the sheds. However, there was a time during which it did not eat the shed skins and sometimes one or two of them were to be seen in the aquarium decaying. In any case, this specimen of amphiuma lived from 9 June 1961 to 13 February 1964 without food, a period of 2 years and 9 months, while losing 54% of its weight.—GORDON GUNTER, *Gulf Coast Research Laboratory, Ocean Springs, Mississippi.*

BEHAVIORAL RESPONSES OF THE MALE GREEN FROG, *RANA CLAMITANS*, TO ITS RECORDED CALL.—Traditionally, amphibians were not thought to exhibit agonistic behavior. However, recent investigations have shown that some dendrobatid frogs (Duellman, 1966, Herpetologica, 22:217–221; Sexton, 1960, Ecology, 41:107–115), a hylid frog, *Hyla faber* (Lutz, 1960, Copeia, 1:61–63), and the pipid frog, *Xenopus laevis* (Rabb and Rabb, 1965, Amer. Zool., 5:275), are definitely aggressive toward members of their own species. The above studies describe intra-specific behavior which seems associated with defense of a territory and usually occurs between males.

There is growing evidence that some North American anurans also display aggressive behavior in defense of territories. Whitford (1967, Herpetologica, 23:318) witnessed apparent territorial behavior in breeding male spadefoot toads (*Scaphiopus hammondi*); when the 10-foot spacing between the males broke down, aggressive interactions ensued. Via recapture data, Martof (1953, Ecology, 34:165–174) and Oldham (1967, Ecology, 48:477–491) have demonstrated that the adult male green frog, *Rana clamitans*, establishes a primitive type of territory where calling males are not found within a certain minimum distance of each other. At times the integrity of the territories is very likely defended through physical contact. Brode (1959, Herpetologica, 15:40) has observed pairs of male green frogs standing upright on their hind legs engaged in wrestling combat; these pawing duels continued until one of the participants retreated.

On 19 and 20 July 1967, a portable Sony Recorder (Model TC 800) was employed to make tape recordings of green frog calls at a lake on the Kulli Recreational Area in McCurtain County, Oklahoma. This recorder has a frequency response of 50–18,000 cps which completely overlaps the sensitive hearing range of the green frog (Kleerkoper and Sibabia, 1959, Z. Vergleich. Physiol., 41:490–499; Schmidt, 1964, Behaviour, 23:280–293). The recorded calls were broadcast at a volume subjectively set to simulate an actual frog. The calls of an undisturbed frog were recorded for 12 min and served as the stimulus for the following observations.

Upon playback, no changes were noted in the calling behavior of surrounding males unless the speaker was brought within 2–3 m

of a male; this same distance, incidentally, was the minimum spacing Martof (1953) found between the male green frogs in his study. Under the latter condition, a definite alteration in the frog's behavior was elicited by the recording. From an average calling rate of once every 18 sec, the initial reaction of the subjects was an extended period of silence which in one case endured for a minute. This silence was followed by one of two vocal reactions.

One type of response was a sound very distinct from the normal call, being guttural in quality and resembling a growl. The frog usually intoned this growl three or four times in quick succession, and the series was generally repeated after each call from the recorder.

The second vocal response heard was similar to the normal call, only delivered more sharply. The frog repeated this with progressively decreasing time intervals (*i.e.*, 23, 18, 12 sec). If the call of the recorded "intruder" persisted, the observed male commenced to growl as described above. On one occasion a frog left his calling site and began to call in close proximity to an adjacent male. Both frogs broke into a growling dialogue.

During the period of vocal exchange between recorder and subject, one frog could be seen in the bright moonlight rotating until he faced directly toward the speaker. The frogs would also advance toward the speaker when the tape was played. Their approach was unpredictable, there being an indeterminant period of time between each jump. No frog actually reached the speaker; most likely the presence of the observers was detected before this could occur.

These observations seem to indicate that the adult male green frog has an additional call with which he alerts his neighbor when the latter is trespassing. If heeded, the warning call may help prevent possible combat such as that observed by Brode (1959). Considering the 3-month calling period during which territories are maintained, such energy conservation would be significant; this is of particular importance in view of the severe weight loss in energy-storing organs and of the reduced food intake of the males during the period of June through August (Jenssen, *in manuscript*).—THOMAS A. JENSSEN AND WILLIAM B. PRESTON, *Department of Zoology, University of Oklahoma, Norman, Oklahoma 73069.*

ONTOGENETIC CHANGES IN THE TOOTH NUMBER OF *AMPHIUMA TRIDACTYLUM*.—Baker (1945, Rep. Reelfoot Lake Biol. Stat., No. 9:55–91) noted that the number of teeth in the "premaxillo-maxillary" series of *Amphiuma tridactylum* varied from 50 to 55, the vomero-palatine teeth from 23 to 24, and the dentary teeth from 36 to 40. In 1963 and 1964 I obtained a large series of skulls of *Amphiuma tridactylum* in Orleans and Jefferson parishes,