thermostable, is nevertheless eminently surface-coagulable, that is, like egg-albumin, fibrinogen and certain other proteins[1], when adsorbed from aqueous or aqueous saline solution at interfaces with any gas or with various neutral oils, it promptly forms a coagulated surface membrane which can be dragged off as a thread, if traction is exerted on it while it is being formed and is still sufficiently plastic.

This surface coagulability makes it necessary to state that the coagulation by freezing is far too massive to be explicable as coagulation solely at the surface of frozen-out gas bubbles. Further, when solutions of egg-albumin are frozen, coagulation is limited to the surfaces of the frozen-out gas bubbles.

I had expected to find that coagulation by surface influence was responsible for the conversion into fibroin, but observation (1) and others, an account of which will, it is hoped, appear shortly, have led to the conclusion that absorptional coagulation proper has nothing to do with it, and that the conversion is brought about, either entirely or almost entirely, by the shearing to which the paste is subjected in the silk-channels.

Added in proof, Dec. 3. I now find that Foà[2], investigating spontaneously coagulable aqueous extracts of finely divided silk-depots, solutions which would contain much besides fibroinogen, observed that freezing 'accelerated' their coagulation, and also that fairly thick layers of coagulated protein (doubtless 'surface-coagulated', W.R.) collected on solids dragged repeatedly from their free surfaces. From this latter fact he inferred that the coagulation of depot content into the fibroin of silk was brought about by traction.

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[1] *Proc. Roy. Soc.*, A, **72**, 156 (1903); NATURE, **112**, 671 (1923).
[2] Foà, *Koll. Z.*, **10**, 7 (1912).

Œstrogenic Activity of Anol; a Highly Active Phenol Isolated from the By-Products

IN a previous communication[1], it was suggested that the œstrogenic activity of crude specimens of anol and of the mother liquor from these preparations may be due to the presence of a polymer possessing an extremely high degree of potency. The active substance has been isolated by the following procedure:

Anethole was demethylated by heating in an autoclave with potassium hydroxide and alcohol. The phenolic products were completely re-methylated and from the mixture of methyl ethers, anethole, together with some *p*-methoxy-*n*-propyl benzene, was removed by steam distillation. The residual thick oil was distilled at 0·15–0·2 mm., when almost half passed over between 160° and 170° C. and produced œstrus in rats with doses of 2 mgm. This oil fraction was oxidized by treatment with finely powdered potassium permanganate in ice-cold acetone and the products separated into anisic acid (i), α-(*p*-methoxy-phenyl)-*n*-propyl methyl ketone (ii) and a saturated oil (iii). The production of (i) and (ii) demonstrates the presence among the products of demethylation, of the di-anol already described by us[2].

The saturated oil gradually deposited a small amount of a crystalline substance which, after purification, melted at 144° C. and gave on analysis: C, 80·7; H, 8·8; CH_3O-, 20·1 per cent. ($C_{20}H_{26}O_2$ requires C, 80·5; H, 8·8; CH_3O-, 20·8 per cent.) When this substance was demethylated, the resulting phenol melted at 184–185° C., and gave on analysis C, 79·9; H, 8·2 per cent ($C_{18}H_{22}O_2$ requires C, 80·0; H, 8·2 per cent.)

The phenol produced full œstrus response in all rats when administered in doses of 0·2 γ. Doses of 0·15 γ gave 60 per cent and doses of 0·1 γ gave 20 per cent response.

The substance proved to be identical with the 4 : 4′-dihydroxy-γ : δ-diphenyl-*n*-hexane, produced by hydrogenation in presence of palladium of 4 : 4′-dihydroxy-γ : δ-diphenyl-β : δ-hexadiene[3], or of 4 : 4′-dihydroxy-α : β-diethyl stilbene[4], although in poor yield from the latter.

A full account of the synthetic work on these substances is now being prepared, and will shortly be submitted for publication in collaboration with Mr. L. Golberg and Prof. R. Robinson.

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[1] Dodds, E. C., and Lawson, W., NATURE, **139**, 1038 (1937).
[2] Campbell, N. R., Dodds, E. C., and Lawson, W., NATURE, **141**, 78 (1938).
[3] Dodds, E. C., Golberg, L., Lawson, W., and Robinson, R., NATURE, **142**, 34 (1938).
[4] Dodds, E. C., Golberg, L., Lawson, W., and Robinson, R., NATURE, **141**, 247 (1938).

Trimethylamine in Menstruous Women

HAVAS'S recent communication in these columns[1] on the suggestive hormonal properties of trimethylamine recalls the fact that it was so long ago as 1902 that Michin[2] first directed attention to the presence of trimethylamine in the vaginal secretion of women. Michin carried out his investigations on Russian women. Briefly, his findings were as follows:

The percentage of trimethylamine in normal women varied between 0·07 and 0·72, with a mean of 0·33. In women with various genito-urinary disorders the range was 0·00–0·64 per cent.

Cases with metastatic tumours were associated with a significant increase in the amount of trimethylamine; more benign tumours with a less appreciable increase. In primiparæ, the average amount was 0·30 and in secundiparæ 0·29. During parturition, the amount is between 0·1 and 0·86 per cent, with a mean of 0·31. In four out of nine women at the climacterium no trimethylamine was found, and in five others it was more or less reduced. In post-menopausal women, trimethylamine was altogether absent. Trimethylamine was found to be very bactericidal, and in a solution of 1 : 15,000 completely inhibited the growth of most bacteria and reduced the activity of others.

It is of interest here to note that in 1927, Klaus[3] obtained trimethylamine from the menstrual discharge, and in 1930 Lanczos[4] found that a preparation of frog's gastrocnemius muscle loses excitability when either the nerve or the muscle is treated with dilute solutions of trimethylamine. She also found that the same effect is obtained when these structures are held by a menstruous woman for 10–15 minutes. This suggests that trimethylamine may be excreted through the skin during menstruation, and that the