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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 This is for our information and not for publication.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.

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(4537) W. B. R. asks: Why does the air end of an air pump such as is used on locomotive engines sometimes get hot when pumping air? What makes the sound that we hear when a locomotive engine exhausts in the stack? A. The air pump on a locomotive is an air compressor. The compression of air and gases develops heat. Any volume of air contains a certain amount of heat, the exponent of which is the temperature. When the volume is suddenly compressed into a part only of its original volume, the same quantity of heat remains, but in a smaller space, which causes the temperature to rise in proportion to amount of compression. The sound of the exhaust the smoke stack is from the vibration of the air, due the suddenness of the operation, the exhaust acting like an explosion.

(4538) W. E. K. asks (1) how to obtain formic acid. A. In various ways; the dry distillation of oxalic acid is the simplest. It is made by the oxidation of gum and other organic substances by mixing 1 part of organic matter with 3 parts of manganese dioxide and 2 parts of water; 3 parts of sulphuric acid 50 per cent are added and in a short time the mixture is distilled. 2. How to take grease stains from the hands off the piano keys. A. Cover with glass and expose to the sun. 3. A cure for pimples. A. Consult a physician. Try washing the face with solution of Rochelle salts.

(4539) W. P. asks (1) for the best method to fasten rubber to steel without using rivets or similar devices. A. Use bicycle tire cement or marine glue. 2. Is there any difference between a series or shunt dynamo, provided everything is in the same proportion as near as possible to construct them, in regard to the E.M.F., that is, let both machines be of the same size and run at the same speed. A. The series dynamo gives the highest E. M. F. on open circuit, the shunt on closed circuit. As regards maximum E.M.F., they may be considered identical.

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Confectionery, A. L. Causse Manufacturing Company ... 21,757
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Paper, envelopes, and fine cardboard, writing, Hard & Pike ... 21,754
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Remedies, a line of, J. Williams, Jr ... 21,760
Remedy for catarrh and all diseases of the throat, lungs, and bowels, R. M. Davis ... 21,762
Remedies, temperamental, J. H. Patty ... 21,767
Sedlitz powders, J. F. Gibson ... 21,764
Tobacco, plug, J. G. Penn, *et al.* ... 21,768
Underwear, including hosiery, J. S. Lowrey & Co. ... 21,766

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