

Effect of Œstrogens on the Pouch of the Marsupial *Trichosurus vulpecula*

Trichosurus vulpecula, the common Australian opossum, has a well-developed pouch which shows marked reactions towards the administration of œstrogens. After the injection of small doses of œstrogen (200–1,000 i.u.), development of the pouch and mammary glands becomes evident, particularly in sexually immature animals. Furthermore, hyperplasia of the pouch muscles is noted as well as the secretion of a pigment which is deposited within the pouch and which stains the hairs a deep orange within the pouch as well as those around it. After the administration of one or several moderately large doses of œstrogen (1,000–10,000 i.u.), hyperplasia and hypertrophy of the muscles of the pouch occur, and the pouch decreases in size. After the administration of a single large dose of œstrogen (50,000–1,000,000 i.u.), the hypertrophy and hyperplasia of the pouch muscle become marked and it goes into a state of contraction which is accompanied by an almost complete disappearance of the pre-experimental pouch.

If the injections of large doses of œstrogen are maintained, the contraction of the pouch remains permanent, but the animal dies from the action of the hormone on the internal reproductive organs. This end result is similar in animals which possess small or large pouches pre-experimentally; but it necessarily becomes more obvious in animals which had large pouches before injecting the œstrogen. This reaction indicates that the muscle of the pouch, which is voluntary muscle, is contracted by œstrogen.

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Severe Mortality of *Macra corallina cinerea* (Montagu) off the Lancashire Coast

I WAS informed by Mr. J. H. Duggan that enormous numbers of molluscs had been thrown up on the coast between Southport and Hightown on October 28. They then formed a continuous belt averaging six feet in width and ten inches in depth at the crest, extending nine miles from Southport towards Hightown. The majority were, at this time, alive.

I visited the area on November 1 and found that the tides since October 28 had scattered the molluscs over a zone averaging twenty-five yards in width. They were arranged in drifts parallel with the high water mark and usually five in number, the heaviest deposit being in the most shoreward drift. In many places this drift was five inches deep and five feet wide.

Most of the molluscs, at this time, were dead, but in the deeper drifts the ones underneath were still alive, having been protected from the wind and sun by the upper ones. The fact that no deposits were found in which all or most were alive suggests that none had been cast up since October 28.

Only one species of mollusc was present, namely, *Macra corallina cinerea* (Montagu), and all were small specimens, averaging 0.9 in. in length, and obviously the same year's spat.

It was found that one cubic foot of the drifts contained approximately 3,600 specimens of *Macra*, so that Mr. Duggan's figures imply a belt nine miles

long, six feet wide and, say, seven inches average depth, from which a conservative estimate of the mortality of the *Macra* can be obtained. This figure is in the order of 600 millions and, as Orton has stated¹, represents a tremendous loss in fish food.

Two previous records of great numbers of molluscs being cast on to this beach have been made: Chaster² recording *Cardium echinatum* being washed up in great numbers in January 1891, and Orton¹ recording great mortality of *Abra alba* and *Donax vittatus* in November 1929.

Orton suggested that the mortality was due to a certain wave action set up by a combination of the action of spring tides and a strong inshore wind, which washed out the organisms in the surface layer of the sea bed. In the present case, however, the mortality occurred at the time of the spring tides, but an offshore wind was prevailing.

It is interesting to note that on each of these three occasions a different species was cast up. This might be due to one of two alternatives: either the population of the sea bed off the shore has changed in the time between each of these events, or a different area of the sea bed has been affected by the tides on each occasion.

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¹ Orton, J. H., NATURE, 124, 911 (December 14, 1929).

² Chaster, Southport Soc. Nat. Hist., 1 (1892).

Chitin Content of the Mandible of the Snail (*Helix pomatia*)

THE presence of chitin in the above-mentioned organ has been indicated so far by means of colour reactions only, probably owing to the lack of material. During the course of another investigation, we came into the possession of 650 mandibles (1 gm.), and an acetolytic breakdown experiment was carried out. After boiling with dilute alkali and hydrochloric acid, the remainder weighed 70 mgm., and yielded upon the application of Bergmann's method 8 mgm. of colourless needles which were identical with octa-acetyl chitobiose: m.p. 290°, nitrogen content 4.4 per cent. The experiment shows that the presence of chitin can be proved in even minute amounts of natural substances.

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Potential Hosts of Potato Viruses in Garden and Field

IN the spring and summer of 1938 one of us (R. N. S.) was working on potato leaf roll with the object of producing an attenuated strain of the virus. To this end, attempts were made to convey leaf roll not only to members of the Solanaceæ but also to a wide range of unrelated genera. Two successes were secured by means of grafts, one with *Matthiola*, the other with a garden *Campanula*, both of which behaved as carriers.

Encouraged by these results we have explored, during 1939, the possibility of such infections occurring in plants grown as field crops. In particular, we attempted to infect cruciferous weeds and cultivated