

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 *Amæba*.

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. Parker² made further experiments on the same phenomenon in *Vanessa*, and I have elsewhere published³ 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.

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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.