Partly through the kindness of Dr. G. A. Alles, of Los Angeles, I have recently had the opportunity of examining a number of different amines of this group and have shown that a further subdivision of the β-phenyl*iso*propylamine group of inhibitors is possible. Substances of the structure R—CH_2—$CH.NH_2$—CH_3, for example, veritol and benzedrine, are much stronger inhibitors of amine oxidase than those of the structure R—CHOH—$CH.NH_2$—CH_3, for example, ephedrine; a comparison with the awakening properties of these substances in the living animal shows that there is again agreement between *in vitro* effect and pharmacological action[4]*.

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Electrophoresis of Animal Viruses and their Neutralizing Antibodies in Low Concentrations

A PERUSAL of the literature dealing with the physico-chemical properties of animal viruses and their neutralizing antibodies reveals the fact that very little attention has been given to the mobility in an electric field of these important substances.

The main investigations on the electrophoresis of viruses and their neutralizing antibodies have been to determine the sign of the charge and the direction of mobility[1,2,3], the separation of virus from virus-antibody mixtures[4,5], and the recovery of virus from the brains and spleens of animals recovered from virus diseases[5].

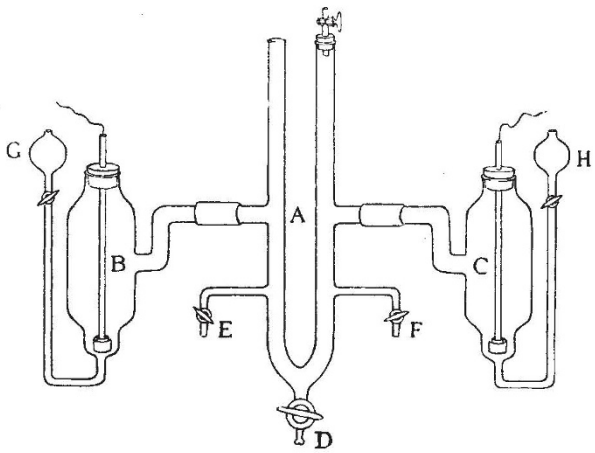
In none of the above-mentioned investigations has any attempt been made to determine the rate of migration of the viruses or their neutralizing antibodies, as the apparatus employed was highly unsuitable for that purpose. In order to measure the migration of viruses and their neutralizing antibodies an apparatus was constructed which has been applied with success to such measurements.

With the aid of the accompanying diagram the essential parts of the apparatus can be explained. *B* and *C* are two electrode vessels connected up to the U-tube *A* in the way illustrated. Two reversible silver–silver-chloride electrodes in saturated potassium chloride solution serve as anode and cathode. The electrode vessels and U-tube are filled with buffer against which the substance has previously been dialysed. By means of the two vessels *G* and *H* saturated potassium chloride solution is let into the electrode vessels to cover the electrodes. The virus or antibody in serum buffer mixture is let through the tap *D* to form a boundary under the buffer solution in *A*. The boundaries are brought up to levels above the two taps *E* and *F*. A position is marked off 2 cm. above the boundaries between the buffer and serum buffer mixture, and the electric current switched on. At the position 2 cm. from the original boundary small samples of fluid (0·1 c.c.) are carefully pipetted off with a fine pipette after suitable time intervals and tested by means of biological methods for virus or antibodies. The limb of the U-tube in which the samples are not taken is kept closed by means of a stopcock. The samples remain negative until the virus or antibodies reach the pipette.

The mobility of the substance investigated is given by the equation[6]

$$\mu = D\,x\,O/tA,$$

where D is the distance traversed by the substance (here 2 cm.); x is the conductivity of the solution; O is the cross-section of the U-tube at the point where the samples are taken; t is the time required for the substance to traverse the distance D; A is the strength of the electric current.



By plotting the mobilities at various hydrogen ion concentrations against the hydrogen ion concentrations of the buffer, the iso-electric point can be determined by extrapolation or interpolation[6]. The experiments are conducted in a room at constant temperature and a small current is employed, generally 1 milliampere, to minimize heating effects which might cause convection currents. It would be more preferable to conduct the experiments in a water thermostat. The apparatus employed is a modification of the Tiselius moving boundary method[6,7], but it is less complicated and less expensive, and with suitable optical arrangements and proper thermostatic control it can be used for similar purposes, for example, separation of the components in protein mixtures.

An extensive report on the electrophoresis of viruses and their neutralizing antibodies will be published in the *Onderstepoort Journal*.

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