notes and hoped to bring them out in a separate publication.

Giard stayed in Lille until 1887, when he accepted a call to Paris as professor in the École Normale Supérieure, and a year later the municipality created for him a professorship in the Sorbonne for the Évolution des Êtres organisés, which he occupied up to the time of his death.

In 1900 he was elected a member of the Academy of Sciences, and during the last few years several of the most important foreign academies had likewise admitted him to their ranks.

There was scarcely a contemporary naturalist who possessed in similar degree Giard's gift of interesting and attracting younger workers. His manner was cordial, happy, inspiring; his students felt that they could rely upon him, and he in turn guided their steps with the keenest interest, gave them his personal support in their career and rejoiced with them in their success. He was not only a master but a true and wise friend.

His science was eminently altruistic; he worked surrounded by his pupils, happy to see them continue and complete discoveries which he had already outlined. His faculty of observation drew his attention to what might prove interesting in many branches. In almost every group he found material for study, and his works consisted chiefly of short papers, results of personal investigations, full of original and suggestive ideas. Nearly every aspect of biology was touched upon—systematic zoology, anatomy, embryology, etiology, comparative pathology, teratology, applied zoology, botany, zoological philosophy. His papers are dispersed among a multitude of periodicals, and it would be a difficult task to collect them had there not been published the usual complete bibliography and résumé (1896) when he was admitted to the Academy of Sciences.[3]

I will mention only a few of Giard's most important results: such, for example, are his numerous researches on parasitism, during which he discovered many very curious types, *e. g.*, the orthonectida, also an admirable series of papers in collaboration with Jules Bonnier on the epicarides, the isopodous parasites of crustacea. His synthetic genius, combined with minute observation and rare erudition, enabled him to seize and combine ideas and facts which would otherwise seem to have no connection, and he introduced into general biology new and important ideas founded on well-proved experiences. For instance, the action of water and the phenomena of *anhydrobiosis,* the curious modifications produced by parasites on their hosts, *e. g.*, in cases of castration by parasites, and the interesting variations of development of individuals of the same species or closely approaching species which he called appropriately pœcilogony.

Giard was one of the few naturalists who had the gift of being both original and encyclopedic. He possessed in an unusual degree a knowledge of infinite details of nature and of general philosophy, as one can judge indeed from the lecture he delivered at St. Louis in 1904.[4]

His brilliant intellect and prodigious memory enabled him to retain the quantity of material contained in his wide-spread readings, so that he was really a living encyclopedia and always up to date, opening immediately at the page wanted, to be examined at leisure by all who desired to acquire knowledge.

All these qualities remained unobscured to the last day of his life, and his loss is felt as an untimely one to all who came in touch with his many activities.

It is as though a torch carried before the crowd to light the way had been too soon extinguished.

M. CAULLERY
UNIVERSITY OF PARIS

[3] "Exposé des titres and travaux scientifiques (1869–96) d'Alfred Giard," Paris, 1896, in quarto, 396 pp.

[4] "Les tendances actuelles de la morphologie et ses rapports avec les autres sciences."

SCIENTIFIC NOTES AND NEWS

DR. DAVID STARR JORDAN, president of Stanford University, has been elected president of the American Association for the Advancement of Science for the meeting to be held

next year in Boston. The vice-presidents for the sections and newly elected secretaries are as follows:

Section A—Mathematics and Astronomy—Professor Ernest W. Brown, Yale University.

Section B—Physics—Dr. L. A. Bauer, Carnegie Institution, Washington, D. C.

Section C—Chemistry—Professor William McPherson, Ohio State University.

Section D—Mechanical Science and Engineering—Dr. J. F. Hayford, U. S. Coast and Geodetic Survey.

Section E—Geology and Geography—Dr. R. W. Brock, director of the Canadian Geological Survey.

Section F—Zoology—Professor William E. Ritter, University of California.

Section G—Botany—Professor D. P. Penhallow, McGill University.

Section H—Anthropology and Psychology—Dr. William H. Holmes, Bureau of American Ethnology.

Section I—Social and Economic Science—President Carroll D. Wright, Clark College.

Section K—Physiology and Experimental Medicine—Professor Charles S. Minot, Harvard Medical School.

Section L—Education—Professor J. E. Russell, dean of Teachers College, Columbia University.

General Secretary—Professor Dayton C. Miller, Case School of Applied Science.

Secretary of the Council—Dr. F. G. Benedict, director of the Nutrition Laboratory of the Carnegie Institution.

Secretary of Section H—Anthropology—Professor George Grant MacCurdy, Yale University.

Secretary of Section K—Physiology and Experimental Medicine—Dr. George T. Kemp, Champaign, Ill.

The officers of the American Society of Naturalists elected at the Baltimore meeting are as follows: *President,* Professor T. H. Morgan, of Columbia University; *Vice-president for the Eastern Section,* Professor W. H. Howell, Johns Hopkins University; *additional members of the Council,* Dr. D. T. MacDougall and Professor Charles H. Judd. Professor H. McE. Knower and Dr. Hermann von Schrenck were reelected as secretary and treasurer, respectively.

Presiding officers of societies meeting at Baltimore were elected as follows: The Geological Society of America, Mr. G. K. Gilbert, of the U. S. Geological Survey, for the second time, he having held this office in 1892; The American Chemical Society, Dr. W. R. Whitney, director of the Research Laboratories of the General Electric Company, at Schenectady; The American Zoological Society, Professor Herbert E. Jennings, of the Johns Hopkins University; The American Anthropological Association, Dr. W. H. Holmes, chief of the Bureau of American Ethnology; The American Psychological Association, Professor Charles H. Judd, professor of psychology at Yale University and director-elect of the School of Education in the University of Chicago.

Professor T. C. Chamberlin, after presiding at the Baltimore meeting of the American Association, left for San Francisco on his way to China, where he will study the geology of the country with special reference to its influence on social and educational conditions, as a member of a commission sent by the University of Chicago.

Dr. Ernst Haeckel, professor of zoology in the University of Jena, will retire from active service at the close of the present semester.

At the commemoration of the centenary of Charles Darwin by the University of Cambridge in June, 1909, the Royal Geographical Society will be represented by its president, Major Leonard Darwin.

Professor Hermann Volz, the sculptor of the Bunsen monument at Heidelberg, has been given an honorary doctorate by the university.

Sir Archibald Geikie will give an address on the occasion of the celebration of the fiftieth anniversary of the Geological Society of Glasgow to be held on January 28.

Dr. Norman E. Ditman, instructor in pathology at Columbia University, has been appointed by President Butler chairman of a committee of twelve to investigate and report at an early date, upon the feasibility of establishing at Columbia a school or department of sanitation.

Dr. J. J. Kinyoun has been appointed pathologist and Dr. Truman Abbe, radiologist

on the staff of the Tuberculosis Hospital at Washington.

DR. EDWARD C. HILL has been appointed chemist in charge of the state station of the United States Department of Agriculture recently opened in Denver.

A DINNER was given at Saranac Lake on December 19, at which Dr. Baldwin presented Dr. E. L. Trudeau with two volumes of reprints on the "Studies in Tuberculosis" by his pupils in commemoration of his sixtieth birthday. Dr. Walter V. James presented Dr. Trudeau with letters from personal friends congratulating him on the occasion.

WE learn from the *Journal* of the American Medical Association that the French government has conferred the decoration of the Legion of Honor on Dr. Carlos J. Finlay, of Havana, in appreciation of his discoveries in regard to the transmission of infection by mosquitoes. The presentation of the decoration was celebrated, at the same time as his seventy-fifth birthday, at a special meeting of local and national notables in the assembly hall of the Academy of Sciences, Havana. At the same time a decree of the provisional governor was read setting forth the importance to the Cuban people of the professional services of Dr. Finlay, especially in connection with the discovery of the means of transmitting yellow fever. This decree provides for the retirement of Dr. Finlay at his own request and because of his advanced age, from the position of chief sanitary officer, and for his appointment as honorary president of the National Board of Sanitation and Charities, which office is created for his life time and will terminate with his death. The salary of this position is to be $2,500 per year. The decree also provides for the publication by the government of a volume of selections from the writings of Dr. Finlay, not to exceed 500 pages nor 1,000 copies.

THE Board for Biology and Geology at Cambridge University has adjudged the Walsingham medal for 1908 to C. C. Dobell, B.A., fellow of Trinity College, for his essays entitled "Protista parasitic in frogs and toads," and "Chromidia and the binuclearity hypotheses"; and a second Walsingham medal to G. R. Mines, B.A., Sidney Sussex College, and D. Thoday, B.A., Trinity College. Mr. Mines's essay was entitled, "The spontaneous movements of amphibian muscles in saline solutions"; and Mr. Thoday's essay was entitled, "Increase of dry weight as a measure of assimilation."

PROFESSOR FREDERICK STARR, of the department of anthropology of the University of Chicago, gave, on December 9, a lecture at the Ohio State University on "The Peoples of the Congo Free State." This lecture was the first to be given by the Society of Sigma Xi under the J. C. Campbell Lecture Fund.

GEORGE WASHINGTON HOUGH, professor of astronomy at Northwestern University and director of the Dearborn Observatory, known for his important observations on Jupiter and for measurements of double stars, vice-president of the American Association for the Advancement of Science in 1902, died at Chicago on January 1 at the age of seventy-three years.

DR. J. P. GORDY, professor of the history of education in New York University, and his wife committed suicide on December 31, following the death of their only child. Dr. Gordy was born in Salisbury, Md., 1852, received the doctor's degree at Leipzig in 1884, and was professor at Ohio University and Ohio State University until he came to New York University in 1901. He was the author of works on psychology, American history and the history of education.

DR. RICHARD A. F. PENROSE, formerly professor in the University of Pennsylvania, and eminent as a physician and surgeon, died in Philadelphia on December 26, at the age of eighty-two years.

MR. JOSEPH LOMAS, lecturer in geology in Liverpool University, has been killed by a railway accident in Algeria, where he was carrying on geological investigations.

DR. CHARLES EDWARD BEEVOR, known for his contributions to the knowledge of our nervous system, died in London on December 5 at the age of fifty-four years.

Dr. Ernest Hamy, professor of anthropology in the Natural History Museum, Paris, died on November 18, at the age of sixty-six years.

Lord Rosse bequeathed £1,000 to Trinity College, Dublin, for the science schools. His telescope and scientific instruments are left to his oldest son, with £2,000 for their upkeep.

A correspondent writes to the London *Times* that the Nizam of Haidarabad has established a well-equipped astronomical observatory in his dominions. The foundation of the observatory owes its origin, to the presentation by the late Haidarabad noble, Nawab Zaffer Jung Bahadur, F.R.A.S., of two large telescopes, but it is evident from the equipment of the observatory, from the selection of its director, and from the working program which has been drawn up, that his Highness intends to go far beyond the original intention of the donor, Nawab Zaffer Jung. The equipment includes, besides the purely astronomical and meteorological instruments, a very complete photographic department and extensive workshops fitted with modern tools and appliances for both wood and metal working. The program of the observatory is both comprehensive and ambitious.

By the President's order the Secretary of the Interior has withdrawn from entry all the public lands, embracing about 6,500 acres in the petroleum and natural gas field in northwestern Louisiana known as the Caddo oil field. This action is taken pending a careful geologic investigation by the U. S. Geological Survey with a view to preventing a waste of natural gas that has been estimated at 75,000,000 cubic feet a day, or more than one twentieth of the amount of this fuel usefully consumed in the United States.

President Roosevelt has signed a proclamation setting aside and naming the Ocala National Forest in Marion County, in eastern Florida, the first created east of the Mississippi River, and another proclamation creating the Dakota National Forest in Billings County, North Dakota. The two proclamations add two more states to the list of those wherein land will be put under scientific forest administration. There are now nineteen states, and Alaska, having national forests. Before the creation of the Ocala, in Florida, the two forests in Arkansas, the Ozark and the Arkansas, were the easternmost national forests. Practically all the other national forests are in the Rocky Mountain and the Pacific coast states. The Florida forest has an area of 201,480 acres, of which about one fourth has been taken up under various land laws. It covers a plateau between the St. John's and Ochlawaha rivers and at no point is an elevation exceeding 150 feet above sea level obtained. The area is by nature better fitted for the production of forest growth than for any other purpose. Nearly all of the area, however, seems particularly well adapted to the growth of sand pine which is even now replacing the less valuable species, and with protection from fire almost the entire area will in time undoubtedly be covered with a dense stand of this species. The long-leaf pine, a much more valuable commercial tree than the sand pine, appears rather sparsely in this forest and is confined principally to the lower flat lands along the streams on the borders of the forest. The new Dakota national forest consists of 14,080 acres in the Bad Lands region. Its creation is important, for it means that an experimental field for forest planting has been secured in North Dakota, the least forested state in the union, having only one per cent. of tree growth. The Forest Service expects to establish forest nurseries with the hope that in time to come the area may be reforested by artificial means. This feature is expected to prove a very good object lesson to the settlers, who it is hoped will in turn plant windbreaks around their farms.

The relation between the increasing use of cement and the diminishing timber supply in the United States has been the subject of some correspondence between the Geological Survey and the Forest Service at Washington. In a letter to the forester, the director of the survey took occasion to quote from a statement of a large Philadelphia firm to the effect that it would be difficult to estimate what the additional drain on the lumber supply would have

been during the last few years had not cement come into such general use. The forester replied in part as follows: "The Forest Service is watching with a great deal of interest the increasing use of cement and other substitutes for wood. They are undoubtedly having some influence on the price of lumber, though I do not think that up to the present time they have greatly retarded the advance in lumber prices. The fact is that our industrial progress has been so great that our requirements for every kind of structural material have increased tremendously. We are using at the present time more lumber per capita than ever before and probably twice as much per capita as we did fifty years ago. The conclusion can not be escaped, therefore, that in the future we must depend more than in the past on other materials than wood for certain purposes at least. As to the increase that will take place in the production of cement, my impression is that this will be very great." If the increase in the use of cement in the United States in past years is to be regarded as any index to its future use, the conclusions of the forester are well founded. The statistics of the production of minerals show that our output of cement has more than doubled in the last five years, and it is well known that its use is being very widely extended. This is due to two conditions: In the first place, excellent cement materials are common in almost all sections of the country; in the second place, reinforced concrete for heavy building material is receiving increased favor among engineers, while in the country regions large amounts of cement are being used for building blocks for smaller structures. Reports received by the survey during the six years from 1902 to 1907 show that the production of cement in the United States has increased from 25,000,000 barrels, valued at approximately $25,000,000, to 51,000,000 barrels, valued at $55,000,000, the annual statistics showing a steady increase in production with some slight fluctuations in price.

THE western phosphate lands recently withdrawn from entry by the Secretary of the Interior in accordance with the President's order comprise portions of Morgan, Rich and Cache counties in Utah; portions of Bear Lake, Bannock, Bingham and Fremont counties in Idaho; and nearly all of Uinta County in Wyoming—in all about 7,500 square miles of land more or less underlain by phosphate rock and constituting the greatest known phosphate deposit of the world. Phosphoric acid is an essential constituent of productive soil. Work at agricultural experiment stations in Wisconsin, Ohio and Illinois has shown that in fifty-four years the cultivated soils of those states have been depleted of one third of their original content of phosphoric acid, or at an annual rate of about 20 pounds per acre. Even if the loss has been only one half this amount it would require 6,000,000 tons of phosphate rock annually to offset this depletion in the 400,000,000 acres of cultivated lands in the United States, without allowance for increase in the area cultivated or in the agricultural yield. The list of lands to be withdrawn was furnished by the United States Geological Survey as a result of preliminary examinations made in the field. Further work will be done by the survey as soon as practicable, for the purpose of making a careful classification of the lands and restoring to agricultural entry such portions as may contain no phosphates. It is pointed out by the survey that the situation of this western field is most favorable. The smelters at Butte and Anaconda give off gases, chiefly sulphurous, which are very injurious to vegetation. These gases can be utilized to great advantage by converting them into sulphuric acid for the manufacture of superphosphate fertilizer, thus transforming a substance that is injurious to vegetation into one that is beneficial.

A LETTER to *Nature* signed "T" reads as follows:

> The council of the Chemical Society, at a recent meeting when it was determined to exclude women from the fellowship, but to admit them to the society as "subscribers," decided, "after mature deliberation"—the phrase is the senior secretary's—that the appellation "subscriber" should be printed with a big S!

Daughters of Eve! So zealous to pursue
The work in Life by which you seek to live!

When F.C.S. you claim, as is your rightful due—
The S alone is what they, grudging, give!
Be patient! Time is on your side.
Reason and justice will your cause defend.
Ignoble spite and arrogance of pride
Shall meet their retribution in the end!

UNIVERSITY AND EDUCATIONAL NEWS

Mr. George M. Laughlin, of Pittsburg, has bequeathed, in addition to $125,000 to the hospitals of the city, $100,000 to Washington and Jefferson College.

The authorities of University College, Bristol, as part of the scheme to establish a University for the West of England, have purchased the Blind Asylum and its lands, which adjoin University College.

In memory of the late Sir George Livesey, it is proposed to establish a professorship of fuel and gas engineering at Leeds University, for which purpose at least £10,000 will be collected.

Dr. F. W. Eurich has been appointed professor of forensic medicine in the University of Leeds.

Dr. Max Rubner, professor of hygiene at Berlin, will succeed Professor W. Engelmann as professor of physiology.

As successors of Professor Haeckel, at Jena, the faculty has proposed Professor Lang, of Zurich, Professor Kückenthal, of Breslau, or Professor Platte, of Berlin. It is said that Professor Platte will be selected by the administration.

DISCUSSION AND CORRESPONDENCE

LIGHTS ATTRACTING INSECTS

To the Editor of Science: In the issue of Science of December 4, 1908 (N. S., Vol. XXVIII., pp. 797, 798), Mr. Owen Bryant states certain observations and asks certain questions regarding the reaction of insects to lights from different sources. As to the relative efficiency in attracting insects of mercury vapor lights, flaming arc lights using sodium carbons, and ordinary arc lights, *when all are of the same area,* I can give no information, nor am I aware that accurate tests of this nature have been made. In a general way, however, it is probable that Mr. Bryant's view that the light of shorter wave-lengths has more effect is correct, since it has long been known that certain insects, such as ants, give little or no response to red light. This is generally true for the lower organisms, even including *Amœba.*

But Mr. Bryant has made the common mistake of considering only the intensity and quality of the lights and not taking the *area* into consideration. His observations are very similar to those of Loeb,[1] who found that a certain crepuscular moth (*Sphinx euphorbiæ*), when liberated in a room lighted on the one side by a window and on the other by a kerosene lamp, always flew to the window unless it was very close to the lamp when set free. Parker[2] made further experiments on the same phenomenon in *Vanessa,* and I have elsewhere published[3] the results of experiments on several species of insects and a number of other animals, whose reactions were tested to two lights of the same quality and equal intensity, but of different area. The general result was that positively phototropic animals possessing image-forming eyes, such as the butterflies and moths, reacted by going much more often toward the larger light. This would seem to explain the observations of Mr. Bryant in the room, and might possibly apply to some of the kinds of lamps he mentions. At any rate, it shows the necessity of keeping in mind the factor of the *size* of the sources of illumination as well as the intensity and quality of the light they give. In considering size the large globe (as in the case of the arc light) and other parts or adjacent surfaces that reflect light must be taken into account.

Leon J. Cole

[1] Loeb, J., "Der Heliotropismus der Thiere und seine Uebereinstimmung mit dem Heliotropismus der Pflanzen," Würzburg, 1890, p. 47.

[2] Parker, G. H., "The Phototropism of the Mourning-cloak Butterfly, *Vanessa antiopa* Linn.," Mark Anniversary Volume, No. 23, pp. 453–69, pl. 33, 1903.

[3] Cole, L. J., "An Experimental Study of the Image-forming Powers of Various Types of Eyes," *Proc. Amer. Acad. Arts and Sci.,* Vol. 42, No. 16, pp. 333–417, 1907.