

3 and 5; an additional list of substances with the calculated values of this ratio from the data given in International Critical Tables is given below :

Substance	$\frac{1}{T} \frac{d\sigma}{d\theta}$
$C_2Cl_4$	3.162
$C_2H_6O$	3.319
$C_6H_6O$	3.360
$C_6H_5NO_2$	3.007
$C_7H_5N$	3.298
$\alpha-C_{11}H_{19}O$	3.256
$C_6H_{12}$	5.340
A (liquid)	4.236
$Cl_2$ (liquid)	4.153
$N_2$ (liquid)	3.458
$O_2$ (liquid)	3.482
$H_2$ (liquid)	4.671
Br	3.343
Hg	2.290
$H_2O$	13.2
$H_2O_2$	2.473
Pb (liquid)	1.055
Bi (liquid)	1.491
Sn (liquid)	0.325

In the above table, there are, however, liquids for which the ratio is considerably different from the value 4 derived from the parachor law. The degree of approach of the experimental ratio to the theoretical value 4 for any liquid can be taken as a test of the liquid obeying the parachor law. Judged from this standpoint, liquid metals,  $C_6H_{12}$ ,  $H_2O_2$ ,  $H_2O$ , Hg, and  $H_2$  (liquid) do not appear to behave like normal liquids.

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April 10, 1935.

<sup>1</sup> *Ind. Jour. Phys.*, 1931, 8, 535.

### The Effect of Magnetic Field on Electrolytic Conductors.

IN January 1934 I observed that the conductivity of aqueous solutions of copper sulphate, potassium permanganate and others, measured by the usual Wheatstone's Bridge method using alternating current of frequency ranging from 300 to 3,000 alterna-

tions per second, did not show any perceptible change even in powerful magnetic fields; but when direct current was used, the electrolytic current flowing through the solution only for less than a second (before the commencement of the evolution of gas bubbles at the electrodes) as measured by a milliammeter, did show a definite decrease when the magnetic field was applied at right angles to the lines of flow of the electric current.

While continuing the investigation of this magnetic effect with a view to find out the exact cause of the change in conduction, another interesting phenomenon was observed, *viz.*, the deflection of streams of fine gas bubbles evolved during the electrolysis of aqueous solutions of several acids, alkalis and salts under the influence of a magnetic field.<sup>1</sup> While continuing and extending those investigations I have obtained the following results:—

(i) The deflection of streams of gas bubbles evolved during electrolysis or in chemical reactions (*e.g.*, action of acids on metals like Fe, Zn, Mg, and of water on calcium) and also of fine streams of solutions of electrolytes or colloids is observed only when both the electric and magnetic fields are acting simultaneously and not separately.

(ii) The same stream of gas bubbles or of electrolytic solution is deflected in opposite directions when brought near the cathode and then near the anode.

(iii) The deflection does not depend upon the chemical nature of the gas forming the bubbles or on the nature of the charged ions contained in those gas bubbles or on the charge at the interface between the gas bubbles and the solution, but it depends on the direction of flow of the current through the electrolyte and the direction of the magnetic field.

(iv) The streams of gas bubbles, etc., are mechanically deflected by the conducting electrolytic solution, which suffers deflection in opposite directions near the anode and the cathode, when placed in the magnetic field. In fact, this deflection of the solution near the electrodes can be rendered visible by suspending in it fine particles which show a rotatory motion in a clockwise and anti-clockwise directions near the two electrodes, when the solution is electrolysed in a magnetic field.

The last observation explains the results obtained by Dr. D. Nider<sup>2</sup> and also the

phenomenon described above, *viz.*, the decrease in electrolytic conduction in magnetic fields.

A detailed account of this investigation will be published shortly.

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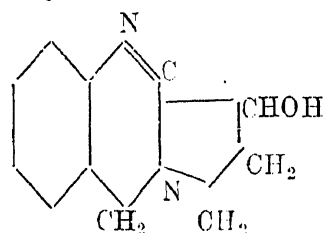
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<sup>1</sup> *Curr. Sci.*, 1934, 2, 387.

<sup>2</sup> *Praktika*, 1931, 6, 130.

### Vasicin.

IN continuation of our note on the above subject published in *Current Science*<sup>1</sup> we wish to state that the picronolate of the reduction product of the base II mentioned in that paper, has been found to be identical with the picronolate of reduced vasicin. Therefore the structure of vasicin is linear and is probably I



We had started on the synthesis of I by preparing  $\gamma$  *o*-nitro-benzyl amino- $\alpha$ -hydroxy butyric acid with the object of closing up the quinazoline ring by reduction with zinc dust and acetic acid after lactamisation but we were surprised to find that Späth, Kuffner and Platzer<sup>2</sup> have just effected almost an identical synthesis. In view of the position stated by us in *Current Science*<sup>3</sup> we thought

that we shall be allowed to complete our work but obviously it is not to be.

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<sup>1</sup> Vol. 3, 352-353.

<sup>2</sup> *Ber.*, 1935, 68, 700.

<sup>3</sup> *Loc. cit.*

### 2 : 4 : 5-Trimethoxy-1-allyl-benzene.

#### Asarone (allyl).

OLEFINIC phenols and their ethers are among the commonly occurring and important compounds in the vegetable kingdom. Though asarone (2 : 4 : 5 trimethoxy-1-propenyl-benzene) has been known since 1890, its allyl isomer has not been known, attempts at its synthesis having proved unsuccessful. It is the only allyl isomer among the naturally occurring olefinic phenolic ethers that is unknown. Recently Kelkar and B. S. Rao<sup>1</sup> during an examination of calamus roots found that the volatile oil contained 82 per cent. of a body closely allied to asarone, further purification leading to samples with 85 per cent. The latter could not be induced to solidify, thus showing that it was different from asarone which melts at 67°C. But as it had not been obtained chemically pure no definite conclusion could be reached.

Asarone (allyl) has now been obtained pure by treatment with selenious acid which holds back the impurities and final distillation over sodium. It is converted quantitatively into asarone (propenyl, m.p. 67°C.) by fusion with caustic potash, like other allyl phenolic ethers. The properties of asarone (propenyl and allyl) are as follows:—

	M. p.	B. P.	$d$	$n_D^{30}$	$(R_1)_D$
Asarone (allyl) (from Calamus oil)	liquid	283/685 mm.	1.078 ( $d_4^{30}$ )	1.5578	62.2
Asarone (propenyl)	67°C	296/760 mm.	1.165 ( $d_4^{20}$ )	1.5643	62.7

Its physical and chemical properties which will be described elsewhere are in agreement with its being an allyl isomer of asarone.

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May 1935.

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<sup>1</sup> *Jour. Ind. Inst. Sci.*, 1934, 17A, 29.