

in benzene) of the same œstrin to the non-epilated skin of the interscapular region by means of a small paint brush. After ten weeks of this treatment, three of these mice had scrotal hernias, bilateral in one and unilateral in the other two. Examination of 90 untreated stock mice and 276 mice under treatment of various kinds not entailing the use of œstrin did not reveal a single scrotal hernia.

The same solution of œstrin in benzene applied twice a week in a similar way and for the same period to the non-epilated skin of 10 female mice not only kept them in œstrus, as tested by the ordinary smear method, but also led in some instances to an accumulation in the vagina of a mass of keratinised epithelium sufficiently large to distend the canal and to block the outlet from the uterus, both horns of which were distended considerably with fluid. These results indicate that keto-hydroxy-œstrin in such a medium is readily taken up through the healthy skin, although it is impossible to ignore the possibility that some may have been taken up by the alimentary canal through the mice licking one another.

The hernias in the male mice treated with superficial applications of œstrin, and those in the mice treated by subcutaneous injection, may be reasonably attributed, it seems, to the action of œstrin. The phenomenon may have some connexion, perhaps, with the well-known fact that in certain species the pelvic ligaments are softened during pregnancy, when large quantities of œstrin are circulating in the body.

HAROLD BURROWS.  
E. C. DODDS.  
N. M. KENNAWAY.

The Research Institute,  
The Cancer Hospital (Free),  
London, S.W.3.  
Courtauld Institute of Biochemistry,  
Middlesex Hospital,  
London, W.1.  
May 23.

<sup>1</sup> *J. Physiol.*, 68; 1930.

#### Occurrence of Ovulation without 'Heat' in the Ewe

A RECENT study of reproductive phenomena in the ewe has shown that, in this animal, ovulation occurs regularly during the month previous to the commencement of the breeding season, and occasionally during the breeding season, without the exhibition of mating. The premises for this conclusion may be stated briefly as follows:—

(1) Four out of five ewes killed before their breeding seasons had commenced showed healthy corpora lutea in their ovaries.

(2) In seventeen ewes kept constantly with a vasectomised ram, the vaginal secretions underwent one or more cycles of œstrous changes before the first 'heat' period had occurred. These cycles possessed the periodicity characteristic of the normal œstrous cycle.

(3) Five of these ewes killed during the breeding season showed, in their ovaries, either one or two more 'generations' of corpora lutea than could be accounted for by the number of full œstrous periods through which they had passed.

(4) The diœstrous interval is sometimes twice, and rarely three or four times its normal length. It is thought that multiplication of the cycle interval takes place as a result of the occurrence of ovulation and the development of corpora lutea although œstrus does not occur.

There is evidence to suggest that under highly favourable nutritive conditions, such as are constituted by the farming practice of 'flushing', these spurious ovulation periods may be converted into normal œstrous periods at which the mating instinct is exhibited.

Cole and Miller<sup>1</sup> have found that a single injection during œstrus of serum from pregnant mares containing 50 'rat-units' or more of gonad-stimulating substance, causes ovulation although 'heat' does not ensue.

Observations made by Mr. Wm. C. Miller (unpublished) have shown that the ovaries of red deer hinds killed during early pregnancy commonly contain not only the corpora lutea of pregnancy but also one or more 'generations' of atrophic corpora. Since it is probable that in the wild state very few hinds fail to conceive at the first service, this fact suggests that the phenomenon of ovulation in the absence of mating may not be confined to the ewe.

Full details of the investigation will be published shortly.

R. GRANT.

Institute of Animal Genetics,  
University of Edinburgh.  
May 23.

<sup>1</sup> H. H. Cole and R. F. Miller, *Amer. J. Physiol.*, 104, 165; 1933.

#### The Minor Details of the Planet Mars

IN the issue of NATURE for April 8, p. 518, a note appears on an article on Mars by Mr. H. B. Brydon, in which particular reference is made to my recent volume on the planet and my conclusions as to the illusory nature of the so-called canals. In order that readers of NATURE should not be misled by the article, I hasten to reply to Mr. Brydon's statements.

It is at Flagstaff that the planets Mercury, Venus, Jupiter and Saturn, as well as the Jovian satellites, have been seen covered with linear markings, which were afterwards pronounced unreal by their most prolific discoverer<sup>1</sup>. It is further imprudent for a believer in linear canals on the planet Mars to mention the name of Prof. G. W. Ritchey, since that great astronomer repeatedly asserted to me that, having carefully scrutinised Mars with the fine 60-inch reflector of Mount Wilson, constructed by himself, he never saw a single straight line, or canal, on the planet, though details were observed beyond the range of the most powerful refractors in existence.

My late-lamented mentor and friend, E. W. Maunder, remarked in 1894 that the so-called canals of Mars often disobey the laws of perspective; and I have demonstrated in my book the veracity of this statement, by showing that canals considered to run along arcs of great circles appear straight, not only at the centre of the disc, but also at 30° and more from the centre—a fact which, of course, establishes their illusive character.

I have also shown that the canals, after defying perspective, further defy diffraction, since they vanish in a large telescope, whereas a real, dark, planetary line, such as Cassini's division of Saturn's ring, becomes naturally darker and broader with an increase of aperture.

Lastly, I pointed out in 1909 that, in the 33-inch refractor I was using, no straight lines could be detected on Mars, while delicate detail, far beyond the reach of the small telescopes with which the