

A corollary of the conclusion that red cell survival in the circulation is 2-3 weeks in familial haemolytic anaemia cases (and that incorporation of red cell haem takes only the last few days of their formation) is that reticulocytes may circulate as long as 3-4 days, as in the case reported by James and Abbott<sup>2</sup>.

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<sup>1</sup> Evans, Robert L., *Nature*, **177**, 839 (1956).

<sup>2</sup> James, III, G. Watson, and Abbott, jun., Lynn D., *Proc. Soc. Exp. Biol. Med.*, **88**, 398 (1955).

### Effect of Exteroceptive Factors on the Oestrous Cycle of Mice

A STUDY of the incidence of copulation plugs in monogamously paired mice showed that the oestrous cycle is influenced by stimuli associated with males<sup>1</sup>. These stimuli are probably olfactory since they are effective through a wire grid and removal of the olfactory bulbs results in a reduction of ovarian weight and activity<sup>2</sup>.

It has now been established from changes in vaginal smears that the oestrous cycle is shortened by the proximity of a male, although a previous attempt to demonstrate this had failed<sup>1</sup>. The reason for this failure has also become apparent; for it has been found that when females are caged together in large groups, remote from males, oestrus and ovulation occur infrequently. Under such conditions the majority of animals show persistent mucification of the vaginal epithelium. In contrast to this, normal cycles occur regularly in most animals caged individually. This difference is also reflected in the incidence of mating when the mice are afterwards paired with vigorous males. In mice that have been grouped, copulation is synchronized so that in the majority it occurs on the third night after pairing, but is distributed more evenly over the first four nights in females which have been caged individually.

Mucification of the vagina of mice caged in groups and segregated from males may persist for forty or more days. There is an associated reduction in the weight of both uterus and ovaries. The latter appears to result from a decrease in the number of corpora lutea, which may be completely absent from some ovaries. These findings show that the oestrous cycle is suspended in these mice. The duration of the mucification, the ovarian and uterine changes, and in addition the failure of the uterus to respond to trauma with the formation of placentoma, show that this suspension is not due to pseudopregnancy. Thus it differs from the findings described by Lee and Boot<sup>3</sup> when mice were placed four to a cage. It seems probable that the mucification of the vagina resembles that observed by Robson and Wiesner<sup>4</sup> following the administration of doses of oestrogen too small to elicit cornification of the vaginal epithelium.

Stress from overcrowding does not appear to be the cause of the inhibition of the cycles for the following reasons: the animals maintain their weight and sleek appearance; there is no impairment of reproductive capacity since more than 90 per cent of them are capable of fertile mating within five days of pairing; if a male is confined in a grid within

the cage oestrus appears promptly in almost all the mice.

These findings lead to the conclusion that the suspension of oestrous cycles of mice which have been grouped results from a relatively specific depression of pituitary gonadotrophic function. There is as yet no indication of the mechanism involved. However, if mutual inhibition of oestrous cycles also occurs in natural populations it may provide a mechanism, intrinsic to a species, to account for cycles in population density. While initiation of oestrous cycles by olfactory stimuli emanating from males may act as 'releasers'<sup>5</sup>, Sibley<sup>6</sup> has pointed out that they may function also as 'isolating mechanisms'<sup>7</sup>.

A full account of these findings will be submitted shortly to the *Journal of Endocrinology*.

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<sup>1</sup> Whitten, W. K., *J. Endocrin.*, **13**, 399 (1956).

<sup>2</sup> Whitten, W. K., *J. Endocrin.*, **14**, 160 (1956).

<sup>3</sup> Lee, S. van der, and Boot, L. M., *Acta Physiol. et Pharm. Neerland.*, **4**, 443 (1955).

<sup>4</sup> Robson, J. M., and Wiesner, B. P., *Quart. J. Exp. Physiol.*, **21**, 217 (1931).

<sup>5</sup> Lorenz, K. Z., *J. Ornith.*, **83**, 137, 289 (1935).

<sup>6</sup> Sibley, C. G., personal communication (1957); *Condor*, **59**, 166 (1957).

<sup>7</sup> Dobzhansky, T., *Amer. Nat.*, **71**, 404 (1937).

### The Genus *Cypraea*

RECENT literature abounds with criticism of the current trend to split genera. The subfamily Cypraeinae (family Cypraeidae) is a case in point<sup>1,2</sup>. Linnaeus's genus *Cypraea*, which forms the basis for the subfamily, contained 42 species. At present approximately 160 are recognized. These species have been distributed in no fewer than 60 genera over the past twenty-five years, 52 of which appear in the latest work on the group<sup>3</sup>.

While deploring the situation and suggesting that caution be used henceforth in describing genera, critics have failed to recognize two points. The genera among which the species of the Cypraeinae are now distributed are based primarily on only one feature of the animal, the shell, with little or no consideration of other characters such as the radula or genitalia. Secondly, numerous genera described on the basis of minute differences in shell characters which are necessarily of a somewhat subjective nature only serve to obscure the broad picture of prosobranch relationships.

Current studies of the soft parts of more than fifty species of the Cypraeinae show a remarkably conservative anatomical picture: the mantle is large and tends to cover the shell; the osphradium is trifid, enclosed in a single, arched ctenidium; the cerebral and pleural ganglia are closely associated; the pedal ganglia form long cords traversing the length of the foot; the penis is a slender, elongate, conical structure; and the digestive system is characterized by a swollen mid-oesophagus and stomach with a caecum. The only differences discernible between species, apart from slight variations in mantle decoration, are in the structure of the radular teeth and in the pattern of the female genitalia. The species examined thus far fall into only two groups, one in which the female genitalia are