tion of progestational proliferation in the castrated rabbit with extracts of *corpora lutea*.

During the past year we have been fortunate enough to have the opportunity of working jointly in the same laboratory on these reactions in an attempt to ascertain whether progestin produces mucification. While engaged in this task, Robson, 1931[4], reported the production of vaginal mucification in mice with progestin-containing extracts which had been treated with alkali. The details were not given but the fact that progestin is readily destroyed by alkali makes these experiments of Robson quite significant. Furthermore, he was able to produce the reaction with small amounts of oestrin prepared from follicle fluid, the dose used being one half that necessary to produce cornification.

Previously to the report of Robson we had been able to produce mucification in the rat with *corpus luteum* extracts made by extracting the fresh tissue with acid alcohol, boiling alcohol, or benzene, active material being obtained regardless of the solvent used. These extracts also always produced progestational proliferation in the adult castrated rabbit and therefore contained progestin. The extracts we had used were quite crude and probably contained oestrin, since no chemical procedure was used which would absolutely remove it. Similarly, none of those experimenters[1, 2, 4, 5, 6, 7] who have produced mucification by *corpus luteum* extracts have proved that the extracts used did not contain oestrin. On the contrary, analysis of the methods used by these workers makes it quite certain that they all did contain oestrin. These findings led us to carry out experiments designed to produce mucification with standardized oestrin-containing preparations.

When the article by Harris and Newman appeared we had been able to produce mucification in the guinea-pig and mouse by continued dosage with small amounts of Squibb's amniotin (an oestrogenic preparation from the amniotic liquor of cattle). This did not of course do more than indicate that oestrin might be the factor. Since then we have produced mucification in one adult guinea-pig, new-born guinea-pigs, mice, and rats with Parke, Davis and Company's theelin (crystalline oestrogenic preparation from the urine of pregnant women). Being producible by theelin, it seems fairly evident that the mucification is not due to progestin since in the preparation of theelin hot aqueous alkali is used, a procedure which destroys the activity of progestin. We feel, therefore, that the ability of theelin to produce mucification makes it reasonable to suppose that those who have produced mucification with *corpus luteum* extracts were obtaining a result due to the oestrin present and not to other specific hormones which they contained (progestin, relaxin).

The method we have used in general is to castrate adult rats, mice, and guinea-pigs in heat and to start injections with the oestrin preparation the next day and to continue for many days. The vaginal reaction was carefully studied by daily smears and by serial biopsies in the rats and guinea-pigs. The biopsy method was very satisfactory, in the guinea-pigs especially, and certainly facilitated greatly the progress of the work. In the guinea-pig 0.5 r.u. for about 25 days will bring about mucification equal to that seen early in the second month of pregnancy but not equal to that seen 24 hours *antepartum*. In the mouse mucification indistinguishable from that of even late pregnancy is produced by 0.04–0.06 r.u. per day for 8 days. Similarly in the rat good mucification has been obtained but the exact dosage has not been as carefully ascertained. We have also produced good mucification in new-born female guinea-pigs by giving 5.0 r.u. per day for 4 days. Mucification has also been produced in mice with oestrin made by extracting male urine with benzene, thus showing that oestrin made from a source other than the female organism is capable of producing the result.

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