A more detailed account of these experiments will be published elsewhere. This work was done under the auspices of the Atomic Energy Commission.

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An Inactive Thyroid Gland in *Carassius auratus*

Carassius auratus has been subjected to prolonged artificial selection which has established several unusual features. Among these is the inactivity of the thyroid gland. This gland consists of follicles scattered along the anterior region of the ventral aorta; the follicles are typically inactive, with squamous epithelium and abundant colloid.

The activity of the teleostean gland increases with rising environmental temperature, particularly when nearing the upper limit of the viable range, and is indicated by structural change, which is emphasized by treatment with anti-thyroid drugs. Reaction time of the thyroids of *Phoxinus phoxinus* and *Lebistes reticulatus* varies between two and fourteen days according to the season[1,2]. *Carassius auratus* has a temperature-range of 0–41° C.[3]. Exposure to high environmental temperatures (40° C. for one week; 35° C. for three weeks; 30° C. for five weeks; 25° C. for eight weeks) has no effect on the thyroid structure, and it is not affected by exposure to a low temperature. Immersion in anti-thyroid drugs—0·1 per cent thiourea at 30° C. for five weeks; 0·005 per cent *p*-amino-benzoic acid at 25° C. for three weeks; 0·001 per cent potassium thiocyanate at 25° C. for five weeks—is also ineffective. When the thiocyanate treatment is extended to eight weeks, some glands show marked histological change with increased epithelial height and a reduced amount of colloid, although some remain inactive. Higher concentrations of the drugs prove fatal. The experiments were repeated at intervals throughout the year, so the lack of response cannot be due to a period of seasonal inactivity. Compared with the thyroid of *Phoxinus phoxinus* and *Lebistes reticulatus*, the gland of *Carassius auratus* is unusually inactive.

It has been suggested that the increased thyroid activity at high temperatures is responsible for the limiting of the temperature-range by the upper lethal temperature. It seems probable that the wide temperature-range of *Carassius* is associated with the presence of an inactive thyroid gland.

The inability of the gland to concentrate radio-iodine confirms that it is functionally inactive[4]. The thyroid is reported to be extremely sensitive to thyrotropin[5], which suggests that the latter is normally absent.

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Biting Times of Parous and Nulliparous *Simulium damnosum*

During dissections of the biting fly *Simulium damnosum* in the Sudan in July 1948 [1] it was found that the proportion infected with developing *Onchocerca* worms was nearly twice as high in flies caught before 1 p.m. as in those caught later in the day. Many *S. damnosum* were dissected at Farangbaia in the Tonkolili valley, Sierra Leone, in October and November 1955, and it was noticed that, on some days at least, more flies with a plentiful fat-body (indicating that they were nulliparous) were present in afternoon than in morning catches. It thus appeared that nulliparous flies tend to bite largely in the afternoon; but no exact figures were obtained because the amount of fat-body is very variable and does not always clearly differentiate parous and nulliparous flies.

It was found, however, that the appearance of the ovaries and their ducts, when examined in normal saline, would nearly always serve to distinguish the two conditions. In nulliparous flies the oocytes are closely packed in the ovaries and the oviducts are narrow. In parous flies the oocytes, when small (as they nearly always are in caught flies because *S. damnosum* seldom bites when its eggs are developing), tend to be loosely arranged and the oviducts rather broad and wrinkled. The differences in the oviducts cannot be measured, unlike those in anopheline mosquitoes which have a definite ampulla[2]; but they can generally be quickly detected after a little practice. In the few doubtful cases the condition of the fly can be ascertained by examining other features such as the presence or absence of a meconium and the state of the fat-body.

The ovaries of flies caught biting at Farangbaia between December 14 and 29 were next examined. Out of 179 caught in the mornings 60·9 per cent were found to be parous and 12·3 per cent to contain developing *Onchocerca*. Among 202 flies caught in the afternoons 25·2 per cent were parous and 5·9 per cent contained developing *Onchocerca*.

Evidently a person bitten by the same number of flies in the morning and the afternoon would be more likely to be infected with *Onchocerca* in the former, at least in certain localities at certain seasons. When flies are required for dissection to ascertain the infection-rate it is clearly important to choose a suitable time of day for catching. It is desirable to avoid wasting time in dissecting a lot of nulliparous flies