

**BIOLOGY**

**Sexual Performance Index of Male Rhesus Monkeys**

ALTHOUGH information about ejaculation in infra-primate mammals is available<sup>1-4</sup>, quantitative data are lacking for most primates. Field studies<sup>5-6</sup> have provided the basic information on the copulatory sequences of behaviour of adult rhesus monkeys; findings which have recently been confirmed in the laboratory<sup>7</sup>. The present investigation is concerned with a particular aspect of sexual behaviour: namely, the relation between mounting and thrusting activity on one hand and the timing of ejaculation on the other.

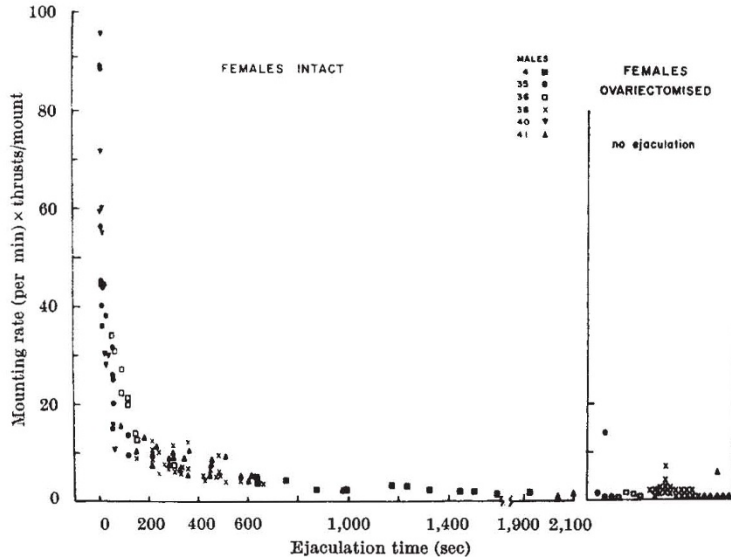


Fig. 1. The relation between the products of the mounting rate and thrusts/mount—sexual performance index—and the ejaculation times of six male rhesus monkeys (ninety-seven tests). There was a marked decline in SPI as ejaculation times increased. On the right, the products of mounting rate and thrusts/mount in tests without ejaculation are shown; the values were in general very low.

Copulation in *Macaca mulatta* consists of a series of sexual mounts by the male on the female and each mount is associated, in the majority of cases, with an intromission by the male and a variable number of pelvic thrusts. The series of mounts is generally terminated by an ejaculatory mount after which there is a refractory period, without mounting, before the start of the next mounting sequence.

Six oppositely sexed pairs of adult monkeys were observed during mating tests, each of 60 min, before and

after bilateral ovariectomy of the female of the pair. Tests were carried out by two observers separated from the animals which were in large observation cages by a one-way vision mirror. Components of behaviour were quantified by means of a scoring system—in terms of time, sequence and frequency. Particular attention was directed to the following: (a) ejaculation time, time in sec or min from the first mount of a mounting series to the occurrence of ejaculation; (b) mounts to ejaculation, number of mounts in a mounting series preceding the first ejaculation; and (c) total thrusts to ejaculation, number of pelvic thrusts with intromission preceding the first ejaculation. From the foregoing measures the following were derived: (a) mounting rate, mounts to ejaculation divided by ejaculation time; (b) thrusts/mounts, total thrusts to ejaculation divided by mounts to ejaculation. Twenty-four tests were scored simultaneously but independently by two experienced observers and the results compared by the Pearson product-moment coefficient of correlation.

No precise relation could be discerned between mounts to ejaculation, mounting rate, or total thrusts and the timing of ejaculation. There was, however, a clear relation between ejaculation time and the product of mounting rate and thrusts/mount; this led to the use of the concept of a sexual performance index (SPI). The relation between this index and the corresponding ejaculation times is shown in Fig. 1: a marked decline in the SPI occurred as ejaculation times increased. When these data were plotted logarithmically, a good linear relation was found (Fig. 2).

The effects on the behaviour of males of ovariectomizing the females of the pair were complex; ejaculation was abolished in most cases and sexual interaction declined to low levels. Sufficient interaction persisted in thirty-four cases to give data for comparison with the intact condition. While the numbers of mounts and the numbers of thrusts varied widely in tests without ejaculation, in the majority of cases, when ejaculation failed to occur, the SPI was extremely low (Fig. 1).

Although different males, characteristically, may have quite widely different ejaculation times, it was of interest that data from all six males, independently of the female with which they were paired, were adequately described by a single regression. Thus, some generalizations from these data may be possible. These results are consistent with a purely reflex interpretation of events leading to ejaculation mediated by spinal segmental pathways. It is interesting, then, to reflect that the behaviour of the whole animal during the copulatory sequence is directed towards giving these reflex phenomena an opportunity for expression.

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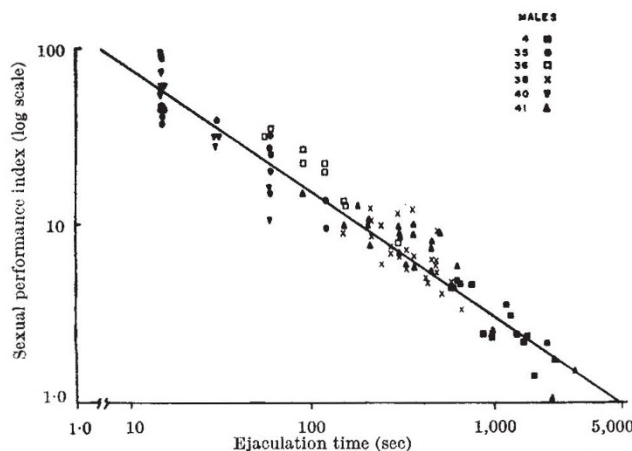


Fig. 2. The regression of the sexual performance index on ejaculation time. The linear regression was highly significant (log scales:  $P < 0.001$ ). Different males characteristically have different ejaculation times but all data were adequately described by a single regression line.

<sup>1</sup> Beach, F. A., *Nebraska Symposium on Motivation*, 1 (Univ. Nebraska Press, 1956).  
<sup>2</sup> Bermant, G., *J. Comp. Physiol. Psychol.*, **57**, 398 (1964).  
<sup>3</sup> Larsson, K., *Conditioning and Sexual Behaviour in the Male Albino Rat* (Almqvist and Wiksell, Stockholm, 1956).  
<sup>4</sup> Young, W. C., and Grunt, J. A., *J. Comp. Physiol. Psychol.*, **44**, 492 (1951).  
<sup>5</sup> Altmann, S. A., *Ann. N.Y. Acad. Sci.*, **102**, 338 (1962).  
<sup>6</sup> Carpenter, C. R., *J. Comp. Psychol.*, **33**, 113 (1942).  
<sup>7</sup> Michael, R. P., *Proc. Roy. Soc. Med.*, **58**, 595 (1965).