phoric and lactic acids are derived from this must be one that is quite independent of that by which the glycogen itself is broken down.

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Experimental relaxation of the pubic ligament of the guinea pig.

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The extraordinary separation of the pubic bones of the guinea pig in late pregnancy has been recorded by several investigators. Todd[1] has made the most recent contribution to this subject and has thoroughly discussed previous research as well as described the gradual changes that take place at the symphysis during normal pregnancy and the subsequent return to the post-parturient condition typical of multiparous females. The writer has been interested in this phenomena for the last four years, chiefly from the standpoint of its physiological explanation and possible correlation with a similar condition which has been studied in the pocket gopher.[2] In the pocket gopher the pubic bones are resorbed at the symphysis before pregnancy occurs, and the reaction is governed by the ovary, while in the guinea pig relaxation of the pubis occurs during pregnancy and little or no bone is resorbed, but the connective tissue at the symphysis is greatly increased, allowing a marked separation of the bones.

It has been possible to produce changes in the pubic ligament of virgin guinea pigs by experimental procedure and these are apparently identical with those occurring normally during pregnancy. If 2 cc. of blood serum of pregnant rabbits or guinea pigs are injected subcutaneously into virgin guinea pigs during early post oestrum a noticeable relaxation of the pubic ligament can be discerned within six to eight hours by movements at the

[1] Todd, T. W., *Am. J. Anat.*, 1923, xxxi, 345-357.

[2] Hisaw, F. L., *J. Exp. Zool.*, 1925, xlii, 411-441.

pubis. These movements gradually become more pronounced during the next eighteen hours and the ligament may not return to its normal condition for two or three days. The blood of males and nonpregnant females does not bring about this reaction, and the blood of parturient females loses its effectiveness very noticeably within the first eight hours, negative results being usually obtained from blood drawn 24 hours after the young are born. The blood of all pregnant animals does not possess the ability to bring about this reaction. Serum prepared from the blood of pregnant cats, dogs, and rats gave entirely negative results when injected into virgin guinea pigs that responded positively to rabbit serum.

These results, while interesting, do not throw light on the source of this active substance and an attempt has been made to locate the organ or organs responsible for its production. The fact that the pubic ligament seems to be more easily influenced when pregnant serum is administered at a time close to oestrum, apparently indicates that the ovary plays some part in the process, but the relaxation and connective tissue multiplication at the symphysis does not cease after pregnant animals are spayed. Also the injection of saline extracts of dessicated whole ovaries gave entirely negative results while the injection of liquor folliculi gave only an occasional positive reaction. It is also possible to inject the extracted follicular hormone and produce artificial oestrum of long duration without noticeably effecting the pubic ligament, but if pregnant rabbit serum is then injected positive results are obtained quite readily, showing that the animals were in the proper physiological condition to respond. These observations indicate that the ovary may be of some importance but is not entirely responsible for a positive reaction.

It is also possible to produce relaxation of the pubic ligament by the injection of other materials. Positive results were obtained quite readily through the injection of saline extracts of rabbit placenta and whole amniotic liquor, but saline extracts of fetuses gave only negative results. These observations when considered with the fact that the blood of pregnant rabbits loses its relaxative properties within a short time after birth of young, and that relaxation is produced more easily during early post oestrum, point toward the conclusion that the pubic ligament, through the action of the ovary, is put in a physiological condition favorable for re-

sponding to relaxative materials secreted by the foetal membranes. It is appreciated, however, that the data at hand are not extensive enough to form a sound basis for far-reaching conclusions but seem worthy of a brief preliminary report.

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The behaviour of caramelised carbohydrates.

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A recent note in the PROCEEDINGS by Deuel, Mandel and Waddell[1] leads us to report one of a series of experiments which we undertook some time ago, using a preparation of caramelized oatmeal with normal diabetic patients as suggested by Grafe.[2] Grafe had used caramel as a substitute for ordinary carbohydrates as far back as 1911.[3] It was found, however, that its use was liable to produce diarrhea.

The preparation which we used was Satrose, made by Messrs. Schering. It is said to contain nitrogen 2 per cent; fat 2.3 per cent; cellulose 8 per cent; ash 2 per cent, and carbohydrate 75 to 80 per cent. It is a brown powder with the taste of burnt brown paper. Although we gave it in the way suggested by the makers, we were unable to induce many of our patients to take it. This, combined with the fact that we were not able to make out any notable effect on the metabolism, lead us to abandon further work with it. From the standpoint of practical dietetics with the diabetic it does not appear to possess any advantage.

We give the results of administering 50 grams of Satrose and 50 grams of glucose to the same diabetic patient in the post-absorptive state.

* Assisted by a grant from the Medical Research Council.

[1] Deuel, H. J., Mandel, A. R., and Waddell, S. F., PROC. SOC. EXP. BIOL. AND MED., 1926, xxiii, 431.

[2] Grafe, E., *Deutsch. Arch. für klin. Med.*, 1923, cxliii, 1; see also Grafe, E., and Otto-Martiensen, *ibid.*, p. 87, and Magin, H. and Turban, K., *ibid.*, p. 97.

[3] Grafe, E., *Deutsch. Arch. für klin. Med.*, 1914, cxvi, 437.