

the kindred industries embracing Wood Tar, Asphalt, Ozokinite, Peat, Lignite, Bone Oil, Fixed Oils, Cellulose, etc. Appendix A provides a description of the six principal types of shale retorts, each being illustrated by a figure, and appendix B furnishes a complete bibliography of destructive distillation in its modern development. A neat summary describes the application of heat to cellulose and kindred bodies as leading to cumulative resolution, the process being in principle the same whether performed by nature or by human contrivance. At a high temperature the liquid distillate is characteristically "aromatic"; at a low temperature "fatty." In either case the persistence of the $n C_3$ group can be freely traced throughout. Inasmuch as a chemical equivalent for much of the "temperature" can be found in "time," petroleum may appear in rocks never actually igneous; and we can understand the occurrence of degraded hydrides, such as turpentine and other "aromatic" compounds in living trees.

C. P.

Poole Brothers' Celestial Handbook and Planisphere. Compiled and edited by Jules A. Colas. Chicago, Poole Brothers.

THE above publication is made up of two parts, the Handbook and the Planisphere.

The planisphere consists of a stiff, circular cardboard, about twenty inches in diameter, upon which has been engraved all the principal constellations that can be seen from the North Pole to 50° south declination. Fastened to the circular disc is a frame made of the same substance, and formed so as to project the horizon upon the sky, and also to assist in noting the days of the year. The planisphere is exceedingly handy, as the explanations printed upon it suffice for finding the approximate time at which any celestial body rises, culminates, or sets. In the hands of the learner of the constellations the planisphere is a great improvement upon the ordinary star-maps.

The handbook, which serves as a companion to the planisphere, contains in a neat form references to the principal constellations,

the interesting double stars, the same being neatly illustrated, and the brighter nebulae and star clusters. Short notes are given which contain the names, magnitudes, distances, and colors of the doubles. Tables are also to be found, giving the names of the bright, fixed stars, the principal binaries, colored stars, and those having a parallax. These are followed by short sketches of the phenomena of shooting stars, the principal periodic comets, and those that have an interesting history, and, last, the principal planets.

As Mr. Colas has simply compiled the remarks in the handbook, it is possible for one to find certain statements that may be questionable. He has probably fallen into pitfalls by following too closely some of the writings of Flammarion. For example, the statement that the earth and moon as seen from Sirius would appear as a spot is exceedingly misleading. A simple calculation would show that from the boundary of the solar system, that is, from Neptune, the moon as seen from that point would never depart more than 18 seconds of arc from the earth.

We note that Arcturus and Alpha Bootis are mentioned as if they were two distinct stars. This is probably a slip of the pen, as well as the statement that the constellation Cassiopeia can be seen every day.

The author has carried his book well down to date, as mention is made of Barnard's discovery of the fifth satellite of Jupiter, and Anderson's discovery of the new star in Aurigæ.

In our opinion the statement quoted from Flammarion's "Les Etoiles," that Baron Dembowski observed the yellow companion to 15 Lyncis covering the blue one by one-fourth of the former's diameter, is exceedingly doubtful.

A star, as seen in the most powerful telescope, is a point of light, never a disc, and such statements as the above are, to say the least, misleading.

The compiler has, in a note on Neptune, raised the question of priority of the discovery of the position in which the outermost planet would be found.

CALENDAR OF SOCIETIES.

Agassiz Scientific Society, Corvallis, Ore.

May 10. — Dumont Lotz, Food Adulterants.

May 31. — Wallis Nash, Darwin's Life and Works.

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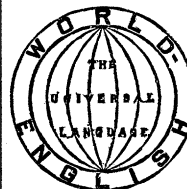
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We would say that perhaps Mr. Colas was led by sentiment to make the unqualified statement that all the glory of the great mathematical computation, for that it was, rests with Le Verrier. The statement, however, is very questionable.

In glancing through the pages of the handbook, we can but admire the neatness with which the text has been arranged, and the selection of interesting objects gives a field of wide range.

We would recommend these two publications to the ambitious learner of the starry heavens as fit companions for his watches.

G. A. H.

Missouri Botanical Garden. Fourth Annual Report. St. Louis, 1893. Plates. 226 p.

THIS is a handsomely gotten up volume, in which we find several papers of interest. The report of the director, Dr. William Trelease, shows a flourishing condition of affairs. The herbarium now contains some 203,000 specimens, and the library over 11,000 volumes and pamphlets. The valuable library of Dr. Lewis Sturtevant was received as a donation, and included many manuscript notes. The only condition was that he retain the books during his lifetime or for so long a time as he needed them. The third annual flower sermon and the proceedings at the third annual banquet are reported in full. In the latter we find many interesting statements respecting Mr. Henry Shaw, the founder of the garden. There are also two scientific papers: "List of Plants Collected in the Bahamas, Jamaica, and Grand Cayman," by A. H. Hitchcock, and "Further Studies of Yuccas and Their Pollination," by Wm. Trelease.

Professor Hitchcock discusses in his introductory remarks various principles of nomenclature, finally taking 1753 as the starting point, in accordance with the recommendation of the Botanical Club of the A. A. A. S. The double citation plan is followed, the original author of the name being placed in parenthesis, the name of the author of the combination coming last. The original spelling of the specific name has been followed, ex-

cept in those cases where typographical errors were clearly apparent. Notes are given on many of the species and several new ones are described. The relationship of the flora to the surrounding region is also discussed, and notes are given upon geographical distribution. Dr. Trelease's paper gives descriptions of the various species of *Yucca*, and mentions the mode in which some of them are fertilized. He agrees with Professor Riley that fertilization takes place through the intervention of species of *Pronuba*. He considers *Yucca whipplei* to belong to the genus *Hespero-Yucca*, the common Spanish Bayonet of San Bernardino region being considered as var. *graminifolia*. This variety is fertilized by a new form of *Pronuba*, described as *P. maculata*, var. *aterrima*.

J. F. J.

THE lists of expectant graduates of Sibley College, Cornell University, in mechanical engineering, are just published by the registrar. The total number of candidates for the first degree is just one hundred; for the second degree, twelve come up, and are already, in most cases, through their examinations. Two or three of the first-degree men may fail; but the total will exceed one hundred. The graduating class, for the whole university, inclusive of its law school and special courses of four years' length, will be considerably above three hundred. There are about two hundred graduate students on the catalogue, a large proportion of whom take their degrees this year. Of these, many take the first degrees in Sibley College, where the custom of going through the regular "general courses" before entering the professional school is rapidly gaining ground, and is greatly encouraged by the authorities—where the student can afford the time and the expense.

—The Contemporary Publishing Co. have just issued an important work on the subject which to-day most attracts the attention of geographers: "The Arctic Problem and Narrative of the Peary Relief Expedition," by Professor Angelo Heilprin, the leader of the expedition.

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The Rev. A. C. Waghorne, New Harbor, Newfoundland, wishes to sell collections of Newfoundland and Labrador plants, all named by competent botanists. He is going on a missionary journey along the Labrador coast, from the middle of July till October, and in return for much needed aid towards (Episcopal) Church purposes in that region, will be glad to be of service to any botanists who may write to him. Letters posted in the U. S. up to July 1 will reach him at the above address, and if posted later will be forwarded.

For sale.—J. D. Dana's Report on Crustacea of the U. S. Exploring Expedition under Charles Wilkes. Text and plates well bound in three volumes, half morocco, \$75. Samuel Henshaw, Boston Society of Natural History, Boston, Mass.

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For sale or exchange.—Johnson's Universal Cyclopædia, 8 vols., ed. 1888. Binding, half-morocco. Will sell cheap for cash or would exchange for typewriter. Address W. J. McKom, Mason, Mich.

I have 500 microscopic slides to exchange in lots to suit. Want Kodak, first-class field-glass or scientific books. A. C. Gruhlke, Waterloo, Ind.

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