

is easily split off by trichloroacetic acid and also by alkali. The iron is also split off by alkali. Controlled experiments with anæmic rats on hæmoglobin-building indicate that this complex (or rather its breakdown products, after absorption) may be a precursor for the formation of hæmoglobin. Previous elimination of copper from this complex has been found to diminish its hæmopoietic power. Quantities of iron and copper corresponding to a given quantity of the complex, when fed to animals, have considerably less potency regarding hæmoglobin formation than the original complex, which would indicate the importance of the organic moiety for hæmoglobin building.

Further work is in progress and the results are being published in the *Annals of Biochemistry and Experimental Medicine*.

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### Decreased Ovarian Response to Chorionic Gonadotropin following Hysterectomy in the Mouse

MANY attempts have been made to demonstrate a possible endocrine influence of the uterus upon the ovaries of animals. The most recent report dealing with this subject<sup>1</sup> describes degenerative changes in the ovaries of hysterectomized rabbits. An extract of rabbit endometrium appeared to retard the process of ovarian atrophy in another group of hysterectomized rabbits. The authors suggest that a protective influence upon the ovary is exerted by the uterus. Some clinical reports support the observation that conservation of some endometrium at the time of hysterectomy in the human lessens the severity of the menopausal syndrome following such an operation<sup>2</sup>. Other investigators leave the subject an open question.

That ovarian activity may be influenced by the uterus is suggested by the results of the following experiment in mice. Six 21-day-old female albino mice (litter mates) were hysterectomized through a small supra-pubic incision. Both cervixes were carefully removed. No intra-abdominal clamping or tying was done save for a single black silk ligature placed about the top of the vaginal stump. The incision was closed with a single skin clip. Four female mice from another litter of the same age were used as controls. At 22 days of age each mouse was injected subcutaneously with 0.5 c.c. (5 I.U.) of an aqueous solution of chorionic gonadotropin. The solution was prepared from the international standard preparation of this hormone, to contain 1.0 mgm. per c.c.

The animals were sacrificed 96 hours after injection. Vaginal introitus had been established in all the controls and all but one of the hysterectomized animals. Œstrous and metœstrous smears were present in the controls and mucus and leukocytes only were seen in the smears from the hysterectomized mice the vaginae of which were open. The ovaries from three of the four control animals contained corpora lutea while those from the hysterectomized animals contained none.

The experiment was repeated using ten more mice (five controls and five hysterectomized) of the same age. The amount of chorionic gonadotropin was doubled, that is, each mouse received 0.5 c.c. of an aqueous solution containing 2 mgm. of the standard hormone per c.c., or 10 I.U. The animals were sacrificed 96 hours after injection. Again, vaginal introitus had been established in all the controls and all but one of the hysterectomized mice. The controls exhibited œstrous and diœstrous vaginal smears and marked uterine growth and circulatory congestion. The vaginal smear from one of the hysterectomized animals was œstrous but the others contained leukocytes. Corpora lutea were present in all the ovaries of the controls but none was found in the ovaries of the hysterectomized animals. The ovaries of the hysterectomized mouse exhibiting full œstrus were enclosed in hæmorrhagic capsules. The ovarian tissue itself, however, appeared quite normal and contained no corpora lutea upon histological examination. With this exception none of the ovaries of the hysterectomized mice in either group showed any evidence of surgical trauma or degeneration.

The mouse unit of chorionic gonadotropin in this laboratory has been found to be approximately equivalent to 4 I.U. The experiment described above was carried out according to the bio-assay procedure by which our mouse unit of chorionic gonadotropin was ascertained: namely, a single subcutaneous injection of 0.5 c.c. of aqueous solution. The results of the experiment suggest that the absence of the uterus decreases the gonadotropic effect of threshold doses of chorionic gonadotropin on the ovaries of 20-day-old mice.

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<sup>1</sup> Mishell, D. R., and Molytoff, L., *Endocrinology*, **28**, 436 (1941).

<sup>2</sup> Marx, R., Catchpole, H. R., and McKennon, B. J., *Surg. Gynec. and Obstet.*, **63**, 170 (1936).

### Evolution of the Fleece of the Sheep

RECENT comparative studies of fibre-type arrays, mostly in the New Zealand Romney, have thrown new light on the probable course of evolution in the coat of the sheep from wild type to the most 'improved' domesticated fleeces. Fibre type arrays<sup>1</sup> are distinguished essentially by differences attributed to the lesser or greater power of the pre-natal check. The effect of this check stands out most clearly when, as in Ravine and Valley arrays, among fibres beginning their development before birth, it causes some starting to grow earlier to be finer than some starting to grow later. Fibre-type array is strongly inherited<sup>2</sup> and this fact gives confidence in the soundness of this new approach to the evolution of the fleeces.

Although I am now finding great interest in a study of the coat of wild lambs, the present communication deals with more advanced stages in the evolution of the fleeces. The course of evolution has run, I am satisfied, from Plateau, through Saddle and Ravine, to Valley and Plain. Within a given fibre-type array there are mostly quantitative differences which make it possible to arrange arrays in a