Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from $1 to $5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

(1) W. S. P. writes: I wish to print names on thin leather for the back of books. What is the best process to get it in gilt letters that will not rub off? I never saw anything of the kind done, and find that to simply print the name in type and then bronze them will not hold. A. Thoroughly beat the white of an egg, rub it thin over the place to be lettered. put on the gold leaf, and with type heated sufficiently to coagulate the albumen press upon the leaf. Remove the surplus leaf with a tuft of cotton.

(2) C. & H. ask: Which is the most profitable and best variety of fish to cultivate in an artificial pond of forty acres, and sixteen feet deep in the deepest part? How shall we proceed to stock it? A. Clear the pond of sun fish, eels, cat-fish, pickerel, pike, yellow and white perch—they being enemies to all young fish. For natural food leave the pygmy silver and striped dace and minnows; stock the pond with German carp and fresh water bass.

(3) W. A. F. asks: Will a 30 horse power engine run with the same number of pounds of steam, and do the work of 10 horse power engine with the same number of pounds of steam, as a 10 horse power engine will? A. The difference will be small; there will be a little more loss in the thirty horse power engine from friction, radiation, and condensation.

(4) J. H. G. asks how to transfer ordinary printed pictures to a sheet of glass, and to remove the surplus paper especially as in book illustrations, where the back of the picture is covered with printed matter. What preparation should be applied to the picture as transferred to render it transparent, or nearly so? A. Coat the paper thinly with a clear mucilage of gum-arabic, spread it out evenly on the glass plate, and let it dry. The paper may then be pared down with the greatest facility by means of a glove maker's knife, a piece of thin flexible steel, 3 inches wide by 5 inches in length. At one end a handle is usually affixed, the other end being ground to a very fine edge. It is used somewhat after the manner of a plane, the plate being pressed down nearly level with the paper, and the edge of the blade presented somewhat obliquely to the stroke so as to cut smoothly. To make the paper translucent saturate it with good castor oil and cover the back with a second glass plate.

(5) G. C. asks: What will remove hair from a person's face without pain or injury to the appearance of the skin? A. To remove the hair so that it will not grow again it is necessary to destroy the hair bulbs. We know of no chemical or depilatory that will do this effectively and is not liable to injure the skin or prove painful in its application.

(6) J. A. B. asks at what degree of heat, or what is the lowest degree, at which steam can be made. A. Exposed to the atmosphere at sea level water boils at about 212° Fah. As the pressure diminishes the boiling point becomes lower. In a vacuum pure water can be boiled at 45° Fah. 2. To what temperature may water be heated? A. Under adequate pressure water may be heated hot enough to melt lead. Under a pressure of 50 atmospheres water boils at about 500° Fah. 3. Is there any way of sharpening cast plow points? A. Grinding is the only method.

(7) J. S. B. asks: What is the best explosive agent to use, efficiency and economy combined, in getting rid of pitch pine stumps? The stumps are full of pitch and the top root prevents pulling out. The stumps are in Florida. A. Dynamite and giant powder are most effective in this connection. A pound cartridge when forced into a hole beneath the stump, loosely tamped and exploded, is usually sufficient to remove it completely.

(8) C. D. R. asks how to remove the sulphur odor of rubber goods. A. Caustic potash, ½ oz.; water, 1½ pints; dissolve and heat to boiling. Put the goods into this for a few minutes, rinse thoroughly and dry.

(9) W. W. C. writes: I inclose a sample of mica taken from a mine near here in pieces varying in size 6 to 12 inches and sometimes larger. What is its value and to what extent is it used? A. The mica is of very fair quality. It is used extensively for stove doors, lanterns, etc. See "The Uses of Mica," page 326, and answer to W. L. T., page 330 (8), current volume.

(10) N. J. A. asks: 1. What is the best method of preserving fence posts from decay, and is saturation in crude petroleum of any use)? A. See "The Preservation of Wood," SUPPLEMENT, No. 119. 2. The best paint to preserve fence boards]? A. Mix linseed oil thoroughly with dry sifted ocher, and thin with benzine for use. 3. How can fine shingles be made durable and at the same time less liable to ignite from sparks, if not fireproof? A. Water, 1 gallon; chloride of zinc, ½ lb.; digest in this the wood for forty-eight hours, drain, and put into a solution of crude tungstate of soda 1 lb., water 1 gallon (hot), for three hours; then dry. 4. The most desirable metallic roof (aside from copper) as regards cheapness and durability? A. Tin plate, with a good coat of asphaltum or similar varnish.

(11) W. P. H. writes: I have some copper coins which have been cleaned and finished with sweet oil for about two years; they now show signs of corrosion, and to save them I must remove the oil and verdigris. I am told that cyanide of potassium properly applied removes it readily, but that it has to be used very carefully. Will it poison the air we breathe in using it, or must our flesh or skin not come in contact with it? How can it be rinsed off or the coins cleansed after application? Will it do what I want? A. Dip the coins into a hot solution of ½ oz. caustic potash in 3 oz. water, to remove the oil; rinse in plenty of clean water, and rub them gently with fine tripoli moistened with solution of ¼ oz. potassium cyanide in 5 oz. cold water. If the hands are free from open cuts or sores (through which the poison may enter the system), and are not allowed to remain long in contact with the liquid, there is little danger of poisoning. It is not safe to keep such a liquid about the house, however, as a few drops taken internally by mistake or carelessness of handling might prove fatal. Rinse the bright coins in water and dip for a few moments in boiling water; on removal from which they will dry spontaneously.

(12) J. D. C. writes: In reference to the new system of chemical nomenclature (yet new and disagreeable to many), I beg information on some points which seem to overthrow the propriety of the new style, at least as regards the use of the termination, "ic." When we say "ferric sulphide," "mercuric cyanide," "argentic oxide," etc., will those terms bear analysis, will they bear application of the searching process peculiar to the magnificent system on which it is sought to engraft them, resolution into constituent principles or elements? For instance, what is the meaning of "ferric sulphide?" The new school will reply "A combination of iron and sulphur." But what is the guarantee that these two principles are *all* that are in combination. The very term "sulphide" implies and completely expresses, *a compound*; and when we hear one say, "It is a sulphide," we immediately inquire, "sulphide" of what? "oxide" of what? The "ic" does not do more than add a *third* principle to the already existing "oxide," "sulphide," etc., and at best, simply indicates a *trace* of the *third* principle. "Ferric alumina," is quite appropriate; because it expresses "oxide of aluminum with a trace of iron;" but "ferric sulphide" is unfinished, unsatisfactory, because it may be a sulphide of well defined character, with trace of iron. It will not do to say that "ferric sulphide" means "sulphide of iron;" for that would be foolishly tautological, if stated in full. If we say the "Germanic Confederation," we are not to be understood as meaning that the principle or element composing the "Confederation" are wholly German in character, custom, inclination, etc.; in other words, German, and Germanic, convey different characteristic ideas. A nation may be Germanic without being German. A "ferric sulphide" may be a "ferric sulphide of barium," or some such combination, unless my comprehension be wholly at fault. I have never seen nor heard any argument pro or con on this subject, and ask the favor of your views. A. Your comprehension is wholly at fault. Molecules contain at least two atoms, one of which is positive to the other, which is negative. In the case of binary molecules the rule is: Place the name of the positive first, then that of the negative, changing the termination of this into *ide*. If the positive atom varies in equivalence this fact is indicated by giving it for the higher of two stages the termination *ic*, and for the lower the termination *ous*. Thus ferric sulphide means bisulphide of iron (FeS_2), while ferrous sulphide means the sulphide, or monosulphide of iron (FeS)—definite compounds. Should a third stage be developed below the *ous*-compound the prefix *hypo* is given, as hyposulphurous oxide; or if above the *ic*-body the prefix *per*. Ternary molecules are similarly named, except the negative terminations are *ate* and *ite*, instead of *ide*. Potassium and chlorine united directly form potassium chloride, a binary, but if united by oxygen they form potassium chlorate. Consult Cooke's "The New Chemistry."

(13) F. G. asks for preparation that will stop rubber hose from leaking. A. The rubber companies sell a cement suitable for this pupose. It is prepared by dissolving gum caoutchouc in naphtha. See article on cements, page 2510, SUPPLEMENT, No. 158.

(14) A. C. B. asks: Is there any preparation with which I can bleach pressed botanical specimens (flowers) which have become brown in drying? I have a specimen of "magnolia grandiflora," which is brown, and I wish to bleach it, then color it white and pink again. A. Try exposing it to the vapor of burning sulphur, under a tight box. It should be moistened before exposing it.

(15) L. A. T. asks: Can you recommend any good work on volumetric analysis? I desire an easy test of that character to determine the amount of calcium sulphate in water. I can use barium chloride to precipitate the sulphate, but on account of its slow deposition, it is very difficult to determine when exactly enough has been added. Can I add anything to the water which by change of color or otherwise will show when enough barium chloride has been used? A. You will find Thorp's "Quantitative Chemical Analysis" a handy book. We know of no good volumetric method of determining calcium sulphate. Evaporate the water to dryness in a capsule over the water bath, redissolve the residue with a little pure hydrochloric acid, add to this solution a slight excess of a filtered aqueous solution of barium chloride, gently warm the mixture, let it stand half an hour, then wash into a weighed filter. Wash the precipitate on the filter, dry it at 212 until it ceases to lose weight, weigh and deduct the weight of the filter, or, what is better, having determined the weight of the ash of such a filter, ignite the filter with the dried precipitate in a platinum crucible, weigh, and deduct weight of ash and crucible.

(16) E. M. E. asks how to preserve natural flowers so that they will look natural, either single or in bouquets. I have seen them—it is something new. A. Dissolve by agitation and digestion in a closely stoppered bottle, ¾ oz. clear, pale, gum copal, coarsely powdered and mixed with equal weight of broken glass, in 1 pint of pure sulphuric ether (ethylic ether). Dip the flowers in this liquid, remove quickly, expose to the air ten minutes, then dip again, and expose as before. Repeat this dipping and drying four or five times. Most flowers thus treated will remain unaltered for some time if not handled.

(17) D. D. asks: 1. What would be a good recipe for red ink to use with a rubber faced stamp? A. Pour over two ounces of fine aniline red or violet about half a pint of boiling water, stir and shake together, then let stand to cool and settle, and pour off the liquid portion. A sufficient quantity of this stirred up with pure concentrated glycerine makes a good stamp ink. 2. Give also a formula for black ink for the same use. A. Use good soluble nigrosine as directed above, or triturate the powdered dye with the boiling water in a large mortar with the water until a smooth paste is obtained. 3. Would gum arabic in the ink be likely to injure such a stamp? A. Gum should not be used in this connection.

(18) U. D. M. asks how is the silica prepared, how is it mixed, and with what to give it the consistency and quality of paint? What mixtures give it the different shades, what is the manner of applying it, and for what is it adapted? A. The name is usually applied to paints wherein a sirupy aqueous solution of waterglass or silicate of soda is employed as the vehicle. Waterglass is prepared by fusing together in a crucible at a bright red heat pure white silicious sand or powdered quartz and carbonate of soda (three of quartz or sand to about five of anhydrous carbonate of soda). It dissolves in boiling water to form a sirupy liquid. Almost any of the ordinary mineral pigments—zinc oxide, white lead, barytes, ochers, chalk, etc.—may be mixed with it to form a paint. It may be used advantageously on common inside woodwork and walls which it is desired to render fireproof. Such paints when they become dry are quite hard, but not waterproof.

(19) G. A. W. asks: How much higher is one of our oceans than the other? A. The latest surveys discover no difference of mean level of the two oceans. The tides on the Gulf side are very much higher than on the Pacific side.

(20) C. L. P. writes: 1. In SUPPLEMENT, No. 83, your correspondent, "D," in giving instructions for making rubber stamps, says: "Vulcanized rubber is used." Can you inform me where it can be purchased—of what company? A. The rubber referred to is gum rubber mixed intimately with about 6 per cent of sulphur and rolled out into sheets. It may be obtained from almost any large rubber manufacturing establishment. See our advertising columns. 2. He also says: "Both together (mould and rubber) are placed in a screw press, and heat sufficient to thoroughly soften the rubber is applied." Can you say how this heat is applied? A. By placing the mould and rubber in an oven or steam chamber heated to the proper temperature, about 320° Fah.

(21) H. W. asks: 1. What will prevent new made flannel underwear from shrinking? A. Good flannel will not shrink much if properly washed. Very little soap should be used, the water should be barely hot, and all the waters used should have about the same temperature. The goods should be wrung as dry as possible and well shaken out before hanging up to dry. We know of nothing that can be put into the goods to prevent shrinking. 2. How can cotton or linen cloth or cord or twine be treated to make it rot-proof or proof against rot? A. The deterioration of the fibers may be in a measure retarded by saturating them with a hot aqueous solution of soap, and after wringing out digesting them in a strong solution of alum, then rinsing out and drying. In regard to your other queries you had better consult some reputable physician.