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(8587) M. and S. J. write: If iron or steel is properly cleaned before plating with nickel, it can be burnished like silver without peeling or stripping, therefore, the burnish is a good test for poorly nickelled goods, as the loose nickel will come off.

(8588) C. W. asks: Please inform me as to the difference between an aneroid and a holosteric barometer. A. The word *aneroid* is from two Greek words meaning without liquid, and the word *holosteric* is from two Greek words meaning wholly solid. They are two names for the same thing. There is no difference between them.

(8589) E. W. F. asks: We have a cooperative telephone system in operation here. One of the wires from the central office extends six miles to a neighboring town; and for one mile of its distance it runs parallel to a wire used by the electric lighting company, and carrying an alternating current of 2,200 volts. At night, when the current is on, the induction is so great as to interfere with the use of this branch. The bridging system is used in connecting the 'phones'; one wire overhead and a ground plate for each instrument. Seventeen telephones are connected in this way on the line. Could this difficulty (induction) be overcome by stringing another wire to a point beyond the termination of the electric light wires and grounding the end, using it as a common ground for all the instruments? Is there a better way of overcoming the induction? A. The only way to completely remedy your difficulty with the induction of the alternating current along your line is to use a metallic circuit frequently crossed, as is done with the city lines and the long-distance lines. See Hopkins' "Telephone Lines and Their Properties."

(8590) H. O. writes: Can you give us a formula for a preparation for the tempering of mill picks? A. The treatment of mill picks before hardening is of far greater importance than any hardening preparation other than salt water, which is the only menstruum that we can recommend. No hardening solution can recover the lost properties of steel that has been overheated, burnt corners of mill picks, or hammering at above or below a full red heat. Cyanide of potassium dissolved in the hardening water or powdered and sprinkled on the red-hot point before dipping, or even common soap rubbed on the pick before heating, are used by experienced men in the business.

(8591) J. G. B. asks: 1. The theory of electricity as commonly accepted by the most prominent scientists. A. The theory held by scientists is that electricity is a disturbance of the ether of space. 2. Why should a sounder have a resistance equal to that of the line? A. The sounder is in the local circuit, and not in the line. Its resistance is usually for 2 to 5 ohms. 3. Is it amperage or coulombs that decompose an electrolyte? A. Amperes are sometimes measured by the amount of metal they deposit in a second. Coulombs are the product of amperes by seconds. 4. If a sufficiently sensitive voltmeter were connected with the terminals of a Ruhmkorff coil, having a 1 cm. spark, what would be the registered voltage? A. The voltage of a spark of 1 cm. is from 14,000 to 15,000 volts. 5. Is it the voltage or amperage that shock animal tissue? A. The voltage furnishes the power to force the amperes through the body. Both are necessary to the shock. 6. How does evaporation from ocean produce electrification of the vapor? I have heard the following theory advanced, but would like your opinion on it. The ocean possesses equal + and - electricity. When a drop of water turns into vapor, the change of surface is so great that the charge becomes less dense per unit surface than the earth, and so becomes negative. A. The process of electrifying the air is not understood. Till something is known, one theory may be as good as another, if it is satisfactory to the person accepting it. 7. In all long-distance polyphase current lines, where the voltage is perhaps as high as forty thousand, is not the amperage a fraction? A. The amperes are proportionally lower as the voltage is raised in long-distance transmission of electricity.

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