object of finding if these split levels could be detected in the absorption spectra of the single crystal of a square planar copper complex, the present investigation was undertaken on the absorption spectra of an elongated platelet of copper-ethylene-diamine-*bis*(acetylacetone).

The optical part of the experimental equipment consisted of a single filament tungsten lamp, Hilger glass prism monochromator and a Leitz polarizing microscope. The electrical part consisted of a 1*P*21 photomultiplier tube, a high-voltage stabilized power-supply unit and a stabilized d.c.-voltage amplifier. The crystal was placed on the stage over a glass slide, and was brought to focus visually. The eye was then replaced by the phototube assembly. The objective – eye-piece combination used was such that the crystal completely covered the field in any orientation. The orientation of the plane of polarization of the incident beam with respect to the long axis of the crystal could be varied either by rotating the polarizer or by rotating the stage with the crystal.

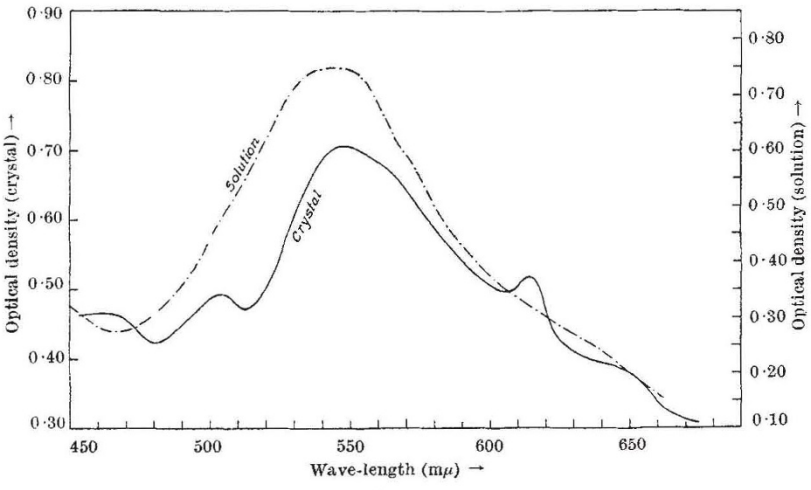

Fig. 1

In Fig. 1 the full-line curve represents the absorption spectrum of the crystal with the incident light polarized along the long axis of the crystal. The curve shows three peaks at 505 mμ, 545 mμ and 615 mμ respectively. The dotted curve represents the absorption spectrum of the same chelate in alcoholic solution. It is evident that the spectrum in solution consists of one broad band with no fine structure. By Gaussian analysis the solution band may be resolved into three bands with peaks at 510 mμ, 545 mμ and 600 mμ, which correspond fairly well with the three peaks observed in the spectrum of the crystal.

With the incident light unpolarized or polarized at right angles to the long axis of the crystal, the absorption spectra were almost identical with those given in Fig. 1, apart from a slight loss in the fine structure.

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Possible Asymmetry in the Daily Range of the Geomagnetic Vertical Intensity around the Magnetic Equator

IN a recent paper, I have suggested that if the indication of an asymmetry in the daily range of the geomagnetic vertical intensity (Z) on opposite sides of the magnetic equator (higher ranges to the south) is confirmed, it might be explained by the opposition in phase of the equatorial electrojet effect on Z and the normal Z-variation on one side and the agreement of their phases on the other[1].

Magnetograms have now been obtained from Zaria, a new magnetic observatory in Nigeria on the northern side of the magnetic equator and about the same distance from that equator as Ibadan is south of it. Zaria is thus near the latitude on the northern side at which the effect of the electrojet on Z-variation should be greatest, as Ibadan is supposed to be near the latitude of maximum to the south. An examination of Z-variation at Zaria shows that the daily ranges of Z are as high as at Ibadan and the two Indian stations to the south of the magnetic equator occupied by Pramanik and Yegnanarayanan[2]. Therefore, Zaria does not confirm the asymmetry. It may still be necessary to record variations of the vertical force at a number of other stations on both sides of the equator before a definite statement can be made on the existence or otherwise of an asymmetry.

Even if the asymmetry is confirmed, it is not likely to be explained by the phase relationship as simply as put in my paper[1]. In the first place the consideration leading to the statement involved an error in reversing the direction of the Z-effect of the jet current during day-time. Secondly, the true position is not so simple because the phase relation at places close to the geographical equator would change as the S_q-current system moves northwards or southwards according to season. The situation is further complicated by possible movements of the electrojet itself according to season. It is considered that further investigation should wait until it is known whether and how the electrojet moves according to season.

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ASTRONOMY

Prediction of Sunspot Numbers until the End of the Present Cycle

SINCE November 1956 the use of a most elementary long-term prediction method[1] for sunspot numbers has been pursued with surprising success. C. N. Anderson[2] directed attention to the possible existence of a 169 years period in solar activity. The coincidence