27 and 28, the address of the retiring president, Dr. Eliot Blackwelder, professor and head of the department of geology at Stanford University, will be given on the evening of December 26, the title being "Science and Human Prospects." Meeting with the Geological Society of America are the Paleontological Society and the Mineralogical Society of America. The address of the retiring president of the Paleontological Society will be given on the morning of December 26, by Dr. Carl O. Dunbar, professor of paleontology and stratigraphy and curator of the Peabody Museum of Yale University, the title of his address being "The Permian Faunas: A study in Facies." The address of the retiring president of the Mineralogical Society of America by Dr. W. F. Foshag, curator of the U. S. National Museum, will be given on the morning of December 27 on "Problems in the Study of Meteorites."

THE Academy Conference of the American Association for the Advancement of Science will meet at the Bellevue-Stratford Hotel, Philadelphia, at 3 P.M. on December 27. The conference is composed of (a) the representatives of the affiliated academies of science (one from each academy) in the Council of the Association and (b) the members of the Executive Committee. The Academy Conference welcomes the attendance of those interested in the relations between the academies and the association. The program will consist of two principal papers which will be followed by informal discussion: "Methods of Bringing the Academy into Closer Relationships with Other Organizations," by Dr. P. D. Strausbaugh, West Virginia Academy of Science, and "Long Range Planning for the State Academies of Science," by Dr. W. F. Rudd, Virginia Academy of Science. The conference will be followed at 6 P.M. by the annual academy dinner to the members of the conference.

THE council of Scientific Societies of Western New York held its first annual scientific symposium on November 23. A large number of technical papers were presented at the afternoon sessions, and in the evening Dr. C. J. Phillips, of the Corning Glass Company, gave a lecture with demonstrations entitled "Modern Miracles in Glass." The purpose of the council is stated to be "To afford scientists in Western New York an opportunity to meet one another, to publicly present the results of their original research and to permanently record these results through publication." Officers of the council are *President,* Irving G. Reimann; *First Vice-president,* A. H. Bennett; *Second Vice-president,* Oscar W. Richards; *Secretary-treasurer,* Harold D. Mitchell. Member organizations are the Amateur Telescope Makers and Observers; the Aquarium, Botanical, Conchological, Geological, Microscopical and Mycological and Bryological Sections of the Buffalo Society of Natural Sciences; the Buffalo Ornithological Society; the Buffalo Section of the American Association of Civil Engineers; the Buffalo Zoo; Canisius College Chemistry, Mendel, Strohaver Science, High-school Science, Roosevelt Field, Allegany Field and Trail, and Science Museum Photographic Clubs; the Mathieson Alkali Works, Inc., Niagara Falls, N. Y.; the Nature Sanctuary Society of Western New York; Pratt and Lambert, Inc., and the Spencer Lens Company.

THE Plant Hormone Laboratory at Connecticut College, New London, will be open from June 23 to August 16, 1941, to adequately prepared graduate students and others wishing to carry on plant hormone research. Special arrangements may be made for shorter periods of investigation. The summer program will consist of laboratory research and seminars. Dr. G. S. Avery, Jr., Dr. J. Berger, biochemist, and other members of the staff will be available as consultants. Board and lodging may be obtained at the College Inn, located nearby. Several fellowships of $100 to $150 each are available, and investigators holding these fellowships will not be required to pay the $15 laboratory fee. Application blanks and further information may be obtained by addressing Professor George S. Avery, Jr., of the department of botany. Wherever possible a preliminary plan for the proposed summer's work should be submitted.

THE Donald R. Dickey Collection and Library of Vertebrate Zoology, valued at more than $100,000, have been given by Mrs. Florence V. V. Dickey, of Ojai, Calif., to the University of California at Los Angeles. The collection contains more than 50,000 specimens of birds and mammals, a library of approximately 10,000 volumes, a small bird egg collection, a photographic collection and miscellaneous items.

DISCUSSION

THE SLEEP OF CANARIES

THESE canaries live uncaged in the laboratory, range in age from six months to nineteen years, and I have considerable opportunity to watch their sleep. Some sleep night after night on the same spot. This spot may be very precise. A blind male during a year and a half roosted seventeen inches from the end of a cabinet, to reach which he had to fly through a fairly encumbered 20 × 20 room, and accomplished this usually without mishap. He would not land exactly on the spot, but often surprisingly near, then carefully edge toward it, seem restless till he had arrived. When such a spot has been held a long time, in the instance of one bird for seven years, usurpers promptly

are driven off, and you have the feeling that "right" weights the contest, so that a larger bird may appear not to have the "courage" of its full strength. The most remarkable example of insistence on a place began with a female who all her life occupied the transom rod over the laboratory door, had that rod taken by her mate on the night of her death, and though the rod has since been occupied by three birds, the occupant each time was of the same blood line. There is, on the contrary, the rarer individual who changes place as the season changes. An elderly female in the spring of the year sleeps on a high perch where most of the birds sleep, in early summer sleeps in the path of a draft from the door, on the hottest summer nights sleeps directly in an open screened window, in autumn moves back to the high perch, and with the coming of winter chooses a branch of a dead tree that stands close by the laboratory radiator.

The mating season here is roughly from February to June. During it the birds are apt to go straight from their activity to their roosts, but the rest of the year, especially on hot days, there will be one or more preliminary gatherings that include sometimes every bird. A gathering may last as long as twenty minutes. The birds stand near together, one preens its feathers, one pecks, one pipes, several may fight, there may be some changing of places, or two may let their bills just touch and hold their bodies as quiet as statues. Blood relations are apt to keep close—the crested, the cinnamon, the striped, the white. Between gatherings there may be eating. What breaks up a gathering is usually some small disturbance that excites one bird to fly, the others following, all presently grouped in a new place. Where and in what number they gathered you can tell afterward by the solid drippings, like milestones.

The birds sleep in one of four general positions. In the first position, either the right or the left leg is drawn up, usually the same leg night after night, the bill and face tucked under the blanket of feathers at the top of the wing. I have known a winter night when every bird slept so. In the second position, the head is not turned round, merely drawn in midway between the two wings, so that the bird looks hunchbacked, never many birds sleeping in that position, and it is more apt to occur where the perch is low and when there is restlessness in the environment. In the third position, and this is strangest, the neck is freely extended and so relaxed that the weight of the head drops it, either repeatedly like a dozing man's in a streetcar, or slowly till the bill rests on the perch, or sinks even lower, both feet then down—this an infrequent position except on hot nights when it may be more comfortable to have the head and neck uncovered, or in old and frail birds who may sleep that way because it takes strength to twist around the heavy head and tuck it under. In the fourth position the bird sleeps resting on its abdomen, the breathing then heaving the body, the position usually meaning bad heart or bad feet.

The act of falling asleep occurs in one of two ways. In the first the bird turns its head, closes its eyes, immediately or after a brief delay tucks its face and bill under the feathers. In the second it holds the head and body utterly still, the eyes wide open, the left fixed apparently on one point in space, the right on another, staring, till abruptly the eyes close and the bird falls asleep, or till the bird rouses, shakes itself and tucks under its head. The staring is noteworthy. It may last a long time. I have seen as many as six birds at various angles, close together, the whole group not by the slightest change the group shape in more than an hour, like an exemplary congregation in a church. An occasional bird apparently sleeps with its eyes open, for I have repeatedly moved my finger the whole way up to one and it did not start off.

Sleep is no more an undisturbed process with canaries than with us. There are light sleepers, heavy sleepers, one who never stirs, several who fall off their perches, one who falls off every night—resumes its sleep right on the spot where it fell. Often a bird wakes just enough to defecate. A certain big Norwich slept straight through the Toscanini concerts coming over the radio on Saturday nights, and in the mating season the tired females also slept through the concerts, but, except for these, everywhere in the nearly dark heights of the laboratory you saw the wide-awake listening heads. The birds sleep commonly with their backs to where the morning light will enter. Most are roused by a flash lamp even when their heads are tucked in. The way an individual may move in its sleep, or the way it may occasionally "mutter" in the middle of the night, suggests that its tiny brain, like ours, may be working when it should be at rest.

GUSTAV ECKSTEIN

UNIVERSITY OF CINCINNATI

TWO FACTORS OF POSSIBLE IMPORTANCE IN RELATION TO THE ETIOLOGY AND TREATMENT OF DENTAL CARIES AND OTHER DENTAL DISEASES

IT has long been known that some of the bacteria which grow on tooth surfaces have the power to ferment carbohydrates to acids which decalcify teeth and thus cause dental caries, or tooth decay.[1] A rapid fall in the pH of bacterial "Plaques" growing on tooth surfaces to as low as 4.1 has been found to occur follow-

[1] W. D. Miller, "Microorganisms of the Human Mouth." Philadelphia. S. S. White Dental Manufacturing Company, 1890.