from a small glass nozzle by a rotating siren disk and then allowing these puffs to enter a glass tube, one end of which was corked and in which pith dust was distributed along the bottom. These striae were formed when the air jet was interrupted too slowly to produce an audible tone.

The author is continuing his investigation of these striae photographically and is making an effort to determine the effects produced by forming them in various gases and in tubes of various diameters and lengths, and when produced by sources of various frequencies.

ROLLA V. COOK
Bethany College and Indiana University,
Bloomington, Indiana,
August 12, 1930.

Intensity Changes of Cameron Bands in the Electrodeless Discharge

The band spectra of carbon monoxide obtained in the electrodeless ring discharge have been photographed by the writers under various conditions in order to determine to what extent this source permits controlled excitation, or modification of relative intensities of different band systems. Pronounced intensity changes have been observed, and of these the variations of the Cameron bands are most striking.

The Cameron bands (Phil. Mag. **1**, 405, 1926) were discovered in a discharge tube containing neon and a little CO. They involve transitions from the $^3\Pi$ state which is somewhat metastable, to the $^1\Sigma$ or normal electronic state of the molecule, and are not easy to obtain in emission, although Hopfield and Birge (Phys. Rev. **29**, 922, 1927) without giving details, report finding them in both emission and absorption. Since the initial state has a long life, the bands would be expected to appear only at relatively low pressures, because of the longer interval between impacts. This led Herzberg (Zeits. f. Physik **52**, 815, 1928) to look for them in his careful study of the CO spectra obtained in the electrodeless ring discharge maintained by a damped wave oscillator. Although he kept the gas at quite low pressures, the Cameron bands were not present on his plates.

The oscillator used in the present work is tube driven, with a frequency of about five millions cycles, and a power input variable from about five to one hundred watts. With low power input, the Cameron bands were entirely missing; with increased power they began to appear, and with the highest input they were well developed, with about the same intensity on a microphotometer record as the bands of the fourth positive group lying near them. The exposure in the last case was for 20 minutes, and the pressure was 0.09 mm. Herzberg's excitation apparently is comparable to that of our oscillator with low power input.

Another effect of the high power input was to produce a rise in pressure, in contrast to the decrease or "clean up" obtained with low power. The increase was as much as five fold, far more than could be explained by the rise in temperature. Since there is considerable carbon deposited in the vessel, a release of adsorbed gas from this finely divided carbon, caused by the rise in temperature, must probably be held responsible for the pressure increase.

A quartz spectrograph of low dispersion has been used in searching for intensity changes; since it was proved that the relative intensities of bands can be varied in the electrodeless discharge, it is planned to continue this work with higher dispersion.

HAROLD P. KNAUSS
JACK C. COTTON
Mendenhall Laboratory of Physics
Ohio State University,
August 29, 1930.

On the Direction of Emission of Photoelectrons from Potassium Vapor by Ultraviolet Light

The wave mechanics (A. Sommerfeld, Atombau und Spektrallinien, Wellenmechanisches Ergänzungsband, p. 213) predicts that the most probable direction of ejection of photoelectrons by polarized light is in the plane of the light beam and the electric vector, the lateral distribution varying as the square of the cosine of the azimuth angle. This has been most satisfactorily shown to be true for light of x-ray frequencies by the well-known experimental work of several investigators.

We have been concerned with examining the same phenomenon in the optical region. Ultraviolet light of wave-length in the region