The splittings and the intensity relations in the doublets exhibit interesting irregularities, some of which are visible in Fig. 1. As these relations depend intimately on the development of the band system at increasing pressure in the source of light, details of observations will be given later in connexion with the performance of these investigations.

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[1] R. S. Mulliken, *Phys. Rev.*, **25**, 509; 1925.
[2] B. Grundström and E. Hulthén, NATURE, **125**, 634, April 26, 1930.

The Stopping Layer of Rectifiers

BY gradually dissolving the surface layer of a cuprous oxide rectifier, W. Schottky and Waibel proved that both rectification and photoeffect were due to a layer of the order of 10^{-6}–10^{-5} cm., the conductivity of which was reduced. So long as we could not produce such intermediate layers artificially, however, it was quite hopeless to try to test any of the numerous theories of rectification.

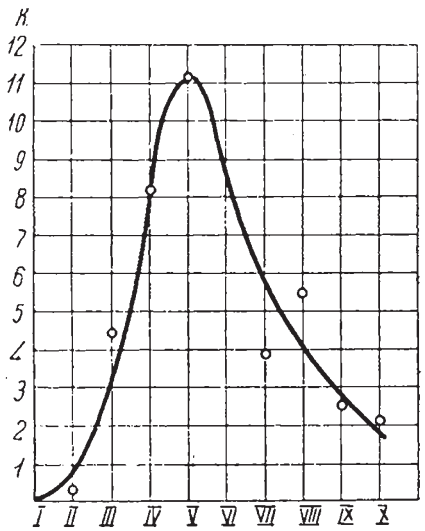

FIG. 1.

A sufficiently uniform non-conducting layer was obtained on the surface of a cuprous oxide plate by the sublimation of quartz in a high vacuum. The thickness of the quartz sheet increased gradually from one end of the plate to the other from zero to about 10^{-5} cm., and the resistance was about five times the resistance of the plate. Covering the quartz sheet by a metallic plate provided with a series of holes and subliming in the same way a layer of gold, I provided the quartz sheet with a series of gold electrodes.

The current passing through the quartz layer to the cuprous oxide plate showed a marked rectification: at 1 volt the ratio of currents in opposite directions reached 13. This ratio showed small fluctuations not exceeding ten per cent for electrodes in the same row, corresponding to equal thicknesses. Proceeding from one row to another, I found a systematic change in the coefficient of rectification, as shown in Fig. 1.

We thus see that rectification is dependent on the thickness of the contact layer between a semiconductor and a metal within quite narrow limits. These limits are 10^{-5}–10^{-6} cm.

The problem was suggested by Prof. A. Joffé.

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Position of the Bands in the Spectrum of Oxyhæmoglobin

WE have investigated the position of the absorption maxima of the spectrum of oxyhæmoglobin by a new photomicrometric method. The solutions were obtained by careful dilution of washed horse blood with 0·58 per cent ammonia solution.

We have found a very considerable shift of the band maxima towards the ultra-violet region with decreasing concentration of oxyhæmoglobin. The product, concentration × thickness of the absorbing layer, was kept constant.

The maxima shifts according to the present measurements range from 5765 A. to 5755 A. for the α band, from 5424 A. to 5367 A. for the β band, and from 4188 A. to 4094 A. for the γ band.

These results seem to be important considering the work of Anson, Barcroft, Mirski and Oinuma, who have found a relation between the position of the α band and the distribution of hæmoglobin between oxygen and carbon monoxide.

A detailed account of the position of the band maxima of oxyhæmoglobin and carbon monoxide hæmoglobin will be published elsewhere.

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Existence of a Neutron of Mass 2

THE existence of a neutron of mass 2 has been considered as a theoretical possibility by several physicists. The observations of Beck, that in the building up of heavier elements from the lighter, electrons are added in pairs, is of much interest and has caused Lord Rutherford to state in his address to the Royal Society on the "Structure of Atomic Nuclei"[1] that uncharged units of mass 2 as well as the neutron of mass 1 may be secondary units in the structure of nuclei.

The purpose of the present note is to point out that such a neutron of mass 2 may have already been observed.

Harkins, Gans and Newson[2], and Kurie[3], have obtained clear photographs of the disintegration of nitrogen atoms by neutrons. In each set, a photograph has been obtained which is remarkable for the length of the recoil track of the boron nucleus. Assuming the conservation of momentum, the energy of the incident neutron, as calculated from the lengths of the tracks of the fork and the angle between them, is found to be 16×10^6 and 17×10^6 electron volts respectively, values which are twice as great as those given by Curie-Joliot and Joliot[4].