

tin No. 34, experiments with sorghum in 1891, by Prof. H. W. Wiley.)

The sugar crystallized readily and separated perfectly in the centrifugals from the syrup in from two to five minutes. By the processes hereinbefore mentioned the sorghum grower of the central States may compete with the grower of ordinary cane in the South. From an acre of good sorghum may be obtained a barrel of nice nearly white sugar, equal in every way to ordinary cane sugar.

The question may arise: "Can the farmer *profitably* manufacture his own sugar, *i. e.*, on a small scale?"

Probably no more than the farmer can manufacture his own woollen goods or make his own flour.

It is doubtful if cane can be profitably raised more than three miles from a central factory, and besides enough cane can be raised within two miles of the factory to supply all of its demands. Such being the fact, the central and northern States must hope to make their own supply of sugar, not by individual factories, but by a system of central factories put up on a large scale and equipped for all the steps of molasses and sugar making.

The amount of sugar consumed in the United States for the year ending June 30, 1890, was about three billion pounds (an average of fifty-five pounds per capita), and there were eighty million gallons of molasses consumed.

The United States produced about one-tenth of the sugar and one-fifth of the molasses. Hence the necessity for increasing our sugar producing crops, *viz.*: the southern cane and the northern sorghum and the beet.¹

¹ To these may be added "corn cane," for a most interesting discussion of which the reader is referred to *Science* during the month of September, 1893.

—The third annual meeting of the Ohio Academy of Science was held at Columbus on Dec. 28 and 29, 1893. The usual necessary formal business was done, and papers were read on various subjects connected with geology, botany, entomology, ornithology, and a beginning was made in chemistry and astronomy, which have not previously claimed their fair share of attention. The following among the papers read may claim notice here: "On the Evolution of Indian Corn," by Mr. W. A. Kellerman; "Distribution of North American Lepidoptera in Norway," by Prof. F. M. Webster; "On Certain New and Known Marine Infusoria," by Dr. D. S. Kellicott; "Lake Licking; a Contribution to the Buried Drainage of Ohio," by Prof. W. G. Tight; "Further Study of the Wheat Scale," by Prof. A. D. Selby; "On a New Fossil Crustacean from the Water-Lime," by Prof. E. W. Claypole; "A Revision of the Lichens of Ohio," by Mr. E. E. Bogue, and "On the Nutritive Value of Common Fruit," by Prof. W. R. Lazenby. Arrangements were also completed for the organization of a Natural History Survey of the State. Three directors were appointed, Professors Claypole, Kellicott and Kellerman, whose duties were simply to enlist and arrange all the volunteer laborers who could be induced to take part in the work and aid them in the choice of fields and in the prosecution of their labors, leaving the whole method or responsibility in their hands as much as if they were independent workers. These results when obtained will be presented to the Academy, by the authors if possible, referred to suitable experts and, at the discretion of the Academy, printed in the annual report. The organization of the undertaking is the most important one of the still young academy. Prof. F. W. Webster, of the Agricultural Experiment Station, was elected president for 1894.

Brain Workers.

Horsford's Acid Phosphate

is recommended by physicians of all schools, for restoring brain force or nervous energy, in all cases where the nervous system has been reduced below the normal standard by over-work, as found in lawyers, teachers, students and brain-workers generally.

Descriptive pamphlet free on application to

Rumford Chemical Works,

Providence, R. I.

Beware of Substitutes and Imitations.

For sale by all Druggists.

EXCHANGES.

[Free of charge to all, if of satisfactory character. Address N. D. C. Hodges, 874 Broadway, New York.]

For Sale or Exchange.—A "Troughton & Simms" bronzed metal sextant, with double-frame platinum and gold vernier; fitted to bronze standard, with balance weights attached and brass adjusting screws, with full set of tubes, both plain and inverting; an artificial horizon and all fittings necessary for observing and rating chronometers. Also the first 10 volumes of "The Forum" bound in twenty volumes (in cloth), together with two unbound volumes. Address W. S. Leavenworth, Ripon, Wisconsin.

I have Michigan shells of the unio, alatus, gibborus, ligamentinus, occideus, plicatus, pustulorus, rubignorus, verrucosus, margaritana, marginalis, rugosa, for fresh water and sea shells of other localities and varieties, copies of *Scientific American* for shells; also a few minerals to exchange. Chas. Miller, Jr., 216 Jefferson st., Grand Rapids, Mich.

For Sale or Exchange.—A large number of state and general government scientific reports, Smithsonian contributions and Bulletins Torrey Club, Botanical Gazette and many others. These were obtained in the purchase of a large scientific library and are duplicates. Write for what you want and offer any sum. Mexican Boundary Survey, Torrey's Botany California, Blume's Orchids of India and Japan, and Hooker's Rododendrons of the Sikkim-Himalaya are in the lot. What offers? R. Ellsworth Call, Louisville, Ky.

Skins, with full data, of *Ægialites nivosa*, *Ereunetes occidentalis*, *Ammodramus beldingi*, *A. rostratus*, *Chamaea fasciata* henschawi and others from California, for native or foreign skins with full data. A. W. Anthony, 2042 Albatross Street, San Diego, California.

For Sale.—An entirely new analytical balance, made by one of the most celebrated manufacturers; capacity 100 grammes, sensitive to one-twentieth of a milligramme. Never been used. Regular price, \$83. Will sell for \$50 cash. Address, A. P. Nichols, 41 Summer Street, Haverhill, Mass.

Wants.

Wanted.—Sachs's Text-book of Botany, 2nd English edition. Dr. Alfred C. Stokes, 527 Monmouth Street, Trenton, New Jersey.

WANTED to exchange for human bones or recent medical text-books, the following books: "Metallurgy of Silver," M. Bissler, 1889; "Practical Treatise on Petroleum," by Benj. J. Crewe, 1887; "Cook's Chemical Philosophy," 1885; "Cairn's Chemical Analysis," 1884; "Wagner's Chemical Technology," by Crookes, 1886; "Fresenius's Qual. Chem. Analysis," 1879; "Elementary Treatise on Practical Chemistry and Qual. Analysis," L. Clowes, 1881; bound Vols. 1 to 12 of Dr. Lardner's "Museum of Science and Art" (very rare), 1854; back numbers of "Electrical World," beautiful specimens of Pyrite Incrustations from Cretaceous of New Jersey; Magnetis Iron Ore, Highly Polarized. Address D. T. Marshall, Metuchen, N. J.

WANTED.—Books or information on the microscopical determination of blood and hair. Also reports of cases where hair has played an important part in the identification of an individual. Address Maurice Reiker, 206 N. First Ave., Marshalltown, Iowa.

A GEOLOGIST thoroughly conversant with the geology of the Southern States desires an engagement. Has complete knowledge of the economic geology of Iron, Coal, Lignite, as well as Clay and Kaolin. Five years' experience with Geological Surveys. Address K., 509 West Sixth Street, Austin, Texas.

WANTED.—Tuckerman's Geneva Lichenum and Carpenter on the Microscope, Wiley's Introduction to the Study of Lichens. State price and other particulars. Richard Lees, Brampton, Ont.

SOME OF THE NEW BOOKS AT LOW PRICES.

FAMOUS VOYAGERS AND EXPLORERS.—\$1.50.

Mrs. BOLTON has added to her *Famous* series of books another and an unusually interesting volume, "Famous Voyagers and Explorers." It is hardly comprehensive, as it gives the biographies of only a few typical explorers—Marco Polo, Columbus, Magellan, Raleigh, and the more prominent of our modern American explorers. Doubtless such names as the Cabots, Sir Humphrey Gilbert, De Soto, Cartier, Nansen and others are reserved for a second volume. Mrs. Bolton has a gift for this sort of writing, and she has here brought together a large amount of deeply interesting matter which otherwise could only be obtained by reading through a dozen or more separate volumes. The book is illustrated with several portraits.—*Boston Transcript*.

OUR GREAT WEST.—\$2.50.

THE contents of the volume appeared serially in *Harper's Magazine* and *Harper's Weekly*, in which periodicals they attracted wide attention and favorable comment. Their importance fully justified their republication in a more permanent form. The book affords a more minute insight into the present condition of the West than can be found elsewhere. What it tells is the result of personal experience, fortified by information obtained from the best-informed and most reliable men in the localities under discussion, and set forth with admirable clearness and impartiality. It is a work to be read and pondered by those interested in the growth of the nation westward, and is of permanent standard value.—*Boston Gazette*.

STATESMEN.—\$2.00.

IN the preparation of this work Noah Brooks has aimed to present a series of character sketches of the eminent persons selected for portraiture. The object is to place before the present generation of Americans salient points in the careers of public men whose attainments in statesmanship were the result of their own individual exertions and force of character rather than of fortunate circumstances. Therefore these brief studies are not biographies. Mr. Brooks had the good fortune of personal acquaintance with most of the statesmen of the latter part of the period illustrated by his pen, and he considers it an advantage to his readers that they may thus receive from him some of the impressions which these conspicuous personages made upon the mental vision of those who heard and saw them while they were living examples of nobility of aim and success of achievement in American statesmanship.

MEN OF BUSINESS.—\$2.00.

W. O. STODDARD, who has just written a book published by the Scribners, on "Men of Business," tells

how the late Senator Stanford chopped his way to the law. "He had grown tall and strong," says Mr. Stoddard, "and was a capital hand in a hay-field, behind a plough, or with an axe in the timber; but how could this help him into his chosen profession? Nevertheless it was a feat of wood-chopping which raised him to the bar. When he was eighteen years of age his father purchased a tract of woodland; wished to clear it, but had not the means to do so. At the same time he was anxious to give his son a lift. He told Leand, therefore, that he could have all he could make from the timber, if he would leave the land clear of trees. Leand took the offer, for a new market had latterly been created for cord-wood. He had saved money enough to hire other choppers to help him, and he chopped for the law and his future career. Over 2,000 cords of wood were cut and sold to the Mohawk and Hudson River Railroad, and the net profit to the young contractor was \$2,600. It had been earned by severe toil, in cold and heat, and it stood for something more than dollars.—*Brooklyn Times*.

ORTHOMETRY.—\$2.00.

IN "Orthometry" Mr. R. F. Brewer has attempted a fuller treatment of the art of versification than is to be found in the popular treatises on that subject. While the preface shows a tendency to encourage verse-making, as unnecessary as it is undesirable, the work may be regarded as useful so far as it tends to cultivate an intelligent taste for good poetry. The rhyming dictionary at the end is a new feature, which will undoubtedly commend itself to those having a use for such aids. A specially interesting chapter is that on "Poetic Trifles," in which are included the various imitations of foreign verse in English. The discussion of the sonnet, too, though failing to bring out fully the spiritual nature of this difficult verse form, is more accurate than might be expected from the following sentence: "The form of the sonnet is of Italian origin, and came into use in the fifteenth [*sic*] century, towards the end of which its construction was perfected, and its utmost melodious sweetness attained in the verse of Petrarch and Dante." In the chapter on Alliteration there are several misleading statements, such as calling "Piers the Plowman" an "Old English" poem. In the bibliography one is surprised not to find Mr. F. B. Gummere's admirable "Handbook of Poetics," now in its third edition. In spite of these and other shortcomings, which can be readily corrected in a later issue, this work may be recommended as a satisfactory treatment of the mechanics of verse. A careful reading will improve the critical faculties.—*The Dial*.

Any of the above books will be sent prepaid on receipt of the publisher's price, less ten per cent. The same discount will be allowed on any new book, not a text-book.

N. D. C. HODGES,

874 Broadway, New York.