THE ELECTRICAL PHOTOMETRY OF STARS AND NEBULAE

George Darwin Lecture, delivered by Professor Joel Stebbins on 1950 *October* 13

My feeling of pleasure on being with you today is mixed with a sense of responsibility, not to mention humility. Dr George E. Hale once said that the meetings of the Royal Astronomical Society are the most stimulating astronomical meetings in the world; and I heard Professor Willem de Sitter say in this room that the Royal Astronomical Society acts as astronomical conscience, astronomers come from everywhere to confess what they have been doing. In the present case my task is lightened by the fact that some months ago our President told you all about my work; he did such a thorough job that I suggested that I sign my name to his paper and call it the George Darwin Lecture. My one criticism of his address is that he was forced to limit it to the successes; he could not give you a true picture of the troubles and failures of the work in photometry.

I never had the privilege of meeting Sir George Darwin, but I knew very well his disciple, Ernest W. Brown. Brown once told me that the training he received from Darwin consisted simply in going to his study and talking with him about Brown's problems. Likewise it was an education to talk with, or rather listen to, Ernest Brown. I met Sir James Jeans several times, the last when he was presiding here over a meeting of this Society. My first collaborator in photometry, F. C. Brown, had been a student of Jeans at Princeton; and so in a way I might claim to be a descendant of both Darwin and Jeans, though not in direct line.

The electrical photometry of stars involves the technique of experimental physics at the end of a telescope, and since all my work in this field has been in collaboration with others, it is only fair at the outset to acknowledge my debt to those without whose aid I should not be here. There was F. C. Brown, as mentioned, who started me off for a few years with the selenium photometer; the late Jacob Kunz, who for twenty-five years produced photoelectric cells of the best quality with his own hands, and cooperated in other ways until his death a dozen years ago; C. M. Huffer, who has divided the observing time at the telescope for many years; A. E. Whitford, who first applied the thermionic amplifier, and continued with notable improvements and applications; and Gerald E. Kron, a former student with whom I am working, the relation of teacher and student being at least partially reversed. For the institutions involved I should mention twenty years at the University of Illinois, twenty-five years at the Washburn Observatory of the University of Wisconsin, fifteen summers at the Mount Wilson Observatory, and the past two years at the Lick Observatory of the University of California, under the auspices of the United States Office of Naval Research.

Instruments.—The present is a fine opportunity to open the floodgates of reminiscence, but I shall go back only to the last time I spoke in this room, during the meeting of the International Astronomical Union in 1925. After that meeting had dispersed I had the pleasure of going to Oxford and calling on Lord Cherwell, then Professor Lindemann, and I discussed with him the troubles we were having with a Lindemann electrometer which we had obtained for experiment a short time before. After a few minutes' conversation he told me that the drift or instability we had found must be caused by a defect in the instrument. I returned to