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.

NEW BOOKS AND PUBLICATIONS.

BOLETIN DE LA SOCIEDAD DE GEOGRAFICA Y ESTADISTICA DE LA REPUBLICA MEXICANA. Mexico, 1880.

The latest installment, consisting of parts 4, 5, and 6, vol. v., of this excellent periodical, published by the Mexican Geographical and Statistical Society, has just reached us, and its contents well sustain the high character possessed by the preceding numbers. Among the principal papers worthy of note in this issue are: Report on the Results of an Exploration of the Metalliferous Regions of the Sierra Mohajada, by Santiago Ramirez; A Hydrographic Study, by Pio Bustamente y Rocha; The Ores of the Sierra Queretaro, by J. M. Reyes; and a General Resume of the Mortality in the City of Mexico during the year 1879, by M. Flores Heras. In addition to these and several other original papers, there are numerous translations from foreign scientific works of subjects coming within the scope of the society's investigations, and forming altogether a collection of considerable scientific interest.

INDIA RUBBER, AND "VULCANIZED RUBBER FABRICS ADAPTED TO MECHANICAL PURPOSES."

This is the title of a handsome book just issued by the New York Belting and Packing Company. It gives thorough details of the manufacture, as carried on at the works of the Company at Newtown, Conn., and is beautifully illustrated. It is only intended for distribution among their customers, but those who use rubber belting, hose, packing, springs, etc., will undoubtedly find here much that is peculiarly interesting, and that will enable them "to care more understandingly for the preservation and prolonged wear of rubber goods," as well as to "discriminate more closely in their purchases, and avoid such products as are of imperfect or unskillful manufacture, or made with injuriously adulterating compounds." The book also contains a full description of their manufacture of vulcanite emery wheels, and the improvements they have made in this direction, whereby their emery wheels are in demand for the best class of work abroad as well as at home.

THE "GAS ENGINEER'S" DIARY AND TEXT BOOK FOR 1881. Birmingham, England: John Wright & Co.

The second annual edition of this work, prepared for the subscribers of the *Gas Engineer*. In addition to matter of special value to the gas manufacturers of England, the volume contains a series of original articles on gas manufacture and apparatus, and several tables of use to gas engineers everywhere

DIE MATERIELLEN VERHALTNISSE UND VORTHEILE FUR EINWANDERER IM STAATE KENTUCKY. Frankfort: Kentucky Geological Survey and Bureau of Immigration.

A pamphlet for free distribution among Germans, describing the resources of Kentucky and the opportunities the State offers for colonization; together with a number of photographs of scenery in sections available for immigrants seeking cheap lands.

U. S. COMMISSION OF FISH AND FISHERIES. PART VI. REPORT OF THE COMMISSIONER FOR 1878. Washington: Government Printing Office. 1880.

A fat volume, giving, in addition to the Commissioners' report of the year's operations of the Fish Commission and a statement of the importance of the work it has undertaken, nearly a thousand pages of matter relating to fish, fish culture, and kindred subjects. These reports are becoming a library in themselves, and one whose significance and value are very imperfectly apprehended by the public generally.

NAVIES OF THE WORLD. By Lieut. W. Very, U. S. N. New York: John Wiley & Sons. 8vo, pp. 451.

Lieutenant Very has undertaken to describe concisely the plans, armament, and armor of the naval vessels of twenty of the principal nations, and to give the latest developments in ordnance, torpedoes, and naval architecture. His point of view is that of the naval officer rather than that of the engineer or ship builder, though he does not neglect the architectural developments of the past decade or two. An interesting chapter is devoted to the principal naval engagements since 1860.

THE SILK GOODS OF AMERICA. By Wm. C. Wyckoff. New York: Published under the auspices of the Silk Association of America. $3.

The second edition of Mr. Wyckoff's account of recent improvements and advances of silk manufacture in the United States. The new part comprises the Eighth Annual Report of the Silk Association, summarizing the progress of the year 1879, which, as our readers already know, was extremely encouraging. The directory of manufacturers and dealers in silk covers 38 octavo pages, indicating a rapid extension of the silk industry.

FIVE LITTLE SOUTHERNERS. By Mary W. Porter. Boston: D. Lothrop & Co.

A children's story of child life on a sugar plantation, with a tragic conclusion in a hurricane on the Gulf.

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) A. H. asks (1) for the process of coating or plating small polished steel articles with tin (or a composition similar to it), by dipping the articles into the melted metal and have a good smooth, bright surface when taken out. A. *a*. Boiling water, 12½ lb.; ammonia alum, 17¼ oz.; add protochloride of tin, 1 oz. Dip the articles in hot potash solution, then rinse in clean water, dip in dilute sulphuric acid, and suspend in the tin solution for a few minutes until bright. *b*. Bitartrate of potassa, 10½ oz.; water, 17 oz.; protochloride of tin three-fourths oz. Immerse in this the cleaned articles in contact with a piece of zinc until tinned. *c*. Pyrophosphate of soda, 11 oz.: water, 17½ oz.; protochloride of tin, 4½ oz. Dissolve. Connect the cleansed articles with a wire from the zinc pole of a battery and immerse in the solution, the vessel containing which should be lined with pure sheet tin connected by means of a wire with the copper or carbon plate of the battery. In Wegler's process the bath consists of stannic chloride, 1; water, 10. The articles are pickled in dilute sulphuric acid, scoured with fine sand or scratch-brushed, rinsed with clean water, loosely armed with zinc wire or ribbon, and immersed for ten or fifteen minutes at ordinary temperature. Rinsing and scratch-brushing follows, after which whiting is used for finishing. 2. Will the same process do as well to coat or plate polished brass articles, and give a bright, smooth surface? If not what different process will be necessary? A. Yes.

(2) E. J. C. asks: 1. Will a steam gauge fixed upon a boiler during the hydrostatic test show the pressure within the boiler the same as it will show the pressure of steam? A. Yes. 2. I have a model oscillating engine, 1 inch by 2 inch cylinder. The valve faces are 1¼ inch by 2¼ inches. How can I lubricate these faces while the engine is running? A. With a proper lubricator cup attached to the steam supply pipe or steam chest. 3. What should be the weight of a fly wheel for the above engine, running with 15 lb. of steam and driving the belt from a 2-inch wheel on the shaft? A. 12 or 14 lb.

(3) C. P. asks: 1. At what temperature will a bar of soft steel, say half-inch in diameter, sustain the greatest weight? A. We know of no experiment to determine this point, but if steel behaves in the same manner as wrought iron, its greatest tensile strength is between 325° and 400°. 2. Are car wheels more liable to break in very cold weather, because the wheels are affected by the cold, or because the road bed is frozen, and consequently is not elastic? A. Yes from both causes. 3. Will a steel spring break quicker at a temperature 40° below zero, than at 40° above zero? A. Yes, especially if there be any sudden movement or jar. 4. Will a railroad sustain more weight at 40° below zero than at 40° above zero. A. No. 5. At what degree of temperature will a chain stand the greatest strain? A. From 325° to 400° Fah. 6. Is the power of cohesion in wrought iron the strongest at a very low temperature? A. No. 7. Is the power of cohesion in gray iron the strongest at a very low temperature? A. No.

(4) J. E. F. asks if the lumber for a boat bottom below the water line should be green or dry. A. All lumber used in the construction of a boat should be dry or seasoned.

(5) D. J. L. asks: 1. Is it safe to blow off steam with 60 lb. pressure and two gauges of water while the engine is running? If it is safe to do this, how low should I allow the water to go? I have blown off steam at 60 lb. on Saturday, and on Sunday at noon it will have water to the bottom of the glass. How can I remedy it? A. It is safe, but when the steam is blown off the water should be above the usual height to allow for evaporation over Sunday, and have ample supply for raising steam on Monday morning. 2. The polished parts of my engine become rusty quite frequently from water dropping on it. What can I get to keep it bright without using emery? A. Use pumice stone and oil. 3. I have a glass tube on the water gauge which has iron rust burnt into it, what can I get to clean it? A. Try vinegar or dilute sulphuric acid.

(6) C. H. F. asks: 1. Do the compressed air motors of to-day generate their own pressure while in motion, or do they have to be charged before leaving a certain place and stop to get charged again when the first is exhausted? A. They are charged at the stations. 2. Is there in existence, to your knowledge, any device whereby a greater head can be put on at a water power without increasing the natural head? That is, a greater head with the same dam, amount of water, and same mill machinery. A. No. 3. What does the term "perpetual motion" mean, or apply to? Does it needs be some machine that will not wear out and run perpetually, or one that will run perpetually if replaced when worn out by friction? A. A machine that will run without extraneous aid until its parts are worn out. 4. What is the reward, and by whom offered, for perpetual motion? A. The laws of force are now so well understood that any one acquainted with the rudiments of the subject would never think of offering a prize for perpetual motion.

(7) G. G. writes: Suppose I order two 3-inch governors from the manufacturer, one to run 100 revolutions and the other 170 revolutions per minute, what will be the difference in the construction of the two governors? A. With many governors there would be no difference, as means are generally provided for adjustment to the speed required.

(8) G. H. W. asks: Will opening the windows of a stamp mill diminish the noise in the mill? A. We think not.

(9) F. T. D. L. writes: I want to get a light boiler for an engine the cylinder of which is 1½ inch bore by 3 inches deep, to run at 300 revolutions per minute, with a pressure of 50 lb., but of enough strength to stand 100 lb. It is for the purpose of running a small boat. Could it be heated by naphtha lamps? I would like to know what size the smallest and lightest boiler I could use would be. A. You should have a vertical tubular boiler with 1½ to 2 square feet heating surface. Such boilers are not on sale; they are only made to order.

(10) A. M. P. writes: In making a strength test of brick, will a column have greater pressure in an upright position than in a horizontal one, provided the whole weight is thrown on the brick? A. There will be no difference, if the weight of the column itself be taken into account.

(11) W. G. A. asks: Does water in a boiler get hotter than 212°, that is, if the boiler has 120 or 150 lb. of steam, does the water attain a greater heat than boiling point to generate steam to that pressure? A. Yes, the temperature rises with the pressure of the steam. It may be heated to very high temperatures, providing the containing vessel is strong enough to withstand the pressure.

(12) C. F. H. asks: 1. How can I make a gallon of silver plating solution? A. Dissolve 5¼ oz. pure nitrate of silver, and 8 oz. pure cyanide of potassium in 1 gallon of soft water. 2. How can I make a gallon of nickel plating solution? A. Dissolve three-quarter lb. of the double sulphate of nickel and ammonia in a gallon of soft water. 3. How many quart gravity cells will it require to plate medals of about an inch and a half to two inches in diameter? How large should the positive pole be in relation to the negative pole or the thing to be plated in the solutions? A. See nickel plating, page 153, vol. xliii., and page 81, vol. xliv., SCIENTIFIC AMERICAN.

(13) E. W. K. asks: What process if any will take fly specks from bronze? A. Lavender oil, 1 drachm; alcohol, 1 oz.; water, 1½ oz. Use a soft sponge, and proceed as quickly as possible, with little rubbing.

(14) J. B. S. asks for a formula for making permanent black dye for woolen goods, something that will not rub off. This latter trouble is what I am anxious to obviate. Several formulas that I have do not relieve this trouble. A. You will find practical formulæ and directions for black dye in Nos. 53, 54, 55, 74, 75, 76, and 169, SCIENTIFIC AMERICAN SUPPLEMENT. See Hints to Correspondents.

(15) G. W. C. asks: Which gives the most heat, the dry or green wood of same quality and quantity? A. Dry wood.

(16) O. B. S. inquires as to the best method of mending broken ivory. A. Moisten thoroughly a small quantity of very finely powdered quicklime (good) with white of egg to form a paste. Use at once, clamp the parts, and do not disturb for 24 hours. Do not use an excess of the cement.

(17) O. E. W. asks: 1. How can I make a galvanic battery with copper and zinc plates, each 2x2 inches, strong enough so that I can feel the current? What kind of acid shall I use? A. It would require several hundred such elements, joined copper of one to