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Notes and Queries.

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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 This is for our information and not for publication.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.

(8688) R. G. R. writes: In the **SCIENTIFIC AMERICAN**, July 5, 1902, I read an article by Mr. Collins regarding a simple receiver for wireless telegraphy. I have constructed the receiver, adhering closely to instructions, but am unable to make it work. The sending and receiving stations are about three-quarters of a mile apart, each has an insulated air wire about 30 feet long bared for about 3 feet at the upper end. The earth wire is attached to a water-pipe. A Morse telegraph key is used for sending; two Lécclanche cells at the receiving station and two at sending station. Wire 1-12 inch in diameter is used for coherer. No coherer used at sending station. Air wire connected with key, key connected to battery, and wire from battery to ground. A. In your description of your wireless telegraph apparatus you do not mention an induction coil in the transmitting circuit to produce the electrical waves. The complete apparatus for both transmitting and receiving stations is described by Mr. Collins in an article in the **SUPPLEMENT No. 1363**, which we can send you for ten cents. To make a suitable induction coil you will need also **SUPPLEMENT No. 160**, price also ten cents.

(8689) I. D. asks for a formula for bluing iron and steel without heating. A. 1. From our **Cyclopedia of Receipts, Notes and Queries**: Scour the steel with a small quantity of a strong aqueous solution of soda, rinse in water, warm and brush over with a solution of 1/4 of an ounce chloride of iron, dissolved in 5 ounces of water, and let it dry; then apply in the same manner a solution of 1-5 of an ounce pyrogallic acid in 1 ounce of water, dry, and brush. Does not wear well without lacquering. 2. The blue oxide is sometimes imitated by using a thin alcoholic shellac varnish, colored with aniline blue or Prussian blue. 3. To blue steel without heat, mix finely-powdered Prussian blue with rather thin shellac; gently heat the steel and apply the varnish. 4. Iron and Steel to Blue Without Heat—Solution of potassium ferricyanide and water, 1:200; solution of ferric chloride, 1:200. Mix the two solutions and dip. 5. Antimony trichloride, 25 parts; nitric acid, fuming, 25 parts; and hydrochloric acid, 50 parts. Apply with a rag and rub until the proper color is obtained with a piece of green oak.

(8690) A. C. L. asks: Is it possible to convey a current of electricity from a battery, stored in a locomotive, to the rail, through the axle and wheel? Does not the oil bearing interfere with a perfect connection? A. We presume it is possible to convey a current of electricity from the locomotive to the rail through the axles and wheels, though we never tried the experiment. We think so, because the current from the overhead trolleys goes through the motor and the axles to the rail and returns to the power house in that way only.

(8691) M. G. M. asks: 1. With a current of 20 volts and where bare copper wire is used, is there any waste of same current where nothing but dry pine is used for insulation? A. There is always some leakage of current when bare wire is in contact with wood, and even over insulators, especially in wet weather. But in the case above there would not be much leakage so long as the wood is dry. 2. How many feet of No. 36 tinned iron wire like the inclosed has a resistance of 10 ohms? A. Iron has very nearly six times the resistance of copper. No. 36 copper wire has 2.408 feet per ohm. Ten ohms of No. 36 iron wire would be 4.02 feet long.

(8692) G. B. D. asks: Can you tell me how to construct a lamp or light that will burn under water (outside of an electric device). Any hints how to proceed will be appreciated. A. Any lamp will burn under water if protected from the water and supplied with air. We do not know any other way to produce a light under water. An electric light does not need air, a fact which renders it easier to have light under water by electricity, but this is out of the question with you. The metal potassium will burn under water. No means has been devised for utilizing the fact for illumination. Its cost is too great for such a use.

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