TABLE I

Genetic constitution	Sex	Per cent. tryptophane	Number of determinations	Method
a^+a^+	♂ and ♀	.233 ± .0138	15	glyoxylic acid
a^+a^+	♂	.297 ± .0074	10	glyoxylic acid
a^+a^+	♀	.206 ± .0192	12	glyoxylic acid
a^+a^+	♂ and ♀	.27	2	p-dimethylaminobenzaldehyde
aa	♂ and ♀	.409 ± .0253	13	glyoxylic acid
aa	♂	.360 ± .0240	8	glyoxylic acid
aa	♀	.335 ± .0326	8	glyoxylic acid
aa	♂ and ♀	.35	2	p-dimethylaminobenzaldehyde

however, with the determinations with glyoxylic acid in so far as in both parallel determinations more blue color was formed in the *aa* than in the a^+ a^+ samples.

It can be concluded from these determinations, that *aa* Ephestia contain more of a substance which gives the reactions characteristic of tryptophane with both glyoxylic acid and p-dimethylaminobenzaldehyde, than a^+ a^+ Ephestia. Since both reactions are supposed to be characteristic of the indole group, the results tend to support the assumption that in *aa* Ephestia the oxidation of the indole ring is inhibited.

ERNST CASPARI

DEPARTMENT OF BIOLOGY,
LAFAYETTE COLLEGE

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLE ANALYTICAL METHOD FOR THE DETERMINATION OF PROPYLENE AND TRIETHYLENE GLYCOL[1]

IN the course of an investigation of the bactericidal effects of propylene and triethylene glycol it became necessary to devise a rapid and accurate method for the analysis of aqueous solutions containing 50 to 100 per cent. of these substances. Since these solutions were frequently contaminated with small amounts of discoloring impurities or other organic substances, analytical methods such as the determination of the refractive index were of no value. Chemical procedures[2] adapted to the determination of small quantities (0–5 mgm) are too cumbersome and involve tedious and inaccurate dilution methods in addition to the possibility of not obtaining a representative sample.

We found that the viscosity of an aqueous solution bears a very regular and definite relationship to the quantity of glycol present in the solution. From this observation the apparatus shown in Fig. 1 was constructed. It consists of a 12-inch length of 7 mm glass tubing, the end of which had been held in a flame until the opening was closed to about 0.2 mm. Interval marks were placed 6 inches apart and 3 inches from both ends. The tube, including the marked-off interval, was surrounded by a water jacket consisting of an 8-inch length of 20 mm tubing; this was fixed by means of a cork.

To make a determination the water jacket is filled with water at 25° C. and the unknown solution, the temperature of which has previously been adjusted to 25° C., is drawn into the inner tube by means of suction on a small length of rubber tubing attached to the top. The rubber tube is then constricted, holding the column of liquid in place. When the constriction is released the meniscus of the liquid slowly falls. The time required for the meniscus to pass the interval marks is determined by a stop-watch.

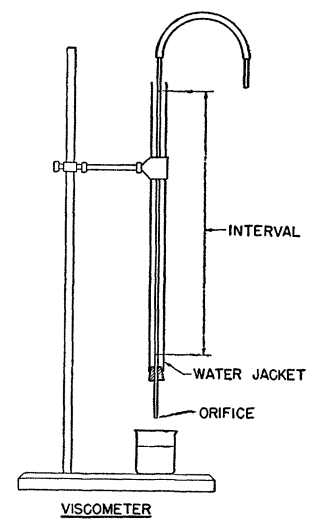

FIG. 1

Known solutions were carefully prepared, using volumetric methods. The concentrations of these solutions ranged from 50 to 100 per cent. glycol in water. The time required for each solution to pass through

[1] From the Northwestern Technological Institute and the Department of Medicine, Northwestern University Medical School. The work described in this paper was done under contract, recommended by the Committee on Medical Research between the Office of Scientific Research and Development and Northwestern University.

[2] T. T. Puck, SCIENCE, 95: 178, 1942.

the orifice was recorded by a stop-watch and the values charted in Fig. 2. Repeated determinations showed this method to be accurate to ± 0.001 minutes.

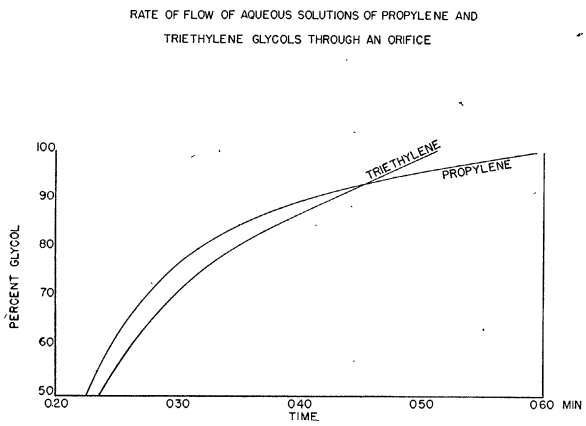

FIG. 2

Since the orifice of any given apparatus is arbitrary it would be very difficult to reproduce exactly our data. Therefore, a graph—Fig. 3—was constructed to enable the rapid calibration of any orifice. This was determined by plotting the relative viscosities of glycol to water against the known concentration of glycol. These relative viscosities were obtained by measuring the time for pure water at 25° C. to pass through our orifice and our interval. When the time required for a known series of glycol solutions to pass through any viscometer is divided by the time for water to pass through the same system the curve is obtained. Since the densities of the two liquids are practically equal they may be ignored in computing the relative viscosity. Therefore, when a new apparatus is constructed, generally having a somewhat different-sized orifice, it is only necessary to obtain the time interval using pure water. When this value for water is multiplied by the various viscosities of the glycol solution, taken from Fig. 3, a curve is easily constructed to fit the particular apparatus.

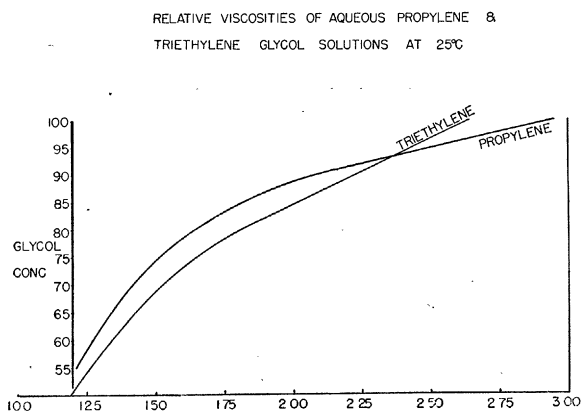

FIG. 3

CONCLUSIONS

This apparatus is easily constructed and can determine the concentration of glycol solution with an error of less than 0.5 per cent. The time required for a determination is about one minute, depending upon the size of the orifice. Using this method and the data supplied it is not necessary to measure the absolute viscosity but only the time utilized by the glycol solution in passing a given interval through an arbitrary orifice.

SHERMAN FRIED
EDWARD BIGG
BURGESS H. JENNINGS

A SIMPLE METHOD FOR PREPARING AQUEOUS SUSPENSIONS OF URINARY SEX HORMONE RESIDUES[1]

THE two commonly used vehicles for subcutaneous injection of urinary female sex hormone residues are oils (sesame or corn) and water. Neither is wholly satisfactory. The oils are poorly absorbed by the experimental animal and tend to encapsulate. Water is a poor solvent for the sex hormones and the inactive contaminants present in urinary residues. An aqueous suspension has been successfully employed,[2] but its preparation is rather laborious.

We wish to report a simple method for preparing an aqueous suspension of the urinary female sex hormone residue, which we have found to be entirely satisfactory.

The residue is dissolved in 2 ml of ethyl alcohol. From 0.1 to 0.2 gm (small spatulaful) of sodium alginate[3] and exactly 30 ml of water are added and the mixture is stirred on a hot plate, just short of boiling, for two or three minutes. On cooling, the suspension should have about the same viscosity as that of a heavy oil.

The success of this procedure depends upon two factors: (1) Care must be taken to add the right amount of sodium alginate, as too much will result in gel formation; a little practice soon establishes the ideal proportion to be used. (2) The stirring should begin while the water is being added in order to insure maximum dispersion of the insoluble material.

The resulting suspension is stable and shows no observable tendency to seep out at the site of injection when a No. 20, 1½ inch needle is used. The foreign material is completely absorbed and well tolerated by the spayed rat. No unfavorable reactions have occurred over a six-month period of repeated injections of our rat colony with this agent.

BENJAMIN F. STIMMEL
SAN DIEGO, CALIF.

[1] From the Rees-Stealy Medical Research Fund.

[2] Gustavson, R. G. et al., Am. J. Obst. & Gynec. 35: 115 (1938).

[3] Prepared and sold under the name of Kelgin by the Kelco Company, San Diego, Calif.