

The results of the enzyme analyses are summarized in the accompanying table :

QO ₂ IN PRESENCE OF <i>d</i> .1-ALANINE AS SUBSTRATE*			
Group	Liver	Kidney	Cortex
K-12 (6) †	0.5	17.0	
K-12+W (7)	1.9	24.5	
K-12+flavin (7)	1.7	24.1	
Normal (stock) (5)	3.2	26.0	
K-12+W+flavin, <i>ad lib.</i> (6)	3.3	25.0	
K-12+W+flavin, restr. (5)	3.9	27.0	

* Average values after subtraction of the no-substrate readings were used in the calculation of QO₂.

† Values in parentheses indicate the number of animals in each group.

These results indicate the importance of riboflavin in the synthesis of the prosthetic group of *d*-amino-acid oxidase, and that other members of the *B* complex may also be related to the formation of this enzyme.

Ball⁵ has shown that xanthine oxidase is an alloxazine protein. Preliminary experiments indicate that the tissues of rats raised on the K-12 ration show similar decreases in their xanthine oxidase activity.

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¹ Warburg, O., and Christian, W., *Biochem. Z.*, **298**, 150 (1938).

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Ambisexual Action of Progesterone as Observed in the Common Australian Opossum

In contrast to the generally accepted theory that progesterone has only definite effects in females, we have found that this hormone produces readily demonstrable changes in the intact male as well as in the female Australian opossum (*Trichosurus vulpecula*).

In the immature female opossum, progesterone increases the size of the mammary glands and of the pouch. This increase may be as much as two to three times that of the pre-experimental size. In the immature male progesterone may bring on what we term testicular 'ascent', that is, the testicles which were pre-experimentally confined to the scrotum of these animals were observed to leave the scrotal sac and to ascend as far as the inguinal area. This was observed in two pouch embryos of about four months of age (body weight 0.18 kgm. and 0.2 kgm.), where after one injection of 2 mgm. of synthetic progesterone the testicles were found to have left the scrotum. A similar observation was also made in two almost fully grown male opossums of about one year of age (body weight 1.3 kgm. and 1.4 kgm.), in which broadening and relaxation of the neck of the scrotum was noted after one to two weekly injections of 2 mgm. of synthetic progesterone, and after one or two more weekly injections the testicles were found to have left the scrotum.

This ascent, however, which is made possible by a widening of the neck of the scrotum, as brought on by the administration of the progesterone, is not permanent, and on inspection the testicles may sometimes be found in front of the inguinal area or

sometimes in the scrotum of the same animal. In the latter case, however, the testicles are quite easily pushed out of the scrotum under the abdominal skin. Testicles and scrotum underwent no gross atrophic changes during an experimental period lasting about two months, following which it becomes impossible to bring on testicular ascent in the almost fully grown animals because the testicles had become too large to pass through the opening provided by the scrotal neck. This is in agreement with observations made on fully grown opossums, where it was found that the neck of the scrotum was widened after the injection of progesterone but testicular ascent could not be accomplished.

The testicular ascent as produced with progesterone is entirely different from that obtained in the same species with oestrogens. In this case, the testicular ascent as brought on in immature opossums injected with oestrone or oestradiol is permanent, and the scrotum as well as the testicles undergo marked atrophic changes¹.

By continuing the weekly injections of progesterone into the almost mature animals for a period exceeding two months, a frankly androgenic reaction was obtained. The penis of these animals, which with the exception of a few days during breeding seasons is hidden in the cloaca, becomes visible and may protrude to its full length (3-4 cm.). This erection is almost permanent in the resting animal which, however, particularly on handling, is capable of retracting the organ. This observation, which indicates the androgenic nature of progesterone when administered to the intact animal, has also been demonstrated recently by Greene, Burrill and Ivy² following the administration of "relatively enormous quantities" to castrated male rats.

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Preference of Dalmatian Dogs for Particular Positions in Coach Running, and Inheritance of this Character

PERHAPS the most widely known characteristic of dogs of the Dalmatian breed is their habit of following horses and of running underneath the axles of moving carriages. Recently our attention has been directed to some observations with regard to differences in the specific positions under a carriage favoured by individual Dalmatians and the probability that these preferences are inherited.

In one large colony of Dalmatians where training for coaching has been practised for more than twenty-five years, individual animals have been permitted to choose the position beneath the carriage which he or she preferred. Some dogs consistently run with their noses very close to the heels of the horses (position *A*). Some insist on having their head just under the front axle (position *B*), while some prefer to have the head between the two axles (position *C*). Others insist upon staying underneath the rear axles (position *D*) or entirely behind the carriage (position *E*). A few animals have been so little interested in horses and carriages that their training had to be abandoned (position *F*).