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.

FORTY YEARS IN PHRENOLOGY. By Nelson Sizer. New York: Fowler & Wells, 12mo, cloth, pp. 413, $1.50.

Mr. Sizer has brought together from the notes and recollections of his long service as a phrenological lecturer and examiner two or three hundred anecdotes illustrative of his varied experiences. Many of them are amusing, and all of them are intended to enforce some social or educational lesson, or to demonstrate the value of phrenology as a guide in the affairs of life. A brief review of the principles of phrenology are given at the end.

ELECTRICITY. By Robert M. Ferguson. Revised and extended by James Blyth. London and Edinburgh: W. & R. Chambers. 3s. 6d.

The additions to this new edition of Dr. Ferguson's well known work are intended to cover the more important recent discoveries, inventions, and practical applications of electricity. The recently adopted units of electrical measurement are given and explained, and also the leading mathematical formulæ, so far as can be done without recourse to the higher mathematics.

TRAITS OF REPRESENTATIVE MEN. By George W. Bungay. New York: Fowler & Wells.

The thirty or more representative men whose characteristics and achievements are here very sketchily presented include prominent Americans chiefly, either living or recently dead. For each character there is given a characterless portrait. Some of the engravings were originally good, but have been abused in the printing; the rest were so cut as to make them caricatures rather than of likenesses, and bad printing has intensified their wooden ugliness.

CHARLES DARWIN. London: Macmillan & Co. 75c.

This latest addition to the Nature Series embraces the memorial notices of Darwin first printed in "*Nature*." Professor Huxley furnishes an appreciative introductory notice of Darwin's life and work. Dr. Romanes discusses his life and character. Dr. Geikie reviews his work in its bearing on geology: Thistleton Dyer his work in botany; Dr. Romaines his work in zoology and in psychology. An admirable portrait of Darwin, on steel, serves as frontispiece.

HEROES OF SCIENCE. By Prof. P. Martin Duncan. London: Society for Promoting Christian Knowledge. New York: E. & J. B. Young & Co. 12mo. $1.20.

Evidently written to order, and remarkable rather for avoiding than for dwelling upon those acts and opinions of the characters named that showed any heroic quality. And there is a careful omission of all essentially modern work in the sciences—botany, zoology and geology—the earlier development of which is reviewed. The heroic period of botany appears to have ended with De Candolle, of zoology with Cuvier, and of geology with the earlier work of Lyell. Nevertheless, so far as it goes, the book is readable, and would make a valuable addition to any Sunday-school library.

THE COMPLETE GUIDE TO SILK CULTURE. By L. Capsadell, New York: W. B. Smith & Co. 25 cents.

Those who think of experimenting in the reviving art of silk culture will find this a handy and trustworthy guide book. It is plain, clear, straightforward, entirely practical, and commendably free from extravagant promises of possible results. The author is an enthusiastic promoter of the new industry, but, while furnishing specific directions as to the treatment of silk worms and their products, he is content to rest his case there, leaving the financial inducements to engage in the work to be offered by the publishers in the advertising pages. In this, as in every other industry, the beginner should bear in mind that experience and practical skill have to be paid for, and that every new industry is apt to be attended by many failures, losses, and disappointments.

MONACO. United States Game Publishing Company, Rochester, N. Y.: American News Company, Sole Agents.

This new game is played somewhat like checkers. The pieces are numbered, and the value of each when taken is the product of its number by the number of its place in the column of the captured. It is fairly interesting as a game, and may be made useful in giving young people a thorough, as well as diverting drill in simple multiplication and addition.

THE STILL HUNTER. By T. S. Van Dyke. Published by Fords, Howard & Hurlbert, New York. Price $2.00.

This is unquestionably the best book ever published in this country on the art of still hunting, or deer stalking, and is written by one who evidently thoroughly understands the subject he treats. He has made a very entertaining and intensely practical book. Numbers of men who potter away three months in a year in the inanities of watering places, when they might enjoy a month or two of exhilarating sport and healthful exercise in the haunts of the antlered monarchs of the forest, want such a book to screw up their courage to go forth and hunt. It teaches how to hunt and where to hunt, giving directions where they are needed, and wisely indicating the circumstances in which a man's common sense must be the teacher.

PRACTICAL MICROSCOPY. By George E. Davis. Illustrated. Philadelphia: J. B. Lippincott & Co.

Though this excellent treatise has reached a second edition, it is substantially a new book to American microscopists. It is thoroughly practical and profusely illustrated. The first half of the book contains little that is new, yet the chapters on staining and on reagents and recipes will be found suggestive and very useful. The author's process for the double staining of vegetable sections is particularly good, and gives beautiful results. The chapters on micro-photography are also excellent, being well illustrated and full of practical details. The test of every day use justifies a hearty recommendation of the work to the favor of microscopists.

AMERICAN FOUNDRY PRACTICE. By Thos. D. West. New York: John Wiley & Sons.

Embodies the series of practical articles on moulding contributed by the author to the *American Machinist* during the past two years, describing American methods in moulding with loam, dry sand, and green sand, the management of cupolas, and the melting of iron. Mr. West believes that to master his trade the young moulder needs something more than the brute force required for ramming sand; indeed, that there is no trade that calls for greater intelligence, skill, and care, than that of the moulder. The book is full of instruction for beginners and contains many facts and suggestions that seem likely to be of use to foundrymen of longer practice.

GYMNASTICS OF THE VOICE. By Oscar Guttmann. Albany, N. Y.: Edgar S. Werner, 12mo, cloth, $1.25.

Professor Guttmann's treatise, which has been before the English and German world for twenty years and more, has now been fully illustrated and carefully revised, materially increasing its already eminent value. Its four parts treats respectively of the anatomy of the respiratory and vocal organs, the activity of these organs in producing voice, the correct utterance of the elements of speech and song, and the art of breathing easily and effectively when speaking and singing. The work shows not only how to train the vocal organs so as to attain strength, purity, and beauty of tone, but gives abundant anatomical, physiological, and hygienic reasons for the modes of training which he advises.

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.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

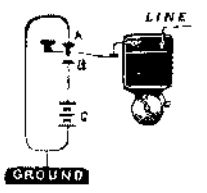
(1) P. F. M. writes: Please decide a discussion between two friends of mine. A says that if a bird sits on a telegraph wire while in operation, it will receive an electrical shock more or less intense, according to the state of the atmosphere and the strength of the current passing through the wire. B says that the bird will receive no shock at all, and to prove his assertion states that it is known in physics that a current always follows the best conductor, and that a body through which a charge is to be passed must form part of the circuit, consequently, he concludes that in the present case the bird will receive no shock, because it is a worse conductor than the wire, and because he thinks it forms no part of the circuit. A, without contradicting the alleged physical principles, argues that the living animal body is a good conductor of electricity, and that the moment a bird sits on a wire through which a current is passing it forms part of that wire, and consequently part of the circuit. A also brings in, to strengthen his assertion, the known physical fact (which he quotes from Ganot's Physics) that, when two conducting bodies are in contact, one of which is electrified and the other in its natural state, the electricity is comparted between the two in a relation proportional to the surfaces of the bodies. Finally, A, to prove entirely his assertion, refers to the fact that there are always dead birds beneath the telegraph wires. I decided the discussion in favor of A, but offered them both to get a decision from you, and expect to have it soon. A. Undoubtedly a small portion of the current passes through the bird, but not sufficient to produce any noticeable effect. The bird, being a comparatively poor conductor, forms a shunt of high resistence to so much of the wire as is between his claws. The dead birds found in the vicinity of telegraph wires are killed by striking the wires during rapid flight.

(2) E. F. L. asks: 1. How fast can an ordinary engine be run without danger? Will it do to speed them up to 800 feet per minute? A. There are many engines running to 800 feet per minute, but they must be carefully fitted and well balanced. 2. What would be the difference in power of a 6 x 12 engine running at 200 revolutions and 400 revolutions, with the same amount of steam, say 90 pounds? A. If you double the speed with the same pressure, the power will be doubled. 3. Is there any rule for the gearing up of machinery? For instance, I want to run a saw from a countershaft; does it matter how large or small the different pulleys are, so I get the desired speed? A. The larger the pulleys, the narrower belt can be used. 4. Is there a book on the planning of machinery, so as to get the most power, and where can it be had? A. There is no one book; the information is scattered through many books. 5 I see there was an engine run on some road last May by naphtha; what has become of it? Is it a success, and if so, why are they not put on the market? A. We believe that no naphtha engine has yet proved a success practically.

(3) S. S. asks: What is the best way of tinning malleable iron bright? I have seen some castings that were bright and smooth, others that were dark and rough. Please inform me of a method by which I can tin bright and smooth without extra work of polishing? A. You cannot tin malleable iron without cleaning it thoroughly in dilute muriatic acid; rinse in hot water, dip in bath of hot muriate of zinc and sal ammoniac, then cautiously in a bath of melted tin.

(4) N. T. C. O. asks: 1. In what ratio does the diameter of copper wire stand to the force (in horse power) transmitted through it from a dynamo machine? A. This depends, first, upon the kind of current used, a current of high potential not requiring as large a conductor as a current of low potential, and, second, upon the distance through which the power is to be transmitted. 2. What is the practical limit of power (in horse power) capable of being generated by a dynamo? A. The limit, if there is one, has not yet been reached. 3. What is the actual percentage of useful power transmitted at a distance, say of a hundred miles from dynamo, or general ratio of force and distance? A. See article "On the Transmission of Work to a Great Distance on an Ordinary Telegraph Wire," p. 350, current volume SCIENTIFIC AMERICAN. 4. Is it practically possible to transmit, say, two hundred horse power generated by a dynamo to a distance of one hundred or more miles? A. Yes. 5. What may be the approximate (primary and running) cost of an engine capable of producing the effect stated in question 4? A. Correspond with some of the prominent manufacturers of dynamos.

(5) C. E. E. W. writes: I notice in your issue of Nov. 25, 1882, you give in answer to question of W. P. S. (No. 1,) in regard to arrangement of two call bells on one wire with open circuit batteries, a plan in which one bell is cut out when the signal is given. Don't you think the arrangement shown in the sketch would be much more satisfactory? For by the arrangement you describe you could not tell whether the line was in working order or not except by inspection, whereas by this plan the bell will ring when the key is pressed down, in all cases, except when the line is out of order, when you would know that there was not any signal made at distant station, and that the line needed repairs. I should think W. P. S. would get more satisfaction from this arrangement. [The plan suggested by our correspondent is good for single stroke bells, and may be adopted where the sound of the bell at the transmitting end of the wire is not objectionable. The extra bell increases the resistance of the circuit, but in most cases this is of no account.—ED.]



(6) J. A. writes: Will you kindly inform me, through your Notes and Queries, how I can successfully finish small brass articles, such as tubing and thin rods? I am making a few fancy things just for home decoration, and I succeed very well until I come to the lacquering, and then, no matter how much pains I have taken to polish the brass, it is sure to look dirty after it is lacquered. Now, I want to get that beautiful golden look that you see on lamp fittings, etc. Is it possible for me to do it with ordinary lacquer and a common kitchen stove, or is there any lacquer you can tell me of, better for the purpose than that I buy at the store? A. For lacquering bright brass work, use for your lacquer half a pint 95 per cent alcohol; one ounce seed lac, or, if not to be had, the same quantity clear shellac; half a drachm of dragon's blood; half a drachm turmeric; put all in a bottle, cork tight, and shake up often for a few days, then let it settle for a few days and pour off the clear part for use. It is well to filter it. Use a fine flat camel's hair brush of a size to work quickly with (say three-fourths of an inch to one inch wide). Warm your finished work in the oven or over a spirit lamp to about the temperature of 150°, and varnish as quickly as possible, avoiding going over any part a second time. If upon a preliminary trial the lacquer appears too thick or waxy, dilute with 95 per cent alcohol until you are suited.

(7) N. C. S. writes: One of the receipts for making the gelatine printing pad includes "a little soap." How much soap to a pound of gelatine, and what kind of soap is required? A. Use ordinary hard soap, 1 ounce to 1 pound.

(8) D. L. F. asks: What will prevent glycerine from absorbing moisture from the air? Can some kind of oil be mixed with it for this purpose? A. Nothing; no oil can be mixed with it that would counteract this tendency.