area, the slopes of the curve beyond the bends are given by

$$k_1 = \tan 83° = 8{\cdot}0 \text{ and } k_2 = \tan 72° = 3{\cdot}0.$$

Putting $e_1 = 0{\cdot}4$ volt and $e_2 = 0{\cdot}8$ volt, we have calculated the values of the rectification ratio for voltages beyond the minimum voltage where the bends appear. The calculated values are shown in the accompanying table side by side with the values obtained from the same characteristic curve for which $k_1 = 8$ and $k_2 = 3$. The observed value for $v = 6$ volts has been made equal to the calculated value of the rectification ratio at that voltage.

Voltage	Rectification ratio	
	observed	calculated
2 volts	0·70	0·71
4 ,,	0·68	0·67
6 ,,	0·65	0·65
8 ,,	0·60	0·64
10 ,,	0·57	0·63

The experimental and the calculated values of the rectification ratio agree well considering that the values given for e_1 and e_2 are only approximate. The current-voltage curve constructed from the calculated data does not, however, fit well with the experimental curve.

That the values of the minimum potential difference are different for the two opposite directions of the current-flow seems theoretically plausible in a crystal having no centre of symmetry.

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Some Polarization Data of the Solar Corona

THE polarization of the solar corona was determined from plates obtained in the 1932 and 1934 total solar eclipses. These eclipses were observed under perfect atmospheric conditions. Polarigraphs, equipped with quartz Wollaston prisms and colour filters of narrow transmission ranges, were used. Intensity squares were printed on each corona plate for photometric reduction. The plates were measured with the Hartmann microphotometer of the Lick Observatory and the Zeiss microphotometer of the Physics Department, University of California.

Fig. 1 shows the polarization values obtained at wave-lengths 420, 447, 482, 668 mμ. These curves represent the polarization in the eastern part of the 1934 corona. The curves are the result from the reduction of plates obtained by two polarigraphs. The curve in the green region is of less weight than the other curves because of the use of non-backed plates.

It is very interesting to note that the slope of the polarization curves in the red is much steeper than it is at smaller wave-lengths. The violet curve passes through a maximum and then decreases. The curves intersect at about 4′ distance from the sun's limb. The polarization in the red reaches very considerable values, going up to 57·5 per cent at 6′ distance from the sun's limb.

The results obtained indicate that scattering of sunlight in the corona by free electrons cannot be responsible alone for the light emitted by the corona. Bound electrons seem to be present in the corona, and the corona itself seems to emit unpolarized light.

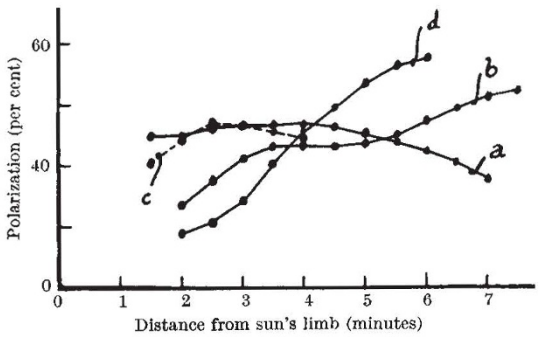

Fig. 1.

POLARIZATION OF THE EASTERN PART OF THE SOLAR CORONA, FEBRUARY 14, 1934.

Curve	Plates	Wratten Filters No.	Maximum transmission
a	Agfa Astro, backed	36	420 mμ
b	Agfa Astro, backed	47	447
c	Eastman 1-H	75	482
d	Agfa Superpan, backed	29	668

Detailed results of the reduction will be published later.

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Time Lag of the Vacuum Photo-Cell

IN a well-known experiment, Marx and Lichtenecker[1] swept the image of a narrow slit across the cathode of a photo-cell by means of a mirror that could be rotated at speeds up to 170 revolutions per second, and found that the photo-electric current was constant, no matter at what speed the mirror was rotated. The shortest duration of illumination at any point on the cathode was $1{\cdot}46 \times 10^{-7}$ sec. The experiment was taken to mean that the cell had no time lag or period of induction comparable with this interval.

I have recently repeated the experiment with two G.E.C. cells, a *KMV* 6 and a *KV* 6, using a faster mirror and a sharper image, and find that, while the law of proportionality between quantity of light and photo-electric current still holds for the *KMV* 6 cell, there is an appreciable breakdown in the case of the *KV* 6. If the periods of illumination are decreased from $1{\cdot}59 \times 10^{-6}$ sec. to $7{\cdot}4 \times 10^{-8}$ sec., the time required to charge the electrometer to a