TABLE III. Shock wave data for carbon tetrachloride.

Initial density (g/cc)	Shock velocity (km/sec)	Particle velocity (km/sec)	Pressure (kbar)	Relative volume (V/V_0)	Dural shock velocity (km/sec)
1.590	2.32±0.01	0.72±0.08	27±3	0.688±0.035	5.93±0.07
1.577	2.27±0.01	0.84±0.04	30±2	0.631±0.018	6.02±0.03
1.571	2.47±0.01	0.83±0.04	32±2	0.663±0.018	6.02±0.04
1.571	2.79±0.01	0.97±0.03	43±1	0.652±0.010	6.16±0.02
1.586	2.91±0.01	1.03±0.03	48±1	0.645±0.010	6.22±0.03
1.594	2.95±0.01	1.04±0.04	49±2	0.648±0.012	6.23±0.03
1.596	3.28±0.01	1.25±0.03	65±1	0.619±0.008	6.43±0.02
1.571	3.32±0.01	1.33±0.02	70±1	0.598±0.006	6.50±0.02
1.606	3.46±0.01	1.33±0.02	74±1	0.615±0.007	6.52±0.02
1.591	3.44±0.01	1.36±0.02	74±1	0.606±0.007	6.54±0.02
1.598	3.50±0.01	1.45±0.08	81±5	0.585±0.023	6.62±0.07
1.577	3.74±0.01	1.61±0.02	95±1	0.568±0.006	6.78±0.02
1.571	3.86±0.01	1.69±0.01	102±1	0.563±0.003	6.86±0.01
1.606	4.08±0.01	1.73±0.04	113±3	0.576±0.011	6.92±0.04
1.580	4.07±0.01	1.77±0.02	114±1	0.566±0.005	6.95±0.02
1.571	4.27±0.03	1.97±0.09	132±6	0.539±0.021	7.14±0.08
1.571	4.52±0.01	2.07±0.02	148±1	0.542±0.003	7.26±0.01
1.586	4.66±0.01	2.10±0.02	156±1	0.549±0.004	7.31±0.02
1.596	4.71±0.01	2.15±0.04	161±3	0.544±0.008	7.35±0.03
1.574	4.88±0.01	2.36±0.03	182±2	0.516±0.006	7.56±0.03
1.610	5.34±0.02	2.55±0.03	220±2	0.522±0.005	7.80±0.03
1.580	5.21±0.01	2.62±0.02	216±2	0.497±0.004	7.83±0.02
1.588	5.72±0.03	2.95±0.07	268±7	0.484±0.013	8.20±0.06
1.571	5.69±0.02	3.06±0.05	274±5	0.461±0.009	8.29±0.05
1.571	6.13±0.03	3.22±0.03	311±3	0.476±0.005	8.48±0.03
1.584	6.44±0.05	3.44±0.08	352±9	0.465±0.014	8.74±0.08
1.598	6.80±0.02	3.64±0.04	395±4	0.466±0.006	8.97±0.04
1.582	6.72±0.02	3.69±0.07	392±7	0.451±0.010	9.00±0.06
1.580	6.78±0.03	3.77±0.08	404±9	0.444±0.013	9.08±0.08
1.586	7.13±0.03	4.05±0.06	458±7	0.432±0.008	9.39±0.05
1.588	7.55±0.02	4.40±0.06	527±7	0.417±0.008	9.77±0.06
1.588	7.96±0.03	4.58±0.06	579±8	0.425±0.009	10.00±0.06
1.598	8.06±0.06	4.74±0.13	611±17	0.411±0.017	10.17±0.12
1.580	8.24±0.04	4.74±0.11	617±14	0.425±0.014	10.18±0.10
1.584	8.26±0.03	4.84±0.10	633±13	0.415±0.012	10.28±0.09

velocity and the excellent agreement between the measured sound speed[19] and the intercept of the lower line with the U_s axis. The line segments were determined by a least-squares fit of the U_s-U_p data; in the region $2.40\leq U_s\leq 3.50$ km/sec the relationship is

$$U_s=1.18\pm0.22+(1.67\pm0.14)U_p, \qquad (9)$$

and from $3.50\leq U_s\leq 8.20$ km/sec,

$$U_s=1.11\pm0.07+(1.35\pm0.02)U_p. \qquad (10)$$

In the particle velocity interval of 1.39 to 1.84 km/sec, the shock velocity is essentially constant. The data of Walsh and Rice[3] agree with the present data but those of Cook and Rogers[9] do not. The abrupt change in the slope and the offset of the two line segments indicates a transition occurring at about 62 kbar ($U_s=3.50$ km/sec, $U_p=1.40$ km/sec, and $\rho_0=1.263$ g/cc) with a new phase formed at about 80 kbar ($U_s=3.50$ km/sec, $U_p=1.80$ km/sec, $\rho_0=1.263$ g/cc). The intercept of the lower line segment with the U_s axis (1.18 km/sec) is very close to the measured sound speed of 1.16 km/sec, indicating that carbon disulfide is in the liquid state from 1 bar–62 kbar.

The $P-V/V_0$ plot of Fig. 7 is characterized by concave upward curves above 80 kbar and below 62 kbar with a well-defined cusp representing the transition at 62 kbar. A straight line segment joins the two major curves. Using the lower curve as a reference, the decrease in relative volume ascribed to the transition is nearly 17%. Every point on the $P-V/V_0$ curves can be reached by the Rayleigh line in a single shock originating from the P_0, V_0 point. As a result there is no double shock wave structure associated with the transition even though an interval of constant shock velocity was observed in the U_s-U_p plot. This was confirmed by experiment (see Sec. II). The