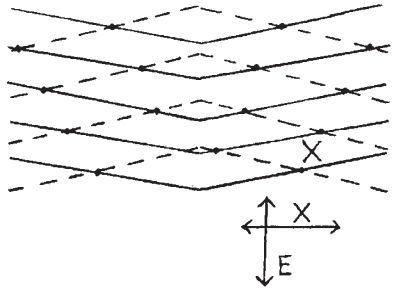

Fig. 2. Part of the pattern presented to the eye. It should be noticed that the points of the two 'herring bone' patterns do not necessarily coincide. *E,X* indicate the movement of the eye and the consequent sideways displacement of the intersections *X*

of the slides shall be roughly in line with the centre of the lens. The lens holder need not be adjustable; simple V-blocks are sufficient.

One of these slides is illuminated from behind by diffused light, and a real inverted image of its pattern is found by the lens under test in the vicinity of the other (graticule). On looking at this second graticule in the direction of the lens, the pattern of the image and the graticule appears somewhat like Fig. 2, where the dotted lines represent the image and the full lines the graticule. If the image is not in the same plane as the graticule, slight transverse movements of the eye cause the intersections (X) to shift sideways. The graticule is then moved along the bench towards or away from this position until this shifting effect disappears. The image is now in the plane of the graticule. The lines are inclined at an angle, and it is easy to show that the lateral shift of an intersection X is greater than the lateral 'parallax' displacement observed in the ordinary way in the ratio $1/a$, where a is the acute angle in radians between the two sets of lines. Thus, in our case the ratio is about $57°/5° = 11 : 1$. Thus the sensitivity is about tenfold greater than that of the older method.

When measuring the focal length of a concave mirror, or fixing the focal point of a lens system using a plane mirror behind the lens, one half of the screen is illuminated and the setting made by viewing the (reflected) image on the other half. The pattern viewed is then similar to that described.

The device lends itself to the study of the curvature of the image, to spherical aberration and to other effects. Its main advantages are its sensitivity and ease of adjustment, and that it enables a form of optical bench to be constructed which, although inexpensive, is capable of considerable accuracy.

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Occurrence of *Culex simpsoni* in Mauritius

During a survey of breeding sites, a mosquito new to Mauritius has been found. Larvæ of *Culex simpsoni* Theobald were found breeding profusely in rock pools in the river bed of the Tamarin Gorges. In the same pool, larvæ of *Anopheles gambiae*, *Anopheles maculipalpis* and *Culex tritaeniorhyncus* were also found. The pool was fed by seepage from a spring on the side of the gorge.

MacGregor[1] stated that the larvæ of *C. simpsoni* were pale green in colour during life; this cannot be confirmed. The larvæ and pupæ obtained from the Tamarin Gorges were light blue in colour during life, changing to pale green at death.

C. simpsoni has not previously been reported from Mauritius; but in Rodrigues, another island of the Mascarene Group, it is a common insect. It is a moot point whether Mauritius has been invaded from Rodrigues, or whether *simpsoni* is native to Mauritius, and has remained undetected due to the unfrequented and almost inaccessible siting of its breeding place. Rodrigues is, geologically, the older island; but its limited mosquito fauna (*C. fatigans*, *Ae. aegypti*, *C. simpsoni*), when contrasted with the relative luxuriant mosquito fauna of Mauritius, would suggest that it is native to Mauritius. *C. simpsoni* has not been detected in the French island of Réunion, the third and youngest island of the Mascarene Group.

It is of interest to note that the surface of the breeding pool supported both *Symphypleona* and *Arthropleona* of the order *Collembola*—an order of insects not previously recorded from Mauritius.

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[1] MacGregor, M. E., "Mosquito Surveys" (London, 1927).

Paper Chromatography of Organic Acids

Glyconic acids, glycaric acids and glycuronic acids and certain related hydroxy acids show a marked tendency to produce streaked spots on paper chromatograms. This may be eliminated by incorporating in the developing solvent certain organic acids such as formic acid or acetic acid[1] to suppress ionization of the carboxyl group. The developing solvents incorporating formic or acetic acid vary in composition with time, due to slow esterification of the acid when an alcohol is present; for this reason R_F values are variable. Moreover, the number of suitable acidic developing solvents is limited. In order to be able to use any developing solvent for the separation of acids, we have coated the filter paper with alginic acid. Whatman No. 1 filter paper is dipped into a 1 per cent aqueous ammonium alginate solution and after removing the excess of this solution the paper is dipped into N hydrochloric acid which causes precipitation of alginic acid. The paper so treated is washed with water or ethanol to remove excess hydrochloric acid and allowed to dry in the air.

Papers prepared in this way have been used for partition chromatography of D-mannuronic acid, D-glucuronic acid, D-galacturonic acid, citric acid, tartaric acid, succinic acid, malic acid, glycollic acid, malonic acid and various aldobiuronic acids such as O-D-glucopyranosidurono-(1 → 2)-α-D-xylopyranose isolated from chagual gum[2].

Since the papers are acidic in character, the usual acid-base indicators could not be used for detecting the acids. The alginic acid, however, did not interfere with the detection of uronic acids and certain hydroxy acids such as citric, tartaric and malic acids by the ammoniacal silver nitrate reagent. The uronic acids could also be detected on alginic acid papers by the spray reagents containing aromatic amines such as aniline, *p*-anisidine, etc., usually employed for locating reducing sugars.

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