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 $\equiv A + \frac{1}{3}\beta$  where  $\beta$  is the com-nens in the two-phase region phase present. This was esti-  
of the specimen at  $20.35^{\circ}\text{K}$ ,

## IDEAL RESISTIVITY OF B.C.C.

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(4) (5)

1.570<sub>3</sub> (1.000) 1.570<sub>3</sub> (1.000)

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1.423<sub>7</sub> (1.034)

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1.249<sub>8</sub> (1.051)

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0.795<sub>4</sub> (1.071)at  $273.15^{\circ}\text{K}$  (except columns 2specimen Na (4), normalized at  
shaw & Pearson (1956), capillary  
ion from the residual resistivity).  
ltjer & Kamerlingh Onnes (1924),he correlation seemed strongly  
different pressure coefficients  
the two pure phases are given  
be made about the results for  
e ideal resistivities of the two  
ably greater amount than the

## The effect of pressure on electrical resistance

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TABLE 8. THE EFFECT OF PRESSURE ON THE IDEAL RESISTIVITY OF  
B.C.C. SODIUM

	specimen	$T$ ( $^{\circ}\text{K}$ )	$\frac{-\partial \ln \rho_i}{\partial p}$ ( $10^{-5} \text{ atm}^{-1}$ )	$-B/A$ ( $10^{-5} \text{ atm}^{-1}$ )	$\frac{\partial \ln \rho'_i}{\partial \ln V}$
1.570 <sub>3</sub> (1.000)	Na (1)	34.77	$9.7 \pm 0.2$	$8 \pm 2$	$6.93 \pm 0.15$
		48.03	$9.1 \pm 0.2$	$7 \pm 3$	$6.50 \pm 0.15$
		58.10	$8.0 \pm 0.2$	$7 \pm 2$	$5.64 \pm 0.15$
		78.3	$7.6 \pm 0.2$	$10 \pm 2$	$5.35 \pm 0.15$
		84.9	$7.4 \pm 0.2$	$6 \pm 2$	$5.15 \pm 0.15$
		155.1	$7.1 \pm 0.2$	$6 \pm 2$	$4.79 \pm 0.15$
		272.0	$7.5 \pm 0.2$	$6 \pm 2$	$4.50 \pm 0.15$
1.423 <sub>7</sub> (1.034)	Na (2)	55.57	$8.5 \pm 0.2$	$7 \pm 1$	$6.00 \pm 0.15$
		78.0*	$7.6 \pm 0.1$	$6.5 \pm 0.5$	$5.35 \pm 0.07$
		273.4	$7.4 \pm 0.1$	$6.0 \pm 0.5$	$4.43 \pm 0.07$
	Na (3)	77.0*	$7.6 \pm 0.1$	$6.5 \pm 0.5$	$5.35 \pm 0.07$
		273.4	$7.2 \pm 0.1$	$6.0 \pm 0.5$	$4.32 \pm 0.07$
		(273.4)†	—	—	$(4.60 \pm 0.07)$
	Na (9)	63.07	$7.9 \pm 0.1$	$6.5 \pm 1.5$	$5.57 \pm 0.07$
1.249 <sub>8</sub> (1.051)		78.7	$7.4 \pm 0.1$	$6.3 \pm 0.5$	$5.21 \pm 0.07$
	Bridgman‡	273.2	$7.4 \pm 0.2$	$9 \pm 5$	—
		303.2	$7.9 \pm 0.2$	$10 \pm 5$	—
		313.2	$7.9 \pm 0.2$	$10 \pm 5$	—
		353.2	$8.8 \pm 0.2$	$11 \pm 5$	—

\* Average values from three different runs.

† This point corresponds to the density at  $273.4^{\circ}\text{K}$  under zero pressure.

‡ Results from experiment on bare wires (Bridgman 1921).

TABLE 9. THE EFFECT OF PRESSURE ON THE IDEAL RESISTIVITY  
OF SODIUM IN THE TWO-PHASE REGION

	specimen	$f$ , fraction of h.c.p sodium in specimen at zero pressure	$T$ ( $^{\circ}\text{K}$ )	$\frac{-\partial \ln \rho_i}{\partial p}$ ( $10^{-5} \text{ atm}^{-1}$ )	$-B/A$ ( $10^{-5} \text{ atm}^{-1}$ )	$\frac{\partial \ln \rho'_i}{\partial \ln V}$
Na (2)	0.5 ± 0.1	20.35	$10.1 \pm 0.4$	$9 \pm 2$	$7.2 \pm 0.3$	
	0.0 ± 0.05		$11.4 \pm 0.4$	—	$8.1 \pm 0.3$	
Na (3)	0.1	20.35	$11.3 \pm 0.3$	$13 \pm 2$	$8.1 \pm 0.2$	
Na (9)	0.3 <sub>5</sub>	20.35	$9.9 \pm 0.2$	$8 \pm 2$	$7.1 \pm 0.2$	
Na (1)	(0.3 <sub>5</sub> )*	20.35	$10.3 \pm 0.4$	$10 \pm 3$	$7.3 \pm 0.3$	
	—	24.70	$10.6 \pm 0.3$	$10 \pm 2$	$7.5 \pm 0.2$	
Na (b.c.c.)†	0	20.35	$11.5 \pm 0.4$	—	$8.2 \pm 0.3$	
	0	24.70	$11.6 \pm 0.6$	—	$8.2 \pm 0.4$	
Na (hex)†	1.0	20.35	$7.8 \pm 0.8$	—	$5.6 \pm 0.6$	

\* Estimated by interpolation of  $\partial \ln \rho_i / \partial p$  at  $20.35^{\circ}\text{K}$ .

† N.B. These values have been calculated on the assumption that there is no change of phase composition of the specimens with pressure (see text).