present experiments as well as those previously reported[1] indicate that adenylic acid can mediate still another reaction, namely, the transfer of inorganic phosphate in the formation of hexosemonophosphoric acid from glycogen. Inosinic acid is also, but less active.[6] In a dialyzed muscle extract to which adenylic or inosinic acid has been added as well as in a dialyzed extract incubated without addition of nucleotide, the first phosphorylation product is glucose-1-phosphoric acid. Addition of magnesium ions is without effect on phosphorylation but accelerates markedly the conversion of glucose-1- to hexose-6-phosphoric acid.

9139

Transmission of Estrogenic Substances from Animal to Animal.

ISABELLA H. PERRY AND ALLAN PALMER. (Introduced by Professor C. L. Connor.)

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We have been treating female white mice with massive doses of estrone (200 I.U.) painted on the skin.* To our astonishment a group of 25 untreated spayed mice, whose vaginal smears were all negative, all went into estrus. It had been our custom in treating or examining animals to take them from their cage, treat, and then place in a temporary box until all animals in a cage were removed, then return them to their cage. No transmission of estrogenic substances has been noted among a large number of female mice treated with subcutaneous injections of 1-10 I.U. of estrone.

To trace out the source of estrogenic stimulation we placed a standard mouse in the cage of each group receiving estrone, and one in the temporary box during a morning when the mice were being treated with estrone. A standard mouse is a young spayed adult known to respond to 2 I.U. of estrone administered subcutaneously. All of these standard mice went into estrus and remained in estrus for about 2 weeks. There could be only 2 probable routes of transmission and of reception of the estrogenic substance, *i. e.*, from the skin, and from the excreta, and through the skin, and through the

[6] Parnas, J. K., and Mochnacka, I., *Compt. rend. Soc. Biol.*, 1936, **123**, 1173.

* We are grateful to Dr. Oliver Kamm of Parke, Davis and Company for the preparation of "Theelin" used in these experiments.

mouth. To make a crude estimate of these factors we placed a standard mouse with a muzzle on in the cage with estrone-treated animals. A mouse in a paraffin sack, with only its head exposed, was also placed in a cage with estrone-treated animals. Two other muzzled and sacked animals were placed in the bottoms of cages of estrone-treated animals. The cages have false bottoms. Except for the period of exposure each standard mouse was caged separately. All four of these mice went into persistent estrus, indicating that all four probable routes are effective.

The volume and precision of work on the sex hormones, and on carcinogenic substances will increase and, in some instances, overlap. The transmission of estrogenic substances from animal to animal has not been previously reported. This observation is recorded in the hope that it will prevent such confusion as occurred concerning vitamin B, due to the transmission of the vitamin from animal to animal by excreta. The significance of the transmission of estrogenic substances from animal to animal is: one, that where animals are being treated with large amounts of estrogenic substances they should be kept segregated from any other animals under observation for estrus; and, two, where precision in dosage is required, animals should be kept in individual cages with false bottoms.

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Method of Preparing Mice for Quantitative Determination of Urinary Estrogen.*

ALLAN PALMER. (Introduced by C. D. Leake.)

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The methods of biological assay for urinary estrogen in use at the present time are dependent upon the production of estrus in a castrated mouse or rat. Various modifications of the original Allen-Doisy test have been used, such variations being single or multiple injections of either aqueous, glycerol, or oily extracts into castrated or immature normal mice or rats. Methods utilizing male animals and fish have not as yet proved of any great value for quantitative purposes.

Chemical methods for the determination of urinary estrogen have

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