one having been on February 2 on "What Evolution means to you."

THE following series of lectures will be given at the New York Botanical Garden on Saturday afternoons at 3:30: February 4, "Important Tropical Fruits," Dr. H. A. Gleason; February 11, "Yellowstone Park's Trees, Flowers and Wonders," Dr. Henry R. Rose; February 25, "California Gardens," Miss Hilda Loines; March 3, "Rambles of a Naturalist among the Indians," Dr. Clyde Fisher; March 10, "Plant Hybrids: How they are produced and their Uses," Dr. A. B. Stout; March 17, "Botanizing in Trinidad," Dr. Tracy E. Hazen; March 24, "Florida," Dr. J. H. Barnhart, and March 31, "The Present Status of Evolution," Professor John M. Coulter.

UNIVERSITY AND EDUCATIONAL NOTES

A DONATION of $128,000 to Columbia University by the alumni of the College of Physicians and Surgeons to found a professorship in pathology at the medical school has been announced by Dr. Francis Carter Wood, as spokesman for the alumni. The money will be held in trust by the university until it reaches the sum of $200,000. The professorship will be called the Francis Delafield professorship, in honor of the founder of the pathology laboratory at the College of Physicians and Surgeons.

A GIFT of $1,650,000 for the erection of four residence halls for women students at Cornell University has been announced by Dr. Livingston Farrand. The name of the donor was withheld by request.

GROUND has been broken for the $750,000 institute of pathology at Western Reserve University. The building is a gift of the Rockefeller Foundation.

THE publication of the report of Charles F. Adams, treasurer of Harvard University, shows that the total endowment of Harvard, exclusive of land and buildings used for educational purposes, is now more than $82,000,000.

AT the University of New Hampshire, a separate graduate school under its own director has been established. Although no director has been officially chosen to head the new division of the state university, it has been intimated that Dr. Hermon Slobin, head of the department of mathematics, would fill the position.

DR. JAMES BUELL MUNN, assistant dean of Washington Square College of New York University, has been elected dean of the college. Dr. Munn will succeed Dr. John R. Turner, who recently was elected president of West Virginia University.

DRS. MARION ARTHUR BLANKENHORN and Roy Wesley Scott, now associate professors of medicine at Western Reserve University, have been promoted to the rank of clinical professor.

ASSOCIATE PROFESSOR J. B. REYNOLDS, of Lehigh University, has been promoted to a full professorship of mathematics and theoretical mechanics.

RALPH G. MEEDER, assistant professor of biology at Hamilton College, has been appointed instructor of biology at Wesleyan University, Connecticut.

PROFESSOR ARTHUR HUTCHINSON, F.R.S., professor of mineralogy and fellow of Pembroke College, has been elected master of Pembroke College in succession to the late Dr. W. S. Hadley.

PROFESSOR JAMES HENRY DIBLE has been appointed professor of pathology and bacteriology in the Welsh National School of Medicine.

DISCUSSION AND CORRESPONDENCE

ALEXANDROVSK BIOLOGICAL STATION

FOR biologists who have an interest in the low temperature relationships of organisms, probably no station is better situated than the one at Alexandrovsk at the mouth of the fjord by which the Kola River empties into the Arctic Sea. The faunal materials available at this station are brought into the arctic by the warm waters of the Gulf Stream. Many of the forms are in great abundance and easily obtainable. They have an interesting relationship to the fluctuating currents of the Gulf Stream. Owing to the changes in position of the four divisions of this current there is much fluctuation in the temperature, salinity, acidity and other ecological factors in this portion of the Arctic Sea.

The station is well established, having been in operation for twenty-eight years. The four major buildings are well situated immediately at the water's edge. Good housing space is available for 120 regular students who spend part of the summer months at Alexandrovsk, and for the 150–200 students who visit the station for a few days. There is usually a staff of 25–30 instructors, research workers, and specialists in residence. The director, Dr. G. A. Kluger, has made special arrangements for the entertainment of foreign scientists. Usually there are several persons in residence who can speak any of the principal languages.

The instruction at the station is excellent in comparative zoological anatomy. This phase of the work is under the direction of Dr. Nicholas Tanaseiichock with three assistants and three preparators. In the division of physiology Dr. Kreps was working on the effects of the acidity and salinity of the water

on the distribution of the organisms. Interesting work was in progress on intracellular digestion in medusae. In plant physiology Mlle. Vera Bersook was working on the rate of photosynthesis in algae.

The physiological work is greatly aided by a very complete hydrographic survey which has been in progress for several years. The station by motor ship sends expeditions on a triangular course of survey to 76° N. Lat. in February, May, August and November of each year.

Botanical instruction under Mlle. Titiana Voblikoff is concerned mainly with the classification and distribution of algae and lichens. There is a substation branch in the Hibini Mountains where collections of plants other than the arctic flora may be made.

Research is in progress through the whole year. The Arctic does not freeze in this region, owing to the warm waters of the Gulf Stream and owing to the action of a 13-foot tide. The main portion of the instructional work is given to three parties of students, each party spending five or six weeks in residence at Alexandrovsk.

The station publishes a series of reports in addition to journal articles. These may be had in exchange.

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THE ETIOLOGY OF EUROPEAN FOUL-BROOD OF BEES

THE attention of the writer has been directed to a communication from Denis R. A. Wharton appearing in SCIENCE, November 11, 1927, similar to one published in *Nature*, August 27, 1927, dealing with the cause of the disease of bee larvae commonly known as European Foul-brood, and the possible rôle of *B. alvei* (Cheshire and Cheyne) as an etiological factor. The article in question is based on data obtained, in part, by Mr. Wharton while temporary assistant under the writer's direction in the Division of Bacteriology, Central Experimental Farm, Ottawa, the publication being unauthorized, and, in the opinion of the writer, somewhat premature, particularly in view of the desirability of a thorough preliminary verification of the results obtained.

The organism isolated from diseased brood, which in pure culture was found to be capable of transmitting the disease, appeared to be closely related to, if not identical with, *Streptococcus apis* described by Maassen[1] but capable of considerable morphological variation showing types which are impossible to distinguish microscopically from what is commonly called *B. pluton* (White)[2] which is usually stated to be the exciting cause of the disease. The claim of White, however, may be said to be based on indirect evidence, on the basis of microscopical and inoculation tests with impure cultures, *B. pluton* apparently not having been obtained in pure culture. The similarity of certain stages of *Str. apis* in pure culture with the appearance of *B. pluton* in diseased material raises doubts as to whether the latter can be said to exist at all.

In obtaining the organism in pure culture from the comb containing larvae dead of foul-brood, a preliminary enrichment medium appears essential. Our most recent experiments have shown the most suitable substrate yet employed to be one containing peptone 1 per cent., K_2HPO_4 0.05 per cent., honey 1 per cent., yeast 1 per cent. and agar 0.15 per cent., slightly acid (pH = 6.2 approx.) A preponderance of the "*pluton*" form over *B. alvei* or other "secondary invaders" in the raw material is desirable if the coccus form is to be readily established. After two or three transfers the organism may be readily obtained in pure culture by regular plating methods.

Respecting the rôle played by *B. alvei*, experiments on the life-cycle of this organism are still in progress. Results so far obtained indicate that *B. alvei* is to be regarded as more than a secondary invader as is now usually stated. Depending on the nature of the substrate, upon the period and temperature of incubation, this organism exhibits a pronounced polymorphism which indicates that the typical rod forms and endospores most commonly encountered are but stages in the life history of the organism. The development of coccoid forms of *B. alvei* is particularly pertinent to the question of the etiology of European Foul-brood. Recent experiments were made with a culture of *B. alvei* which had been kept for over two years with occasional transfers on nutrient agar and nutrient dextrose agar. On these media as well as on solid substrates containing yeast, endospore formation is prompt, and further morphological changes are seldom. On a medium composed of peptone 1 per cent., K_2HPO_4 0.05 per cent., dextrose 0.5 per cent., saccharose 0.5 per cent., agar 1.5 per cent. (pH = 6.8), the type of growth is very different, being more transparent in character and endospore formation much lessened, being even absent on repeated transfers. After establishment of *B. alvei* on this substrate, subsequent plate cultures kept at room temperature for 3 to 5 weeks have repeatedly given rise to coccoid forms which in morphology and group

[1] Maassen, A. "Zur Aetiologie der sogenannten Faulbrut der Honigbienen." *Arb. aus d. Kaiserl. biol. Anst. f. Land. u. Forstw.* Bd. VI, Heft. 1, 53–70. 1908.

[2] White, G. F. "The cause of European Foul-brood." *U. S. D. A. Bur. Ent. Circ.* 157. 1912.