In our investigations, two electrodes, free from any obstructing layer, were attached to a cuprite crystal so that by the illumination an E.M.F. appears on them in consequence of the Dember effect. These electrodes were connected through two condensers with an alternating current source; the current flowing through the crystal caused an additional direct voltage as soon as the crystal was illuminated. In darkness, however, the alternating current did not cause any direct voltage. By exchanging the direction of the light both the Dember effect and the direct voltage, caused by the alternating current, changed their direction.

In Fig. 1, the resulting voltage, measured with an electrometer, is shown in relation to the alternating voltage applied to the crystal. In curve *b* the intensity of illumination was a quarter of that of curve *a*. Hence the intensity of the new appearance is related to that of the Dember effect. The value of direct voltage at the alternating voltage zero corresponds to the crystal photo-effect.

Several trials have proved that this appearance is caused by events in the bulk of the crystal (bulk-rectification) and not by the obstructing layers between the planes of the crystal and the electrodes. Moreover, rectifying action, caused by exposure to light, could not be formed in synthetic cuprous oxide, in which the Dember effect does not appear.

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[1] *Z. Phys.*, **82**, 754 (1933).

A Protective Action of Progesterone on the Genital Organs of Male Mice

IT is recognized that œstrone and progesterone are mutually antagonistic in some of their biological capacities. A fresh example of this antagonism has recently been observed at this Institute. Sixteen male mice, eight of which had been previously castrated, were given œstrone twice a week by cutaneous applications of a 0·01 per cent solution in benzene. On every day following these applications, progesterone was given to some by subcutaneous injections of 0·1 c.c. of a 0·1 per cent solution in sesame oil, to others by the application to the skin of a 0·1 per cent solution in benzene. The mice died or were killed at intervals from the 28th to the 120th day of the experiment.

After death, all the castrated mice showed the usual effects of œstrone, namely, keratinization of the coagulation gland, with arrest of secretion and epithelial hyperplasia in the seminal vesicle and prostate. The eight non-castrated mice, with one exception, showed none of these characteristic effects of œstrone. Spermatogenesis was in progress, the coagulation gland, seminal vesicle and prostate were normal in appearance, and in two instances normal ejaculation plugs were observed at death. In the exceptional case the mouse, which had been treated by cutaneous applications of progesterone, was killed on the 73rd day, and showed defective spermatogenesis, keratinization of the coagulation gland and loss of secretory function with epithelial hyperplasia in the seminal vesicle and prostate.

The difference between the results in the castrated and the non-castrated mice may perhaps be attributable to a combined effect in the latter of progesterone plus the testicular hormone. However this may be, it seems clear that progesterone can protect the genital organs of non-castrated mice from the injurious effects of excessive dosage with œstrone. In this connexion the similarity of molecular structure between progesterone and testosterone will be recalled.

For the progesterone used in this experiment we have to thank Prof. Schoeller of the Schering-Kahlbaum, A.G. of Berlin.

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Determination and Excretion of Flavins in Normal Human Urine

KOSCHARA[1] has demonstrated the presence of flavins in urine, and has been able to isolate a crystalline flavin (uroflavin). I have carried out an investigation to determine if large doses of flavins (ox liver), similar to vitamin C (Harris[2] and van Eekelen[3]) and B_1 (Harris[4]), caused an increased urinary output.

The quantitative determination of the flavins in urine was carried out in the following way (details will be published elsewhere):

(1) Adsorption with lead sulphide. The lead sulphide was previously prepared, washed out and added to the urine. This was found to be preferable to the method generally used (addition of lead acetate to the flavin solution and introduction of hydrogen sulphide).

(2) Elution with a mixture of water-pyridine-glacial acetic acid (8 : 2 : 0·2).

(3) Oxidation with potassium permanganate in acetic acid solution and determination of the resulting colour with the stuphometer (*S* 47).

In normal urines (males), a daily urinary output of 819–1250 γ was found. The excretion per hour during the different periods of a day was found to vary between 30 γ and 50 γ.

Two subjects *A* and *B* (analysts) consumed cooked ox liver (100–140 gm.). Subject *A* took 5710 γ flavin[5] and excreted during 24 hours after the intake 3283 γ (normal excretion 952 γ), whereas subject *B* took 4240 γ and excreted 1797 γ (normal excretion 885 γ). The largest excretion per hour was observed two to three hours after the intake of the liver (subject *A*, 378 γ; subject *B*, 139 γ).

From these investigations, which took place in June, it follows that an increased excretion of flavins in urine took place after consumption of liver, probably caused by a 'saturation' of the subjects with flavins.

Further investigations are in progress.

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[1] *Z. physiol. Chem.*, **232**, 101 (1935).
[2] *Biochem. J.*, **27**, 2011 (1933).
[3] Dissertation, Utrecht (1936).
[4] *Lancet* (1936).
[5] *Acta Brev. Neerl.*, **5** (1935).