Table II: Λ_p for Aqueous $MnSO_4$ Solutions at 25°

	P, atm.				
$C \times 10^4$[a]	1	500	1000	1500	2000
0	133.2[b]	135.0	135.3	134.5	133.0
5	116.3[b]	118.7	120.3	120.3	119.6
10	108.7[b]	111.6	113.3	113.8	113.4
20	99.7[b]	103.3	105.4	106.2	106.3
100	75.2[c]	79.6	82.6	84.5	85.4
200	65.9[c]	70.4	73.7	75.8	77.0

[a] C is atmospheric pressure concentration in moles/liter. [b] C. J. Hallada and G. Atkinson, *J. Am. Chem. Soc.*, **83**, 3759 (1961). [c] Measured this experiment.

Table III: Degree of Association $(1 - \alpha)$ for Aqueous $MnSO_4$ at 25°

	P, atm.				
$C \times 10^4$[a]	1	500	1000	1500	2000
5	0.070	0.065	0.055	0.050	0.046
10	0.115	0.105	0.094	0.085	0.079
20	0.172	0.155	0.140	0.129	0.119
100	0.345	0.316	0.292	0.271	0.255
200	0.415	0.383	0.355	0.332	0.314

[a] C is atmospheric pressure concentration in moles/liter.

Table IV: Molal Dissociation Constant (K_m) and $\Delta\bar{V}^0$ for Aqueous $MnSO_4$ at 25°

	C, atm. press. concn., M				
P, atm.	0.0005	0.001	0.002	0.01	0.02
1	0.0044	0.0044	0.0046	0.0052	0.0060
500	0.0048	0.0050	0.0053	0.0063	0.0073
1000	0.0059	0.0057	0.0062	0.0073	0.0086
1500	0.0066	0.0065	0.0069	0.0084	0.0099
2000	0.0073	0.0072	0.0077	0.0094	0.0111
	$\Delta\bar{V}^0$, cc./mole[a]				
1	−7.4	−7.1	−8.0	−9.3	−10.0
2000	−5.3	−5.0	−4.8	−5.0	−5.0

[a] $\Delta\bar{V}^0$ was calculated by a least-squares fit of log K to a quadratic curve.

Table V: Comparison of $K_m(P = 2000)/K_m(P = 1)$ for $MgSO_4$ and $MnSO_4$ Aqueous Solutions at 25°

C, M	$MgSO_4$	$MnSO_4$
0.0005	1.9	1.7
0.001	1.8	1.6
0.002	1.7	1.7
0.01	1.8	1.8
0.02	1.7	1.9

It is seen that at atmospheric pressure the value of $\Delta\bar{V}^0$, as concentration decreases, approaches that predicted from the Fuoss theory, namely, −7.4 cc./mole. There appears to be a concentration dependence of $\Delta\bar{V}^0$ at atmospheric pressure but not at 2000 atm.

A comparison in Table V of the ratios of the equilibrium constants at 2000 and 1 atm. indicates that a

Table VI: Comparison of $\Delta\bar{V}^0$ for $MgSO_4$ and $MnSO_4$ Aqueous Solutions at 25° and 1 Atm.

	$\Delta\bar{V}^0$, cc./mole	
C, M	$MgSO_4$	$MnSO_4$
0.0005	−8.5	−7.4
0.001	−7.0	−7.1
0.002	−7.0	−8.0
0.01	−7.3	−9.3
0.02	−6.9	−10.0

Table VII: Cell Constants[a]

Cell constants at atm. press.		Press. dependence of cell constant	
Concn., M	L_1	P, atm.	L^*_p
0.0005	0.808	500	0.991
0.001	0.811	1000	0.986
0.002	0.812	1500	0.982
0.01	0.824	2000	0.979
0.02	0.829		

[a] To find cell constant L_p at pressure P multiply atmospheric pressure value L_1 by L^*_p.

Table VIII: Copy of Original Conductivity Data Measured for Electrolytes at 25° in Aqueous Solutions (Teflon Cell without Glass Bar)

	P, atm.					
	1	500	1000	1500	2000	1[a]
0.02 *M* KCl, mmhos	3.338	3.484	3.582	3.639	3.670	3.322
$MnSO_4$	3.118	3.436	3.681	3.868	4.008	3.104
K_2SO_4	5.769	6.046	6.245	6.381	6.456	5.742
$MnCl_2$	4.941	5.197	5.374	5.482	5.539	4.934
0.01 *M* KCl, mmhos	1.715	1.790	1.840	1.871	1.886	1.709
$MnSO_4$	1.812	1.977	2.101	2.196	2.264	1.802
0.002 *M* KCl, μmhos	359.7	375.0	385.4	391.6	394.8	358.7
$MnSO_4$	486.7	519.9	543.8	560.3	571.5	484.5
K_2SO_4	684.4	712.6	732.3	744.6	751.4	681.2
$MnCl_2$	575.6	602.6	620.3	631.5	637.1	573.2
0.001 *M* KCl, μmhos	181.8	189.9	195.0	198.2	199.9	181.3
$MnSO_4$	267.5	283.4	295.0	302.6	307.6	266.5
0.0005 *M* KCl, μmhos	92.0	96.1	99.0	100.4	101.4	91.3
$MnSO_4$	144.2	152.0	157.9	161.5	163.8	144.0
K_2SO_4	181.8	189.5	194.5	197.8	199.6	181.3
$MnCl_2$	153.4	160.7	165.7	168.8	170.3	152.9
Water, μmhos	0.5	0.7	0.9	1.1	1.3	0.8
Series lead resistance, ohms	0.134	0.134	0.134	0.134	0.134	

[a] The readings in this column were obtained the day after the pressure run was made.

different trend as a function of concentration exists between $MgSO_4$ and $MnSO_4$ solutions.

At atmospheric pressure and at the lower concentrations the values of $\Delta\bar{V}^0$ for both $MnSO_4$ and $MgSO_4$ agree with the value predicted by the Fuoss theory. For $MnSO_4$ there appears to be a dependence of $\Delta\bar{V}^0$ on pressure which was not observed for $MgSO_4$. Furthermore, there is a more noticeable concentration dependence of $\Delta\bar{V}^0$ at atmospheric pressure for $MnSO_4$ and in the opposite direction to that exhibited by $MgSO_4$, as shown in Table VI. The change in $\Delta\bar{V}^0$ is greater than would be accounted for assuming errors in Λ_p/Λ_1 to be as great as $\pm 0.5\%$.

The differences in the pressure behavior of these two salts may, in fact, be due to differences in the various ion-pair species which can be related to the differences in acoustic behavior. However, a multistate model cannot be deduced from conductivity data; these results can only provide a check for consistency of any multistate models which may be proposed.