filled in at its northern end by a large alluvial fan. Since the streams which feed the lake have their source in the snow and ice fields high up on the adjacent mountains, they are loaded with a considerable supply of rock waste, which, by reason of their swift descent down the steep mountain slopes, they can easily wash into the valley. But as soon as the water reaches the much gentler grade of the valley floor, a great deal of the material, which is too heavy to be borne farther, is dropped, the coarser near the foot of the cascades, the lighter at some distance. In spring, when the volume of the rivers is much increased, coarse fragments are swept farther down the valley than they are in the summer season. Furthermore, after the stream has raised its bed in one place, a freshet may cause it to break through its low walls and begin building in a new direction. Evidence of this swinging of the stream is abundant on the surface of the Emerald Lake fan, in the numerous forsaken channels that radiate from its feeding point, or origin.

The construction of the fan is carried on by *two* streams which unite near the head of the lake. That the west branch is the more efficient is proved by the fact that the east branch flows through a narrow marshy tract bounded on the east by the steep valley walls and on the west by the edge of the fan of the west branch. In other words, the latter has shoved the east branch against the eastern valley walls. Furthermore, the east stream has, near the base of its cascades, a small fan of its own.

There is no doubt, then, that the main fan is growing. At what rate this development is going on is not certain; but it must be relatively rapid, for, although trees of twenty or thirty years are found on many parts of the deposit, especially in the older portions, these are generally rather thinly scattered. Vegetation is scarce because there has been little or no rock decay.

Emerald Lake was described above as occupying a depression near the head of a glacial valley. We may add that the fan is in the northern half of this depression; that is, the lake and the fan together are situated in a single basin. This is very evident in the field, where the continuity of the bounding walls of both fan and lake is most conspicuous.

The northern border of the lake is marshy because the finer sediments of the fan are laid down here. Farther back these are being covered by coarser sand and pebbles. Hence a vertical section through the fan would be that of a typical lake basin, for in vertical succession the strata run from fine below to coarse above.

There are five facts, therefore, which indicate that the lake is being filled in by the fan. They are as follows: (1) the surface of the fan is dissected by channels of *recent* formation; (2) the weaker stream has been pushed against the valley wall; (3) the deposits are fresh, and the vegetation is consequently sparse; (4) the lake and the fan are in the same depression; and (5) the structural relation between the lake and the fan is that of a filling lake basin. The first three statements denote recent change, while the last two refer to the close connection between the sites of the water and of the sediments. To-day Emerald Lake appears to be about half its original size. How soon it will be crowded out of existence it is impossible to determine; but that it must eventually disappear, unless some unforeseen event occurs, seems inevitable.

FRED. H. LAHEE

HARVARD UNIVERSITY

BOTANICAL NOTES

SEASIDE LABORATORY WORK

THE combination of recreation with study is so difficult in many places that it often seems an act of cruelty to urge tired teachers to engage in study during summer vacations. We work too hard for eight or nine months, so that rest of some kind is often absolutely necessary in order to avoid brain fag. No doubt it would be a wiser plan in schools and colleges for both students and teachers to work at a more leisurely rate, and to keep it up the whole year, as is done in other occupations, but as schools are conducted at the present time teachers and

students are pretty well fagged out by the beginning of the summer vacation, and there is imperative need of rest. In spite of this, many teachers find it necessary to add to their stock of knowledge during the vacation, and so they flock to the summer schools, and add six or eight weeks of strenuous work to their school year of teaching. No wonder that so many teachers, especially in the high schools, so soon acquire the look that we recognize as the "teacher's face." The wonder is that more of them do not break down mentally and physically.

When Agassiz thirty-five years ago started the Penikese summer school he did more than any one then thought for the tired teachers of the country, for he showed them how they might rest and study at the same time. He showed them that "better way" of finding out about nature and all the world of living things. His secret was the simple one of learning of nature by being in it, of learning about the world of living things by becoming a part of that world of life. And this was the beginning of the out-of-doors schools in America. In these new schools, instead of trying to bring mutilated fragments of nature into the laboratory the student lives in the forests, fields and meadows, with the birds, insects and plants. He lives much in the open, wandering through the fields and woodlands, searching the brooks, rowing over the ponds and bays, always with nature, because always in nature. And at the end of his vacation school he returns to his teaching refreshed and strengthened in body and mind, and with a satisfying store of knowledge about the woodsy things, and the creatures of the swamps and ponds.

Such a vacation school is that at Cold Spring Harbor, on the north shore of Long Island, thirty miles eastward from New York City. For eighteen years it has annually welcomed those who came to it for rest and study, and this year it invites such again to come (during July and August) to its shady woodlands, its bogs, its fresh ponds, and its salt-water basins and bays, all full of the life that thrives in such environment. Here one may study birds, comparative anatomy of animals, embryology, bionomics and evolution. Here too, the student may acquaint himself with the world of lower plants, from the tiny water forms to the fungi, the lichens, the mosses and the ferns, up to the flowering plants. For these living things are all about him, and he has but to observe them where they grow, or take them to the near-by laboratory where with microscopes and books he may study them more critically.

For twenty years the Marine Biological Laboratory at Woods Holl, on Buzzard's Bay, Mass., has afforded facilities for seaside study. In the waters of the bay and its varied shore line, including points and flats of many kinds, extending out to Vineyard Sound and across to the shores of Marthas Vineyard, added to the fresh-water ponds and lakes on the mainland, the student may find a world of aquatic life, while in the woodlands, which in many places still linger from the time when the region was covered with forests, terrestrial life of all kinds may be found in abundance. In the laboratory are provided botanical courses of instruction in algae, fungi and the higher plants, and zoological courses in lower animals, embryology and comparative physiology. The fact that it is only fifteen miles from the laboratory to Penikese Island where Agassiz started the first seaside summer school should add interest to this place for vacation study.

Much like the preceding is the Lake Laboratory at Cedar Point, near Sandusky City on Lake Erie, which for the past few years has offered similar facilities for those living so far away from the ocean as to practically prohibit so long a journey. Here also are offered facilities for studying animals and plants in the forests, in the open or in the ponds and bays, while in the laboratory are more formal studies of the embryology, morphology and comparative anatomy of animals, and the more technical lines of general botany.

If you are tired out at the end of the school year, and yet feel that you must study, go to Cold Spring Harbor, or Woods Holl, or Cedar Point, and rest while you imbibe something of what nature can teach you when you come closely in contact with her.

PHILIPPINE TIMBERS

NOT long since a notice was made in SCIENCE (March 13, 1908) of F. W. Foxworthy's paper on Philippine Woods published in the *Philippine Journal of Science.* Now we have another paper on the same subject published as Bulletin No. 7 by the Bureau of Forestry of the islands, and entitled "A Preliminary Check-list of the Principal Commercial Timbers of the Philippine Islands" prepared by Dr. H. N. Whitford, the chief of the Division of Forest Investigation. This list differs from the former in giving more attention to the systematic arrangement of the species and their distribution as indicated by actual specimens in the herbarium of the Bureau of Science in Manila, while it gives much less attention to the structural and physical properties, and uses of their wood. The purpose of the list is to show what is actually known as to the timber trees of the islands, so that additions and corrections may be made more easily. As in the former list the common names used in different parts of the archipelago are recorded, and one of these is selected for each species as the one most widely used, and therefore the approved name for general use.

The twenty-six families which are represented by somewhat more than eighty species are arranged according to Engler and Prantl's system in the Natürlichen Pflanzenfamilien. The families Leguminosae, Dipterocarpaceae, Combretaceae and Sapotaceae contain the larger numbers of species; in fact these four families include nearly one half of the known species. There is but one species of Pinaceae, viz.: *Pinus insularis.* A good index completes the pamphlet.

ANOTHER TREE BOOK

THE Philadelphia publishing house of Lippincott Company has just brought out a book which must prove very useful for students and tree-lovers everywhere. It bears the title of "Our Trees: How to know Them," and is the joint work of Arthur I. Emerson and Dr. Clarence M. Weed. The book consists of large photographs which have been very well reproduced in the full-page plates, and in each case a page of non-technical text. Each photographic plate includes the flowers, fruits, twigs and leaves on a larger scale, and at the side a view of the tree on a much smaller scale. The text includes a popular but accurate description of the tree, its bark, foliage, fruit and something of its uses. Its range of natural distribution is usually given, and in some cases suggestions are made as to its ornamental value. In the sequence of families and the generic and specific nomenclature the authors follow Sargent's "Manual of the Trees of North America." The book must prove to be a valuable addition to the library of every man who is interested in trees.

A SECOND ORCHID BOOK

THREE years ago the present writer had the pleasure of reviewing favorably in this journal (SCIENCE, May 19, 1905) the first volume of Oakes Ames's "Orchidaceae," and now the second volume, which has just been received, calls for a notice. This one opens with a five-page introduction in which the author discusses the part of Engler's "Das Pflanzenreich," which deals with *Orchidaceae,* protesting vigorously against the treatment which his writings and drawings received at the hands of the editors of that work. Then follow half a dozen short articles before reaching the principal paper of the volume, "Studies in the Orchid Flora of the Philippines," covering 242 pages. Following this are fifteen pages devoted to new species and names of American orchids, and the volume closes with a generic and specific index to volumes I. and II. Nine full-page plates and many text illustrations, all very good and satisfactory, are scattered through the book. As in the preceding volume, all original descriptions (and many others) of species are in Latin, as is quite proper in a work of this kind, although the general discussions as well as the keys are in English. In many cases the Latin description is followed by an English translation. The paper used in the book is of fine quality, and the typography and presswork of the best. The author is to be congratulated upon bringing out a second volume so soon after the first, and it is to be

hoped that he may be encouraged to continue this admirable series. It is particularly creditable to American botany.

SHORT NOTES ON BOTANICAL PAPERS

Dr. P. A. Rydberg's "Scandinavians who have contributed to the Knowledge of the Flora of North America" (Augustana College Library Publications, No. VI.) is a valuable contribution to the history of botany in this country. This comes quite opportunely at this time when there is a distinct revival of interest in everything pertaining to the history of botany, due no doubt to the celebration last year of the two-hundredth anniversary of the birth of Linné. In treating the subject Dr. Rydberg recognizes eight historical periods, viz.: the Medican (A.D. 1478–1601) in which there were no Scandinavian contributors to the flora of North America; the Bauhinian (1601–1694) again with no contributors; the Tournefortian (1694–1735) with two contributors; the Linnean (1735–1789) with eleven Scandinavian contributors; the Jussieuan (1789–1819) with eight; the Candollean (1819–1840) with twelve; the Hookerian (1840–1889) with forty-three; the Englerian (1889–) with thirty-two. These botanists, of whom there were one hundred and eight, are divided by nationality as follows: Danes, 51; Swedes, 43; Norwegians, 9; Finns, 5. Short biographies are given of each, with lists of their principal works bearing on the flora of North America.

The Annual Report of the Director of Botanical Research in the Carnegie Institution (Dr. D. T. MacDougal) for 1907 contains brief accounts of the lines of work carried on during the year. Among the titles are "The Advance and Recession of Vegetation in the depressed Basins of the Colorado Delta," "Acclimatization," "Distribution and Movements of Desert Plants," "The Topography of Chlorophyll Apparatus," "Physiology of Stomata," "Evaporation and Plant Distribution," "The Relation of Evaporation to Plant Activity." An automatic rainmeter is described, and mention is made of the explorations and field work undertaken, the studies of desert conditions, bibliographical and cooperative work, equipment, etc., and the report closes with a list of the laboratory publications of the year, including thirteen titles. This work was provided for by a grant of $25,000, and was practically all done at the Desert Laboratory at Tucson, Arizona. The report includes a map of the Colorado River delta, a half-tone view of the laboratory, and two views of portions of the Salton Sea. Every botanist will be glad to note that the work undertaken is of the highest scientific value, and the trustees of the institution are to be congratulated upon their selection of so able a director of the botanical work.

The United States National Herbarium has begun the publication of a series of papers by Mr. William R. Maxon under the title of "Studies of Tropical American Ferns," the first of which has just appeared as part 7 of volume X. of the "Contributions" from the Herbarium. This part is pretty largely taken up with attempts of the author to bring order out of the confusion into which many of the species have fallen. One new genus, a new name for another genus and several new species are the additions proposed in this part. Two good plates illustrate some of these additions. The continuation of this series will be watched with interest by fern students everywhere.

The closing number (December, 1907) of the *Philippine Journal of Science* (Botany) contains notes on an early collection of ferns, a revision of *Tectaria* (by E. B. Copeland), descriptions of two new grasses (by E. Hackel), some additions to the flora, further identifications of some of Blanco's species, and further titles for the index of Philippine botanical literature (by E. D. Merrill).

Another part (vol. 9, part 2) of the North American Flora has come to hand, completing the Family *Polyporaceae* (by M. A. Murrill). Part 1, which appeared in December, 1907, covered the first half of this family, and included the key to the tribes and genera, and descriptions of the genera and species from *Hydnoporia* (No. 13) to *Laetiporia* (No. 46), while this part begins with *Phaeolopsis* (No. 47) and closes with *Cycloporus* (No. 78). An

examination of these pages shows one who has known something of the pore fungi that he will have many new names to learn, since the old genera, as *Polyporus, Daedalea, Lenzites, Trametes,* etc., have been split up into new ones.

If there are any plants about whose nomenclature there has been no doubt, the common alfalfa of the fields is one of them. We all felt that we were on solid ground when we wrote its name *Medicago sativa* of Linné, but now comes C. S. Scofield, of the United States Department of Agriculture, who offers strong reasons for abandoning this name. It appears that Tournefort in 1700 figured "luserne" quite correctly under the name of *Medica,* and also a very different plant on the same plate under the name of *Medicago.* Linne made use of Tournefort's plate and descriptions, at first (in the "Systema Naturae," 1735) accepting his names, but later (in the "Species Plantarum," 1753) applying the name *Medicago* to both plants in the plate. It appears from this that *Medicago* must be retained for the second plant on the plate (*M. radiata*), and that the proper name of the alfalfa ("luserne") is *Medica sativa* (L.) Mill.

G. H. Powell, of the Bureau of Plant Industry of the United States Department of Agriculture, has published (in Bulletin 123) the results of his studies of the decay of oranges while in transit from California. He finds that it is principally due to a blue mold (*Penicillium digitatum*), although a part of it is caused by *P. glaucum.* He finds, further, that the fungus is incapable of penetrating unless the skin has been injured in some manner. Cooling the fruit before shipment and the maintenance of a cool temperature in transit tend to reduce the amount of decay. The report is illustrated by nine full-page plates, two of which are colored.

Experiments by Dr. G. G. Hedgcock extending through five years seem (Bulletin 131, Bureau of Plant Industry, U. S. Department of Agriculture) to prove that the disease of the roots of the almond, apricot, blackberry, cherry, peach, plum, prune and raspberry known as "crown gall" is essentially identical, and due to the same organism. Furthermore, it has been found possible to produce ("with great difficulty") a crown gall on the apple, chestnut, walnut and rose by transfer of the organisms from the galls on the first named plants. The author says, further, "these results show quite conclusively that apple crown gall in its soft form is contagious, but that in the hard form it is either slightly or not at all contagious."

CHARLES E. BESSEY
THE UNIVERSITY OF NEBRASKA

HARVARD ANTHROPOLOGICAL SOCIETY

THE Harvard Anthropological Society celebrates its tenth anniversary in May of this year. The club was founded in 1898 mainly through the initiative of the late Dr. Frank Russell and Mr. Walter S. Andrews. Its object "is the promotion of interest in the study of the natural history of man and of the history of human culture with special reference to its origins and primitive forms and to the general laws of its development."

The society is composed of undergraduates and graduates of Harvard University who are taking or have taken courses offered by the department of anthropology. The officers, with the exception of the permanent secretary, are elected from the student body. Meetings open only to members of the club are held every month during the college year, at which time papers are presented and discussed. The society thus furnishes a means of intercourse between the older and younger men which is not possible in any other way.

During the first seven years of the history of the organization two or more public lectures were given under the auspices of the society each year. A different policy has been carried out during the last three years. Two dinners have been held annually with a special guest of honor who has delivered an address. These occasions have proved most profitable as well as enjoyable as many former members of the club have returned.

The society numbers among its honorary members Professor F. W. Putnam, Miss Alice Fletcher, Mr. C. P. Bowditch, Professor Franz