can measure $\triangle T$ and $\triangle T'$, and can calculate $\int_{-H}^{+H} HdI$ from magnetic data, we know α, since it is equal to

$$\frac{\triangle T}{\triangle T'} \cdot \frac{A}{T.F.} \int_{-H}^{+H} HdI.$$

In a recent letter in NATURE[2], we mentioned a new method of measuring the heat generated step by step in a hysteresis cycle. We have now applied this method to an invar rod 0·473 cm. in diameter, purchased from Messrs G. P. Wall, Sheffield. We find that at 7·6° C., the temperature within our cooled solenoid, the calculated value of $\int_{-190}^{+190} HdI$ is 2,984 ergs per c.c., which gives a total deflection of 0·91 cm. with our temperature measuring device. The sudden application of a longitudinal tension of 36·75 kgm. to the rod results in a deflection of 7·21 cm. The ratio $\triangle T/\triangle T'$ is therefore equal to 7·92 and $\alpha = 0{\cdot}411 \times 10^6$ per degree C., correct, in our view, to less than 2 per cent.

Unfortunately, no specimen of superinvar[3] (63·5 iron, 32·5 nickel and 4 cobalt) is at our disposal, but we see no reason why its coefficient of linear expansion should not be obtained in the same way. The method as described above is applicable to ferromagnetic substances only, but it could be modified to deal with non-ferromagnetic materials.

L. F. BATES.
J. C. WESTON.

University College,
Nottingham.
March 7.

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Liberation of Potassium from Muscle by Acetylcholine

POTASSIUM appears to increase the liberation of acetylcholine from frog's heart (Beznak[1]), from the superior cervical ganglion (Brown and Feldberg[2,3]) and from other organs (Feldberg and Guimarais[4]). But it has been found[5,6] that muscles curarized with erythrina, cobra venom, curare, etc., are nearly or completely insensitive to intra-arterial injections of acetylcholine, whereas they react normally to potassium. It may therefore be inferred that if both compounds intervene in the nervous transmission, acetylcholine acts by the intermediate liberation of potassium probably from some organic compound as suggested by Reginster[7] for striated muscles, and Dulière and Loewi[8] for the central nervous system of the frog.

If the sciatic artery of a toad is perfused with potassium-free Ringer solution containing acetylcholine at a concentration of 1×10^{-6} or more, the contracture of the muscles is accompanied by an increase in the concentration of potassium in the liquid flowing from the vein.

Denervated muscles which respond more readily to acetylcholine liberate ten times more potassium than normal muscles, and curarized muscles which do not react to acetylcholine liberate no potassium.

V. H. CICARDO.
J. A. MOGLIA.

Institute of Physiology,
University,
Buenos Aires.
Feb. 1.

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Relationship between the Critical Temperatures, Boiling Points and the Parachor Values of Simple Molecules

IN previous publications[1,2], it has been pointed out that the critical temperatures and boiling points of chemically related substances containing the same number of molecules are linear functions of the parachor values P, and the van der Waals factor b has been shown to be similarly related. It was suggested that the applicability of such a relation to a distinct series was probably due to the similarity of cohesional and configurational functions characterizing a particular group. Recently, an interesting regularity was observed which gives considerable support to this suggestion.

The simple electronic conception of valency pictures the combination of atoms as being due to the preferential arrangements of the outermost electronic sheaths, but the factors giving rise to the known cohesive force which exists between neutral molecules are still a matter of conjecture. It is extremely probable that this cohesive force is governed to a large extent by the arrangement of electrons around the neutral molecules taken as a whole, and that the major part of the cohesive effect is exerted by those electrons which do not participate in a true 'valency bond'. Thus, a consideration of the following molecular types readily gives n, the number of electrons exerting a 'cohesive effect'.

Type	Inert Gas	Halogen acid	Halogen
	:N̈e:	H ×× C̈l :	:C̈l ×× C̈l :
n	8	6	12

The following table gives the derived equations for the critical temperatures taken from the original paper[1]. It is remarkable that in each case the coefficient of P when divided by the function n gives an almost constant result.

Group	Equation	k (coeff. of P)	n	k/n
Inert gas	$T_c = 3{\cdot}7P - 48$	3·7	8	0·465
Halogen acid	$T_c = 2{\cdot}72P + 130$	2·72	6	0·453
Halogen	$T_c = 5{\cdot}57P - 188$	5·57	12	0·465