showed little or no perceptible alteration. Now since the temperature coefficient of German silver is very small, and that of steel is quite large, we suggest the theory that the decrease of resistance is due cooling while vibrating.

(7845) W. M. B. asks: What will preserve gill nets (made of fine gill twine) used in catching shad in the waters of Delaware Bay? We have been using lime water as recommended, but it does not seem to have the desired effect, as the nets become rotten before one season is ended. A. The following treatment is said to preserve nets for a long time in a good condition: Soften 1 pound good glue in cold water, then dissolve it in 10 gallons of hot soft water, with 1/2 pound curd soap. Wash the nets in soft water, then boil them in this for two hours, press out excess of the liquid and hang up over night. The second bath consists of alum, 2 pounds; water, 5 gallons; heat nearly to boiling, and immerse the nets in this for about three hours, then press and transfer to a strong decoction of oak bark or a solution of sumac in warm water (water, 5 gallons; sumac, 8 pounds), and let them remain immersed in this for forty-eight hours or longer, if convenient.

(7846) W. D. H. asks: 1. What is the smallest E. M. F. and current which will produce an arc? A. The counter E. M. F. of the arc is 35 volts. Hence a voltage greater than this is necessary. For direct currents at least 40 volts must be had. For alternate currents, 30 volts is the minimum. Five amperes may perhaps be taken as the minimum current. 2. I would like to produce a small arc light with the smallest possible size of dynamo, using the best and most efficient materials, and built into the most compact form; what would be the approximate size and weight of such a machine? Please give me an estimate, at least, of the size of such a machine. A. The dynamo which would light such a lamp, would require about a half horse power to drive it, and may be taken as of about the size of a half horse power motor. 3. What current is required for the manufacture of calcium-carbide at about 60 volts? A. In the electrical furnaces of the carbide works at Niagara many thousands of amperes are used. We do not know the minimum current for producing carbide. Twenty-five amperes will enable some work to be done. 4. Which is the most suitable for this, the direct or alternating? A. The direct current.

(7847) H. H. S. asks the cause producing "Jack-O-Lantern." A. The ignis fatuus is thought to be due to the spontaneous ignition of a small jet of phosphoreted hydrogen, when it comes into contact with the air. This gas is evolved by the decomposition of matter in swampy places and rises to the surface of the water where it takes fire and burns with a pale light. In the night this may be seen from quite a distance. It has always alarmed the timid and superstitious, but it is in reality a very pretty chemical experiment.

NEW BOOKS, ETC.

AMERICAN TELEPHONE PRACTICE. By Kemster B. Miller M. E. New York: American Electrician Company. 1899. 8vo. Pp. 458. Price \$2.

There is quite a literature on the telephone but most of them are hopelessly out of date and the practice they stand for is archaic. The present work deals with the subject in a masterly way and tells exactly what the electrician wishes to know about switch-boards and other perplexing points in telephone work. It is an admirable book and is profusely illustrated by diagrams and half-tones taken from the objects themselves. No phase of the subject seems to be neglected.

A MODERN SAFETY BICYCLE. By H. A. Garratt. London: Whittaker & Company. New York: The Macmillan Company. 1899. 16mo. Pp. 224. Illustrations and plates. Price \$1.

The literature in book form upon the bicycle is far from being extensive. The present work was intended to help riders to understand their machines and with the aid of the working drawings, mechanics can build their own machines if they desire to do so. The principles underlying the construction are clearly expressed.

INDEX OF INVENTIONS For which Letters Patent of the United States were Issued for the Week Ending MARCH 13, 1900. AND EACH BEARING THAT DATE.

(See note at end of list about copies of these patents.)

- Accumulator, H. Leitner..... 645,478
Acid rolling tower, C. Ruggart..... 645,235
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Advertising bombshell, J. Scalona..... 645,135
Advertising device, E. A. Powell..... 645,330
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Alarm mechanism, time, C. Schmidt..... 645,534
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Redstead attachment, in valve, E. A. Libby..... 645,421
Bell striker, F. W. Cole..... 645,249
Bicycle, fruit, A. L. Garford..... 645,446
Bicycle, lounsberry & Winn..... 645,267
Bicycle brake, W. S. Busler..... 645,245
Bicycle driving mechanism, A. A. Brown..... 645,065
Bicycle fan attachment, J. A. Mills..... 645,482
Bicycle, folding, H. L. Trebert..... 645,145
Bicycle gearing, changeable, G. S. Adams..... 645,446
Bicycle, fruit, A. L. Garford..... 645,446
Bicycle support, F. Barry..... 645,346
Binder, uniting tablet, J. F. Mallet..... 645,111
Bismuth or antimony from their sulfid ores, humid process of extracting the metals, J. Ranald..... 645,490
Blanket retaining means, animal, F. H. Mitchell..... 645,308
"Bobbin" holder, G. A. Clark..... 645,417
Boiler. See Steam boiler.
Bolt operating device, automatic, H. C. Stockwell..... 645,431
Book leaves flexible, rendering blank, L. Clark..... 645,459
Book, scrap, C. E. Schwartz..... 645,191
Books, binding, C. E. Searse..... 645,301
Boot or shoe, W. N. Hilton..... 645,083
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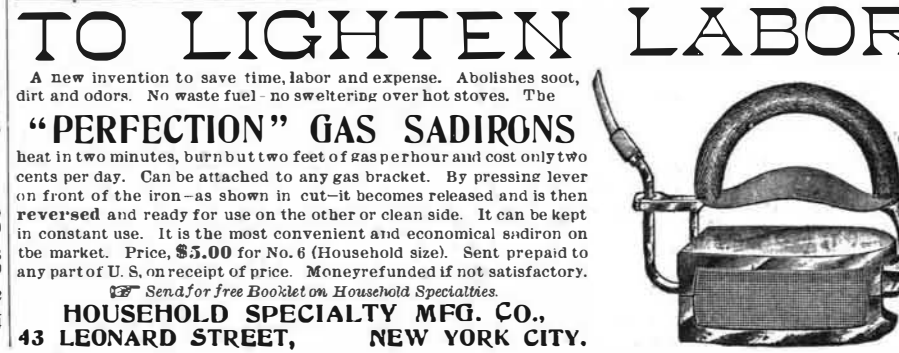
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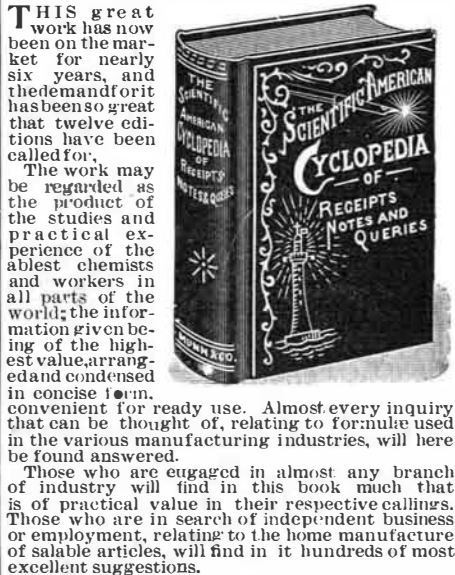
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