

THE INFLUENCE OF PARATHYROID HORMONE UPON BONE FORMATION IN *Xenopus Laevis*, by J. T. Irving and C. M. Solms (Joint Dental Research Unit of the Council for Scientific and Industrial Research and the University of the Witwatersrand, Johannesburg; and the Department of Physiology, Medical School, University of Cape Town).

This communication and the next report work which is a continuation of that previously published [Fox and Irving, 1950a, b].

Forty-nine female *Xenopus* weighing approximately 60 g. were used. They were injected once intraperitoneally with "Lilly" parathormone in doses of 1/10, 1/5, 1/2, 2 or 3 units in equal volumes of solution, and were killed 3 hours to 12 days subsequently. Control animals were injected with the same volume of saline. Blood was taken for Ca estimations and the femora were removed, decalcified and stained after longitudinal section with haematoxylin and eosin.

The blood Ca levels did not change significantly throughout the whole of the experiment compared with those of the controls. An osteoclast response was observed in several bones in the parts of the femoral shaft normally undergoing resorption. This response occurred with one exception from 6 to 48 hours after injection at all dose levels, and while evident, was not nearly so pronounced as has been reported in mammals. The osteoclasts were large multinucleated cells, situated against the bone face and usually in Howship's lacunae, and often containing orange staining material.

Both Jordan [1925] using *Rana pipiens*, and Fox and Irving [1950a] working with *Xenopus*, found either no osteoclasts or excessively few in the bones of adult animals. Schlumberger and Burk [1953] injected 100,000 or more i.u. of vitamin D into *Xenopus* and observed osteoporosis and Howship's lacunae with osteoclasts in the femora. They also gave 10 units of parathyroid extract to *Rana pipiens* and obtained an occasional small focus of osteoclastic activity. It would thus appear that amphibia are not very sensitive to mammalian parathyroid extract, and it may well be that amphibian parathyroid hormone differs chemically from that of mammals. Amphibia are, however, able to form osteoclasts, an excessively rare cell in adults, if the stimulus is sufficiently great. In the present experiments the parathormone was tested on rats and found to be active in raising the blood Ca level.

#### REFERENCES

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Oestrogen is well known to cause medullary bone formation in birds [Bloom *et al.*, 1941] and mice [Gardner and Pfeiffer, 1938]. Pfeiffer [1951] at a conference on bone formation enquired if this action of oestrogen had been tested on *Xenopus*, and as far as is known this has not been done.

Two groups of *Xenopus* were chosen, young frogs taken two to four days after metamorphosis, and adult female frogs about 60 g. in weight. The young frogs