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## Notes &amp; 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 This is for our information and not for publication.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.

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(4416) G. C. F. says: Please give me a formula for making a neutral or alkaline copper bath suitable for copper-plating zinc by the galvanic process. A. The best alkaline copper solution is that introduced by Mr. A. Watt, and subsequently modified by Mr. J. T. Sprague. Dissolve 8 ounces of copper sulphate in 1 quart hot rain water and set aside to cool. When cool, add liquid ammonia while stirring with a stick or glass rod. At first a green precipitate will fall, and then this will dissolve on adding more ammonia, until the whole solution assumes a lovely blue tint. Dilute this with an equal bulk of cold rain water, and add to it enough solution of potassium cyanide, while stirring, to destroy the fine blue color of the ammonia.

sulphate and give the color of old ale to the solution. Set this aside for a few hours, then pass it through a calico filter and make it up to a gallon of solution with rain water. This solution may be worked cold, but the rate of deposition is increased and the deposited copper of improved quality when the solution is heated to a temperature of from 110° to 130° Fahr.

(4417) S. McI. writes: Glass and sealing wax, if rubbed on cloth, will attract light substances. Is there any way of making a magnet permanent to attract small bits of paper, or other light substances? A. An ordinary horse shoe magnet attracts steel? A. Magnets will attract only magnetic materials and conductors carrying electric currents.

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June 7, 1892.

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