

Table 2. EFFECT OF RAPIDITY OF THAWING ON THE ACTIVITY OF *Avena* MITOCHONDRIAL SUSPENSIONS AFTER STORAGE IN THE FROZEN STATE. Addenda as for Table 1. Exp. 1: 0.60 mgm. nitrogen per 0.5 ml. mitochondrial suspension. Exp. 2: 0.48 mgm. nitrogen per 0.5 ml. mitochondrial suspension

Exp.	Storage in days	Conditions of thawing	mm. ³ Oxygen absorbed per mgm. nitrogen in 60 min.	Relative activity
1	0	—	226	100
	1	30 sec. at 30° C.	261	115
	1	5 min. at 2° C.	249	110
	1	2 hr. at 2° C.	133	59
2	0	—	272	100
	2	30 sec. at 30° C.	303	111
		6 min. at 2° C.	270	99
		5 hr. at 2° C.	161	59

The technical assistance of Mrs. M. C. van Beijma is gratefully acknowledged. This work was done during the tenure of a research fellowship granted by the South African Council for Scientific and Industrial Research.

J. M. TAGER

Plant Physiological Research Institute,
University of Pretoria,
Pretoria.
June 30.

¹ Hele, P., *J. Biol. Chem.*, **206**, 671 (1954).

² Millard, A., and Bonner, J., *Arch. Biochem. and Biophys.*, **49**, 343 (1954).

³ Tager, J. M., *Physiol. Plant.* (in the press).

⁴ Umbreit, W. W., Burris, R. H., and Stauffer, J. F., "Manometric Techniques and Tissue Metabolism" (Burgess Pub. Co., Minneapolis, 1949).

Effect of Thyroxine on Sexual Behaviour in the Ewe

THE administration of thyroprotein to female rats caused an increase in weight of the ovaries, with histological evidence of intense luteinization¹. It was found that iodinated casein proved beneficial in improving libido and fertility in inactive bulls. It has also been found to overcome 'summer sterility' in rams². So far, little work has been carried out to investigate the effect of thyroxine on the various reproductive processes in the ewe.

In an experiment conducted at the Animal Research Station, Cambridge, to investigate the effect of orally administered L-thyroxine on wool production in the ewe, nineteen ewe lambs were used. Five of them were given L-thyroxine in gelatin capsules daily for eleven months from August 15, 1952, to July 17, 1953. For the first six weeks the dosage was 3.5 mgm.; it was raised to 5 mgm. for the next six months and then maintained at 4.5 mgm. for the last three and a half months. After two months of the cessation of thyroxine administration and at the beginning of the breeding season (October 1953), when the treated ewes were allowed to run with the ram, they exhibited hyper-sexual activities characteristic of male behaviour, namely, jumping and mounting other animals. These symptoms took place at the normal breeding season. It appears that an intensification of the normal oestrous behaviour took place at about the time of ovulation. However, these ewes were served and lambed as normal.

Another experiment was conducted to investigate this effect and also the possibility of bringing the ewes on heat during the anoestrous period. Of ten ewes, five were fed daily 7 mgm. L-thyroxine from April 1 to May 20, 1954, the other five being used as controls.

They were running continuously with a vasectomized ram. The ram's briskets were ochred daily and the ochre colour was changed every fourteen days. Observations for oestrous were carried out daily. None of the treated ewes was served by the ram. However, two ewes showed the same type of hyper-sexual activity as had been observed previously. The two ewes did not attract the attention of the ram running with them, and neither did the other ewes. The ram was changed and replaced by another ram known to have recently served artificially oestrous ewes, but this ram also did not serve the two ewes. Moreover, the two ewes did not show normal oestrous periodicity. They were active intermittently, with never more than four or five days rest. Laparotomy was performed on the more active of the two ewes the day after it was observed to be active. Both ovaries were very small and showed no sign of follicular activity. These observations seem to be a more abnormal type of behaviour not linked to ovarian activity. Perhaps the best way to explain these results would be to attribute this behaviour to an effect on the central nervous system. It is well known that, in the human, hyperthyroid individuals tend to be over-excitable.

J. Hammond, jun.³, observed jumping on other ewes by an anoestrous ewe injected with stilboestrol. He also observed it once in a normal ewe at oestrous and often in normally oestrous ewes after stilboestrol injection (personal communication). He offered the opinion that such male behaviour seems to be due to prolonged stimulation rather than to heavy dosage of oestrogen. However, there is no evidence that in the animals treated with thyroxine oestrogen secretion was at all enhanced.

So far as bovine fertility is concerned, it is of great importance to have a wider knowledge of the effects of hyperthyroidism induced by the administration of thyroxine on ovulation and implantation of the fertilized ova.

I am indebted to Dr. John Hammond for his guidance and advice, and to Mr. J. Hammond, jun., for suggestions during the course of the present investigations.

F. M. LABBAN

School of Agriculture,
University of Cambridge.
July 30.

¹ Koger, M., and Turner, C. W., *Mo. Agric. Exp. Sta. Res., Bull.*, **377** (1943).

² Blaxter, K. L., Reineke, E. P., Crampton, E. W., and Peterson, W. E., *J. Anim. Sci.*, **8**, 307 (1949).

³ Hammond, jun., J., *J. Endocr.*, **4**, 169 (1945).

Phenetidine in Urine

THE urinary substance referred to as *B* in a previous communication¹ has now been isolated in pure form. It can be shown to be *p*-phenetidide by its infra-red and ultra-violet spectra, the melting point of a picrate (176–180° C.) and lack of depression of melting point in a mixture with authentic *p*-phenetidide picrate (179–181° C.). It is present in urine as a labile acidic substance which can be precipitated by lead acetate and purified by paper chromatography from butanol-acetic acid (*R_F* about 0.5). The precursor seems to be a conjugate with sulphuric acid. About 2–3 per cent of administered phenacetine is excreted in this form.

Substance *B* was believed to be a tryptophan metabolite because a compound with the melting