and pressing together the fresh surfaces. Otherwise it cannot be satisfactorily done. 8. How can I get a price list of chemicals? A. Address any wholesale drug house.

(2615) G. A. asks: 1. What is the highest altitude ever reached by a rarefied air balloon, and also a gas balloon? A. Accurate data are not obtainable for rarefied air balloons. In Coxwell and Glaisher's famous a cent of September 5, 1862, with a gas balloon, the height of 37,000 feet was probably attained. This is the highest altitude ever reached. 2. Can you recommend me to some good articles on aeronautics and balloon making? A. We refer you to our SUPPLEMENT, Nos. 726 and 249, and for an excellent illustrated account of the history of ballooning to our SUPPLEMENT, Nos. 738 and 739. 3. Is there any school on the Pacific coast where aeronautical engineering is taught? A. No. 4. Can you supply me with a book on the subject? A. We can supply May's Ballooning, $1. The book you mention in your letter is out of print.

(2616) J. G. H. writes: 1. I want to make an electrophorus as mentioned in "Experimental Science." Instead using a vulcanite disk, I want to make one composed of resin, shellac, and Venetian turpentine. Please let me know the proportions, how to go about making it, also is there any danger of explosion from the turpentine? A. Use 6 parts of resin, 4 of shellac, and 1 of Venice turpentine. Work at a low heat; there will be some danger of fire. 2. What kind of battery is the most useful for one who wants to make different electrical experiments? A. Probably a plunging bichromate battery would suit your purpose. The bottle form commonly known as the Grenet battery is very convenient. 3. I have an old style phonograph for which I am unable to get any suitable tin foil (12 square feet per pound). I have been to several foil manufacturers, but what they have is either too thin or too heavy. Can you tell me where I can get the right kind, also by what name is it known? The last that I used is called "sand blast foil," but it seems altogether too stiff. A. By going directly to the tinfoil manufacturers you can get any grade of foil you want. Some of the dealers who call themselves manufacturers do not really make the article.

(2617) Reader asks: In the simple electric motor is it necessary to have the wire on the twelve coils wound even, provided all the coils have the same length? If so, what is the reason? A. It is advisable to wind the wire as compactly as possible, on account of making the space between the armature and field magnet as small as possible. A motor will operate with more or less efficiency, whether the wire is wound evenly or not.

(2618) A. F. writes: Can you tell me if the piece of metal I sent you is the same as non-magnetic watch movements are made of, and if all of said metal will draw steel filings, if left on a magnet for a few hours, as this sample does? This is a piece of shield sold as non-magnetic, but it is attracted by the magnet. A. The metal you send is nothing but iron. As a magnetic shield it is the only serviceable metal. For non-magnetic work iron, on the other hand, must be rigorously excluded. The conditions in the two cases are exactly opposite. The metal best suited for a magnetic shield is the worst for non-magnetic movements.

(2619) W. L. R. asks what to add to the ordinary starch paste to make it permanent. I make it of a little water and common gloss starch, for mounting pictures, but it dries in about eight days. A. You must keep it in a tightly closed vessel. If it did not dry, it would be useless. See SCIENTIFIC AMERICAN, October 11, 1890, page 227, and also November 1, 1890, page 281, for pastes.

(2620) H. H. writes: 1. Will shaving cause pimples on the face of a young man in good health? A. It should not. 2. What will cure the same? A. Wash with a solution of Rochelle salts in water. 3. I find that bisulphate of mercury will make a silver-like polish on brass. Will this polish last? A. It will destroy the brass and will rapidly deteriorate. It should never be used.

(2621) P. M. asks what the musical artists use on their hands to make the sound when they play on musical glasses, tumblers partly filled with water. A. Powdered resin may be applied to the finger tips to give a greater "bite" upon the glasses.

(2622) C. H. R. asks: 1. In what number of the SCIENTIFIC AMERICAN can I find a description of the Stiletto? A. We refer you to the SCIENTIFIC AMERICAN of June 20, 1885, and of May 4, 1890. The latter article describes her as altered into a torpedo boat. 2. What is the rate of speed in miles attained by the speediest ocean steamers? A. From 23 to 25 miles an hour. 3. Would it be possible to attain same speed in a 50 or 60 foot boat built on approved speed lines by using specially designed engines? A. Yes, but only by using very high power.

(2623) B. R. B. writes: Will you inform me what is meant by dyeing on cotton mordanted as for the alizarine test? Would it not do to pass the cotton through a solution of alum to which soda ash has been added? A. For an alizarine mordant on cotton use a bath of 24 parts alum and 6 parts gray tartar for 100 parts of cotton. Boil for two hours, steep for twelve hours and dry for a day. With 3 parts alizarine, an equal weight of sumac, ¼ part flavine and 2 parts chalk may be used. Add the alizarine last. Many other mordant formulas may be used. Your mordant would doubtless answer. We can supply excellent works on dyeing, such as Bird's "American Practical Dyer's Companion," price $10.

(2624) R. C. asks: What would be the effect of using an alternating current dynamo in connection with a storage battery? A. Practically no result would be reached. An alternating current does produce certain electrolytic effects, but it would not answer for charging a storage battery.

(2625) H. W. A. writes: I have a plaster cast, which from age and careless usage has become discolored. Is there any way in which it can be restored to its original whiteness? A. Only by painting or calcimining. A thin wash of plaster of Paris and water might answer.

(2626) M. T. asks: 1. Can parchment paper be sized? A. It can be sized, but the parchmentizing process renders it so impervious that sizing is not needed. 2. What is it used for? A. It is used largely for covering jars of pickles, bottles of liquids, etc., by stretching and tying over the corks. It can be bought of different qualities.

(2627) J. H. M. asks: 1. Is there any freezing mixture that retains its coolness permanently? A. No. 2. What one retains its coolness longest? A. Of ordinary substances, ice.

(2628) C. H. M. asks: 1. What will dissolve aniline color or dye, besides alcohol? A. Water dissolves most aniline colors. 2. Will you give me a receipt for making black and colored inks? A. For inks we refer you to our SUPPLEMENT, No. 157. 3. A good mucilage. A. For mucilage use a solution of gum arabic in water flavored with a little oil of cloves.

(2629) W. H. asks: What treatment is necessary to extract tannin from new oak vessels in order to prepare them for the storage of wine? A. The tannin can be extracted by solution in water, or can be precipitated by washing the barrels with a solution of 1 pound sulphate of iron and 3 pounds sulphuric acid, followed by thorough washing out with water. Or rinse out with 4 gallons water and 6 ounces sulphuric acid and wash thoroughly.

(2630) H. S. B. asks if anything can be done to soften rubber mackintoshes, silk finish, when they have become stiff and hard. A. Probably nothing effectual. Try sponging with ammonia.

(2631) W. E. S. asks for the ingredients and manner of making sticky fly paper. A. Sticky fly paper may be coated with one of the following mixtures: *a*. Resin 9 parts, rapeseed oil 4 parts. *b*. Resin 8 parts, turpentine 4 parts, rapeseed oil 4 parts, honey ½ part. *c*. Resin 1 pound, molasses 3½ ounces, linseed oil 3½ ounces, boil until thick enough.

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