density is appropriate for the excitation of plasma oscillations at this frequency. This level is at a height of $0 \cdot 58\, R_0$ above the photosphere, according to the Baumbach-Allen model of the solar corona where R_0 is the radius of the Sun's optical disk ($0 \cdot 6957 \times 10^6$ km). The commencement of the SCNA as well as the start of the type II radio burst are fairly sharply indicated on the record, and the time lag between the two commencements can be measured to within ± 10 s. This leads to an error of about ± 1–3% in the values for the velocities of the shock fronts.

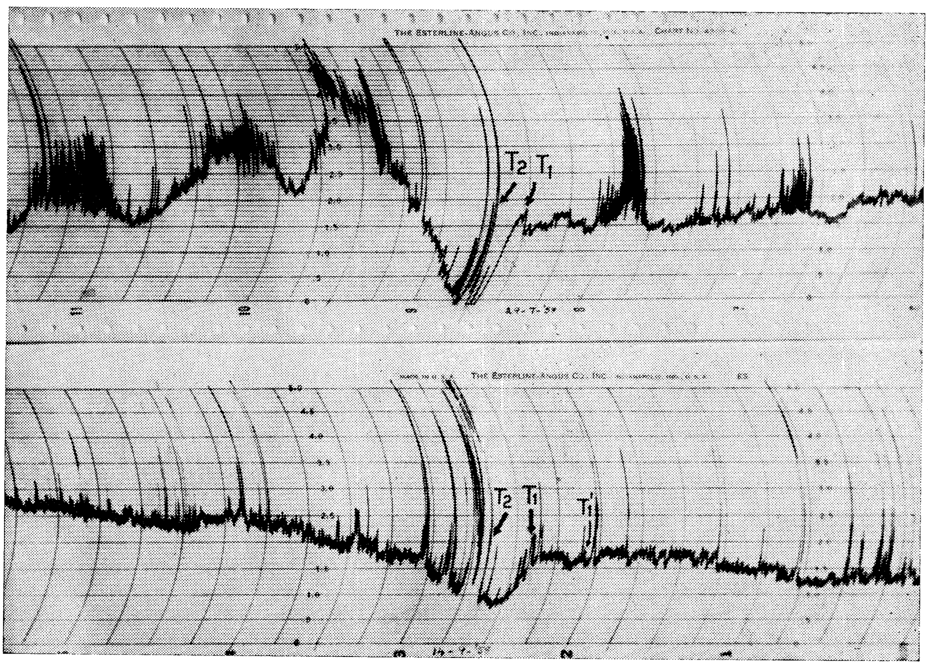

Fig. 1.—Sudden cosmic noise absorptions observed on July 29, 1958 and September 14, 1958. T_1, Beginning of the SCNA ; T_2, start of the type II event ; T'_1, start of optical flare.

Table 1 gives the times of start of SCNA and the time difference, T s, between the beginning of the SCNA and the start of the type II event and the corresponding velocity V of the shock front in km/s. It has been observed that in the case of the SCNA's marked with an asterisk there is a slight fall in the level of the record coinciding with the commencement of the optical flare followed by a steep fall of large intensity later. These correspond to the type C of the classification made by Bhonsle (1960). For calculating the velocities of the shock fronts the time of occurrence of the start of this rapid fall is taken into account. This can be seen from the event of September 14, 1958 shown in Figure 1. This is in contrast with the other cases where the sudden fall coincides with the start of the optical flare.

These velocities are in fair agreement with those reported for type II travelling disturbances obtained by using the swept frequency techniques

(Roberts 1959). However, experiments on the frequency drift of type III bursts have shown that the type III sources are generated at levels far higher than those predicted on the Baumbach-Allen model of the solar corona. Reporting this, Wild, Sheridan, and Neylan (1959) have shown that the coronal streamer model

Table 1

VELOCITY OF SHOCK FRONTS IN SOLAR CORONA CAUSING TYPE II BURSTS

S. No.	Date	Start of SCNA (U.T.)	T (s)	V (km/s)
1	3. iii.58	10 10	710	567
2	23. iii.58	09 51	568	709
3	5. v.58	04 10	474	851
4	6. vi.58	04 36	521	774
5	29. vii.58	03 00	616	655
6	16.viii.58*	04 45	379	1063
7	14. ix.58*	08 53	900	448
8	19. x.58*	07 27	379	1063
9	3. xii.58	07 02	805	501

* Indicates slight fall in record.

proposed by Newkirk yields results in better agreement with the experimental observations. The velocities, calculated on this model of the corona, for the shock fronts exciting the type II bursts would have values nearly twice those given in Table 1.

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