

lower to the upper layers. "Passive resistances" therefore cannot be invoked to explain the very one sided distribution observed.

The slight difference in composition and properties of the two liquids evidently determined the distribution of the arsenious sulphide at equilibrium, from which it follows that the influence of the concentration of the latter on its chemical potential must be slight indeed—a calculation based on Perrin's theory and on measurements of the dielectric constants of the boundary solutions near the plait-point might lead to a lower limit for the 'molecular weight' of the sulphide.

Arsenic trisulphide, water, chloroform, acetone

The alcohol of the preceding sections was replaced by acetone; but, as before, the arsenious sulphide remained in the upper layer until the last drop of acetone removed the heterogeneity. The composition at the plait-point is: water 2.9 cc, chloroform 1.0 cc, acetone 8.1 cc.

Arsenic trisulphide, water, ether, alcohol

Tables 1 and 2 and Fig. 1 give the data for the binodal curve, tie-lines and plait-point. A glance at Fig. 1 shows that the ether curve is much flatter, *i. e.*, that in the system ether-water-alcohol, addition of a drop of alcohol produces more change in the compositions of the two layers than it does in the system chloroform-water-alcohol. To approach the plait-point by rough and ready methods is therefore much easier when chloroform is used than with ether; and from this point of view the latter system seem even less likely to afford instances of distribution than the former.

As a matter of fact, however, distribution was readily observed over a fairly wide range of composition on either side of the abscissa of the plait-point. The experiments were carried out by mixing measured volumes of 1 percent arsenious acid solution, ether, alcohol, and sulphuretted hydrogen water (either old or freshly prepared) in the order given, taking somewhat less alcohol than was necessary to make a