The crochet does not assist in identifying flares that are followed by geomagnetic disturbances. However, averaged geomagnetic indices following crochet-flares with "major early bursts" at 200 Mc/s rise to a high maximum on day 2 even though crochet-flares are relatively far from the central meridian.

The study indicates that crochet-flares do not form a random sample of important flares and that there are systematic differences between flares with crochets and those with "major" ionospheric disturbances.

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The calculation of line profiles in a stratified atmosphere.

The acceptability of a model solar atmosphere depends upon the agreement of the observed and predicted line profiles or curves of growth, at different angles of the emergent beam. One calculates the specific intensity from Milne's familiar integral, in terms of a known source function. The dependence of the result upon changes of model may be difficult to determine and interpret physically when many variables are present and when each integration is a relatively laborious process.

We have adopted a simplified model which allows for stratification of the absorbing material and for a wide variety of source functions. The final result appears in algebraic form, so that one can readily examine how the emergent radiation varies with alteration of the parameters of the model. The approximations that we have made are the following.

1. We have reproduced the effect of stratification by taking the ratio of line-to-continuous absorption (Eddington's η) as constant in a layer between two arbitrarily chosen values of the optical depth τ . We can also obtain a simple result by taking η proportional to $\tau/(a + \tau)$ or $1/(a + \tau)$.

2. We have assumed a constant Doppler temperature throughout the absorbing layer.

3. We have represented the source function as a linear combination of exponential and power terms in the optical depth.

Intensities computed under the assumptions stated in (1) show that the results for variable η may essentially be duplicated by a layer with η constant between selected optical depths. In other words, the results are not very sensitive

to the detailed form of the stratification. From this fact we conclude that the layer model adequately represents the effects of stratification on profiles of absorption lines. We have also computed curves of growth and find that a layer extending from the surface to an optical depth about 0.5 provides the best fit to the empirical curves for FeI (Bell 1951) and TiI (Claas 1951). As might be expected, this curve also corresponds with the theoretical Schuster-Schwarzschild curve.

We anticipate that this method will be particularly useful for source functions that depend on depth in a complicated manner, as in the chromosphere, or that vary over the disk, granulation and spots.

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Fernie, J. D. The binary system X Ophiuchi.

X Ophiuchi is a visual binary, the components of which are a long-period variable of period 337 days, spectrum M6e and a normal K giant, K2 III. The period of the binary is probably of the order of 500 years or more, but 120 observations since 1900 define a 50° arc of the apparent orbit. Five widely differing ellipses have been found to fit this arc to within the errors of observation, but among all five orbits deduced from these ellipses, the value of (a^3/P^2) is constant to within a factor of two.

The parallax of the system has been derived principally through accurate spectrophotometric analysis of the K star (Oke 1957). The apparent distance modulus so obtained agrees closely with that derived from the long-period variable, employing the absolute magnitude versus period relation given by Wilson and Merrill (1942). Allowance for interstellar absorption has been made from consideration of the reddening of nearby stars.

Radial velocity data for both components are available for mean epochs in 1921 and 1957. Wilson's (1941) method was applied to obtain the mass ratio of the system, but the velocity changes were found to be too small to be able to distinguish among the five visual orbits.

Collation of the above data leads to a formal