tative of (though on the average slightly lower than) the actual speed of the disturbance. Furthermore, our conclusion that type III disturbances often travel at approximately constant radial velocities over large distances in the corona implies that the paths of these sources are approximately rectilinear. It should, however, be emphasized that we have omitted from the study bursts which show obvious large radial deceleration, and which may be due to the source being guided along a curved path. The few cases of marked radial acceleration and deceleration found in this study may also represent occasions when the escaping path is curved.

Wild, Sheridan, and Neylan (1959) proposed that the type V continuum was due to synchroton radiation from type III electrons partially trapped in the magnetic field high in the corona. Electron energies of at least 2 MeV ($v \geqslant 0 \cdot 95c$) were required to account for the observed intensity. However, we shall show below that the radial velocities derived in this paper ($\bar{v}_r \sim \frac{1}{3}c$) are incompatible with such high electron speeds.

The constancy of the radial velocity of the disturbance with height leads us to consider the speed of the individual electrons which we suppose to constitute the type III source. If the source is guided quasi-radially outwards through the corona by a magnetic field configuration such as that contemplated by Weiss and Wild (1964), the individual electrons can travel faster than the source as a whole, owing to their spiral path. However, if spiralling does occur with substantial pitch angles, the radial velocity of the source could only remain constant if either (1) the pitch angles and therefore the magnetic field remained constant with height, in which case our observations would imply that the magnetic field intensity should often be independent of height over the range $0 \cdot 2R_0$ to about $2 \cdot 0R_0$, or (2) if the pitch angles are redistributed by collisions in such a way that the radial velocity of the source as a whole remains constant. It seems extremely unlikely that such special conditions could prevail as commonly as the observations would indicate. An alternative explanation for the constant source speeds, and one more in keeping with our rudimentary picture of magnetic fields high in the corona, is that the motion of the electrons is essentially rectilinear (i.e. the pitch angles are very small) even at heights as low as $0 \cdot 2R_0$ above the photosphere. In the absence of other deceleration mechanisms, the source speed will remain unchanged to great heights in the corona, even if the magnetic field intensity further decreases to very small values. On this interpretation, the speed of the individual electrons is to be identified with the observed speeds of type III sources, i.e. $\frac{1}{3}c$ on the average. Electrons with these speeds could not account for type V emission by the synchroton mechanism. However, Ginzburg and Zheleznyakov (1958) have shown that a pulse of such electrons can yield the observed type III intensities by the coherent plasma wave mechanism, and this interpretation will be considered in a subsequent paper in relation to type V bursts (Weiss and Stewart 1965).

## IV. Acknowledgments

## V. References

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