separated as *B. atricristatus sennetti* Ridgway; the small Floridian form of *B. bicolor* has been named *B. bicolor floridanus* Bangs; while the maximum of the same species, found in eastern Kansas, could be called *B. bicolor missouriensis* (*Parus missouriensis* Baird) if it were worthy of a name, which Dr. Allen thinks doubtful. These differences are clearly geographic and are apparently dependent upon climate, directly or indirectly. It is quite possible that in part, at least, they represent what Tower calls "place-variation." In both species there is some difference in color accompanying that of size, and in the case of the black-crested titmouse this is quite marked. If the birds can be readily bred in captivity, they afford a fine opportunity for experimental work.

AFRICAN ISOPODS

IN a descriptive account[6] of the terrestrial Isopod Crustacea collected in Liberia by Dr. O. F. Cook, Miss Harriet Richardson describes four species of the genus *Ethelum* Budde-Lund, stating that "all the species of this genus hitherto described are from the West Indies." It is interesting, as showing how little we know about tropical Isopods, to find that all the species of Eubelidæ collected by Dr. Cook, twelve in number, were new to science.

T. D. A. C.

BOTANICAL NOTES

SUNDRY BOTANICAL PAPERS

ELMER D. MERRILL, of the Biological Laboratory of the Bureau of Science, at Manila, has published in a recent number of the *Philippine Journal of Science* an interesting account of the flora of Mount Halcon on the island of Mindoro. He confines his paper to the spermatophytes, the vascular cryptogams having been catalogued by Copeland in an earlier number of the same journal. One species of *Agathis* (*Pinaceae*), three of *Dacrydium,* eight of *Podocarpus,* and one of *Phyllocladus* (*Taxaceae*) make up the list of gymnosperms. But nine species of grasses are recorded, including one *Bambusa.* The sedges are scarcely better represented, having but ten species in the list, only one of which is a *Carex.* Of the palms there are but two species. The families *Juglandaceae, Fagaceae* and *Ulmaceae* are represented respectively by single species of *Engelhardtia, Quercus* and *Gironniera.* Of the *Rosaceae* and *Leguminosae* there are but three species each, while there is but one umbellifer. Even the great family *Compositae* is represented by only nine species. The largest family is the *Rubiaceae* with 27 species, followed with *Melastomaceae* (18), *Taxaceae* (12), *Myrsinaceae* (12), and curiously enough, the *Ericaceae* also with 12 species. In the latter there are two species of *Rhododendron,* one of *Gaultheria* (subscandent!) and eight of *Vaccinium* (mostly epiphytic!).

In the September *Botanical Gazette* Mary S. Young publishes an interesting short paper on the germination of the pollen of *Dacrydium,* one of the *Taxaceae.* The material was obtained in New Zealand.

Mr. Ellsworth Bethel, of Denver, and Dr. W. C. Sturgis, of Colorado Springs, have projected a series of papers to be published under the general title of "The Myxomycetes and Fungi of Colorado." The first number has appeared in the "Colorado College Publication" for September, and is entitled "The Myxomycetes of Colorado." It was prepared by Dr. Sturgis. He does not attempt to determine whether these organisms are plants or animals, "nevertheless," he says, "the study of these organisms is, and always has been mainly in the hands of botanists." After a few paragraphs on their structure, collection and preservation, microscopic examination, and literature, he gives a key to the genera known to occur in Colorado. This is followed by a fully annotated list of the species arranged under their genera. No attempt is made to characterize the genera otherwise than is done in the key, and only new and hitherto unreported species or varieties are described. About one hundred species and varieties are included.

"Linné and the Love for Nature" is the title of a pretty and appreciative paper by

[6] *Smithsonian Misc. Coll.*, September, 1907.

Edward K. Putnam read at the Augustana College celebration of the two hundredth anniversary of the birth of the great Swedish botanist. It has now been published in *The Popular Science Monthly* (October, 1907).

Dr. C. L. Shear publishes a valuable bulletin (No. 110 of the Bureau of Plant Industry, U. S. Department of Agriculture) on "Cranberry Diseases." In it he brings together what he has hitherto published in smaller papers, and thus makes the first full account of the diseases of the cranberry due to fungi. It is illustrated by seven full-page plates, two of which are colored. The diseases discussed at length are "scald" (due to *Guignardia vaccinii*), "rot" (due to *Acanthorhynchus vaccinii*), "anthracnose" (due to *Glomerella rufomaculans vaccinii*) and "hypertrophy" (caused by *Exobasidium oxycocci*). Thirteen additional species of fungi attacking the fruit and producing diseases of less importance receive briefer treatment, while seventeen more occurring on leaves or stems are noticed and still more briefly discussed. Several pages are devoted to preventive and remedial measures. A bibliography of cranberry diseases including sixty titles closes this important paper.

Dr. H. L. Shantz's "Biological Study of the Lakes of the Pike's Peak Region" in the *Transactions of the American Microscopical Society* (Vol. XXVII.), although largely given to a description of the zoological phase of the matter is a valuable paper for the botanist who is interested in plankton studies. Dr. Shantz brings out many interesting facts in regard to the vegetation of a dozen or more lakes ranging from 1,800 to over 3,300 meters above sea level.

Professor Stanley Coulter and Herman B. Dorner, of Purdue University, have issued a handy "Key to the Genera of the Native Forest Trees and Shrubs of Indiana" which must prove very helpful to pupils and teachers in the public schools, as well as to some college students. The key is of the strictly dichotomous kind, and so while quite "artificial" is very easily used. Two plates and a two-page glossary complete the duodecimo, 24-page pamphlet. It is supplied to schools for twenty cents.

A useful 80-page bulletin (No. 107), prepared by Alice Henkel, has just been issued by the Bureau of Plant Industry (U. S. Department of Agriculture) under the name of "American Root Drugs." From it we learn that "more than half of the root drugs in the Eighth Decennial Revision of the United States Pharmacopoeia occur in this country, some native and not growing elsewhere, and others introduced." In all fifty such drugs are described, and with the description of the drug there are given botanical and common names, habitat and range, description of the plant, with notes as to cultivation, collection, prices, and uses of the drug. Twenty-five text figures and twenty-eight reproductions of photographs of as many plants serve to make this paper still more useful.

Under the title of "The Roots of *Lycopodium pithyoides*" Alma G. Stokey describes in the July *Botanical Gazette* the curious phenomenon of the formation of "inner roots" which run down *inside* of the stem, boring their way through the cortical tissues, and finally emerging at or near the base of the stem.

In a recent paper Dr. R. P. Hibbard gives (*Botanical Gazette*, June, 1907) the results of his experiments made to determine the effect of prolonged tension upon the formation of mechanical tissue in plants. By ingenious devices he subjected stems and roots to tension and compression. The results showed that the response of the plant was generally not great, although usually noticeable.

From his investigations of pollen formation in Cucurbitaceae (*Bulletin Torrey Botanical Club*, Vol. 34, pp. 221–242) J. E. Kirkwood is able to confirm the conclusions of other observers, and to add somewhat to our knowledge of the karyokinetic stages.

One of the best attempts to formulate the work in botany for the high schools is that of Professor R. Kent Beattie, of the Washington State College. It is issued by the State Superintendent of Public Instruction as High

School Bulletin No. 1, and is intended to serve as a guide for the high schools of the state. The work as outlined includes the cell, the blue-green algae, the green algae, the lower fungi, brown seaweeds, higher green algae, red algae, higher fungi, liverworts, mosses, ferns and their allies. This is followed with sixteen lessons on the structure and activities of the seed plants and suggestive paragraphs on how to make a botanical museum and herbarium, how and what apparatus to buy, a list of text- and reference-books, etc., etc. It must prove very helpful to high school principals and those who are teaching botany in these schools.

ANOTHER TREE BOOK

MR. ROMEYN B. HOUGH, well and favorably known in connection with his publication of sections of American woods, has issued a stout volume of 464 pages under the title of "Hand-book of the Trees of the Northern States and Canada east of the Rocky Mountains." In this book one finds for each of the more than two hundred species included, on one page a reproduction of a photograph of the leaves, twigs and fruit, and on the page opposite, a similar photograph of the trunk, a map showing distribution, a careful description, and in many cases an enlarged photograph of a cross-section of the wood. The photographs are admirably selected, and have been reproduced very successfully. Those showing leaves and fruits are upon a background marked into squares which originally were square inches, and so while the pictures have been reproduced with different degrees of reduction, the lines enable one at once to make out the actual dimensions of the objects. This device is very ingenious, and should be more generally adopted by book-makers. The little maps are admirable, and tell more exactly the distribution of each species than is possible by any amount of mere description.

At the beginning of the volume is a key to the families, based mainly upon the flowers, and in the back portion is given a synopsis of the families and genera, with keys to the species. Here occur also the descriptions of a considerable number of species not found in the illustrated part of the volume. The book closes with a full glossary, and a well-arranged index. It will be indispensable to the botanist, and the student of forestry.

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APPOINTMENTS AT TULANE UNIVERSITY

THE following changes are noted in the faculty of the Tulane University of Louisiana for 1907–8:

Dr. Robert Sharp, head of the department of English, has been granted a year's leave of absence, and has selected as his substitute Mr. Armour Caldwell, of Columbia and Harvard, who with Assistant Professor Brown, of the department of English, will carry on Dr. Sharp's work for the present session.

Dr. Ulrich B. Phillips, assistant professor of American history in the University of Wisconsin, who has been granted a year's leave of absence by that university, has been selected to fill the chair of history, made vacant by the death of Professor John R. Ficklen.

Professor J. M. Gwinn, professor of pedagogy in the Missouri State Normal School, at Warrensburg, has been appointed to the newly-established chair of education.

Dr. John C. Ransmeier, who recently returned from Europe, where he has been traveling on the John Harvard fellowship, has been appointed assistant professor of German, vice Professor John Hanno Deiler, who retired last June on a Carnegie pension.

Dr. William B. Smith, former professor of mathematics, who spent the most of last year in Europe, will fill the chair of philosophy. Dr. Joseph N. Ivey, associate professor of mathematics, has been appointed head of that department.

Professor Douglas S. Anderson, who was granted a year's leave of absence in 1906–7, and who spent the greater part of his time at the Polytechnic School at Zurich, Switzerland, has returned to take up his work as head of the department of electrical engineering.

Professor William B. Gregory will pursue studies at Cornell University for the session of 1907–8. Mr. James M. Robert will act as his substitute.