These results demonstrate that D-valine is an effective inhibitor of actinomycin synthesis. Moreover, the data obtained suggest that L-valine rather than its D-enantiomorph is the precursor of the D-valine present in an actinomycin molecule. The biogenesis of D-valine and the site and nature of the inhibition of actinomycin synthesis occurring in the presence of this amino acid are still to be investigated.

Details of these studies will be described elsewhere.

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ENTOMOLOGY

An Insect attacking *Striga*

Striga is a genus of parasitic plants attacking grain crops throughout the tropical regions of the world. Where monocropping is extensively practised infection can build up to a point where grain yields become negligible. Agricultural techniques such as trapcropping[1], soil conditioning and the use of weedkillers can reduce the incidence of the parasite; but in the poorer regions of Asia and Africa where the value of the crop is low but where it remains an essential part of the diet, these techniques are for the most part impracticable.

A study of *Striga* in Nigeria has revealed that in certain areas considerable numbers of the fruits produced by the plant are infected with the larvæ of *Smicronyx* sp. (Coleoptera:Curculionidæ). The eggs of *Smicronyx* are probably laid in the developing fruit or ovary. The larvæ lives within the fruit, feeding on the immature seeds. From preliminary investigations it would seem that the mature larva emerges from the drying fruit and falls to the soil where it pupates. In laboratory culture, larvæ collected in December had all pupated and emerged as adults by the middle of January. The adults have well-developed hind wings, and there seems little doubt that they would fly to new hosts.

Sopubia ramosa is a common alternative host for *Smicronyx* in Nigeria and data from the Commonwealth Institute of Entomology reveals that species of *Smicronyx* have been recorded on *Orobanche* in Cyprus, cotton in the Sudan, *Cuscuta* in India and *Sopubia* in Kenya.

It would therefore seem that *Smicronyx* feeds largely on parasitic plants; but before it could be considered for possible biological control the record on cotton would need careful investigation. The possibility of biological control of *Striga* by *Precis orithya* has been suggested by Agarwala and Naquvi[2], but to our knowledge this has not been investigated further. It has been reported that *Smicronyx* on dodder in Britain lays its eggs in the stem of the plant and the larvæ liva within a gall; but the species under discussion here appears to attack only the fruits.

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PSYCHOLOGY

A Mathematical Model for Perception and a Theoretical Confusion Function

Crossman[1] investigated the time taken to discriminate between stimuli, and produced an empirical expression for the ease of discrimination between two stimuli (their 'discriminability' D) the inverse of which (the 'confusion function') was proportional to the time taken to discriminate. The characteristics of this function were that it depended upon the ratio of the stimulus values concerned, and not upon their absolute magnitudes, and that it tended to 0 and ∞ as this ratio tended to 0 and 1 respectively. The present communication outlines a mathematical model of perception processes, from which a theoretical confusion function was derived.

It is assumed that (*a*) an act of perception is based on a population of values—perhaps, for example, of neurone firing rates—normally distributed about the correct magnitude; that (*b*) the standard deviation of such a population bears a constant ratio (taken as unity for simplicity of computation) to the value of the mean. Thus the distribution for the perception of a stimulus x_i will be:

$$y = \frac{1}{x_i\sqrt{(2\pi)}}\exp\left[\frac{-(x-x_i)^2}{2x_i^2}\right]$$

Clearly, if 2 stimuli, x_1 and x_2, are presented, there will be a finite area ($= A \leqslant 1$) common to both. It is suggested that (*c*) the discriminability is proportional to the area of either not common to both (that is, $D \propto 1-A$) and hence that (*d*) the confusion is proportional to the inverse of this, that is, $\propto 1/(1-A)$.

The curves bounding the distributions connected with x_1 and x_2 ($0 \leqslant x_1 \leqslant x_2$) intersect in the points ($x = p$ and $x = q$, say) given by the roots of:

$$\frac{(x-x_1)^2}{2x_1^2} - \frac{(x-x_2)^2}{2x_2^2} - \ln\left(\frac{x_2}{x_1}\right) = 0 \qquad (1)$$

and consequently the discriminability is proportional to:

$$D = 1 - \frac{1}{\sqrt{(2\pi)}}\left[\frac{1}{x_1}\int_{-\infty}^{p}\exp\left\{-\frac{(x-x_1)^2}{2x_1^2}\right\}dx + \frac{1}{x_2}\int_{p}^{q}\exp\left\{-\frac{(x-x_2)^2}{2x_2^2}\right\}dx + \frac{1}{x_1}\int_{q}^{+\infty}\exp\left\{-\frac{(x-x_1)^2}{2x_1^2}\right\}dx\right] \qquad (2)$$

These expressions were solved numerically. The derived confusion values were multiplied by the constant term 1/2·897, for the convenience of giving C = 1 for $x_1/x_2 = 0{\cdot}50$, and are tabulated below.