was not clear whether on not the trabeculae contained smooth muscle. Hoffmann (*op. cit.*) made no mention of such a vascular plexus in the nasal passages of the hawksbill, but his sections were taken through more posterior parts of the nose.

Such a vascular network can have little to do with warming the air passing into the lungs in a poikilotherm, as is believed to be the role of a somewhat similar plexus in parts of the human nose. Probably this plexus is the mechanism for closing the nostril in sea turtles, for when it became engorged with blood it would swell and the opposite sides of the nasal passages would approach each other.

A closure of this nature obviously prevents water from entering the respiratory passages, but the question arises as to why this is necessary when turtles are at rest, if closure of the glottis is sufficient at other times, as it usually must be. I saw no indication that the nostrils are regularly closed during submergence, as Legendre (*op. cit.*) noted. Again McCutcheon's study (*op. cit.*) throws some light on this question. He found that a mechanical stimulation, such as tapping the shell, caused the glottis to open. Moreover, sensitivity to stimuli increased as the time following inspiration increased. He also found that general muscle tonus was lowered during prolonged apnea. Sea turtles at rest on the bottom for a prolonged period therefore might be hypersensitive to stimuli that would cause the glottis to open reflexly, or they might have such low muscle tonus that the glottis would not be tightly closed. I suggest that the closure described here is an adaptation to prevent water entering or air leaving the respiratory passages under these conditions.

I wish to thank the staff of the Marineland Research Laboratory and Marine Studios for the opportunity to make these observations. In particular, I am indebted to Mr. Frank S. Essapian for taking the photograph shown in Fig. 1 C, and to Mr. Mickael Castagna for help with the preparation of the slides.—WARREN F. WALKER, JR., *Department of Zoology, Oberlin College, Oberlin, Ohio.*

THE GLIDING FLIGHT OF *HOLASPIS GUENTHERI* GRAY, A WEST-AFRICAN LACERTID.—During a herpetological expedition to Southern Nigeria we have had ample opportunity of studying the beautiful little lacertid lizard *Holaspis guentheri* Gray. This lizard is an inhibitant of the tree trunks in the tropical rain forests of West Africa. It is, however, not found in the closed forest, but only in clearings where the sun can penetrate. It is active by day, especially when the sun is shining, at which time it can be seen running up and down the trunk searching the crevices in the bark for insects.

One of us (A. S.) had repeatedly seen a *Holaspis* suddenly appearing on a trunk, as from nowhere, which led us to suppose that it was able to make short jumps like many geckos and agamas. In order to study its jumping ability, we decided to keep a specimen under constant observation for some time. An animal sitting high up on the trunk just under the crown of an oil palm was chosen for the purpose. For about half an hour it sat motionless, head downwards, then it started circling around, as if looking for something. In the binoculars we could see it turning its head from side to side. Suddenly it jumped off the trunk; and, to our great surprise, performed a perfect downward glide through the air, and landed securely, head upwards, on another trunk about 10 meters distant from the one it had left. The track of the flight was first rather steep, but during the last few meters it leveled out. There was a slight rise just before the landing. During the first part of the flight the longitudinal axis of the lizard almost coincided with the direction of the flight, but during the last part it carried its body more and more obliquely in the air until it at last stood vertically on its track, finally landing at reduced speed with its belly against the trunk and the head upwards.

The height of its starting and landing points and the horizontal distance between the trees were measured. The horizontal distance between the two trees was found to be 10.5 meters and the approximate length of the track was calculated to be 13.5 meters with a drop of 9 meters. The average slope of the track was about 42°. The whole performance gave the impression of being deliberate, since the animal was not in any way frightened by us, and it obviously aimed at the landing point from the start of the flight. There was no wind to help the flight.

Having ascertained this gliding ability in *Holaspis*, we have repeatedly seen it perform similar glides. It is therefore beyond doubt that such gliding flights form a normal feature in the behavior of *Holaspis*. Once it was observed to span a small river in this way, landing securely on a trunk on the other side. Another time the animal landed on the trunk of a fallen tree and immediately began running about in search of prey. The exactness of its aim and its ability to follow a staked course is shown by a case in which the animal landed on a small piece of loose bark projecting from the trunk. During one of the flights the animal was observed to curve its back in the horizontal plane, apparently in order to steer the flight.

Unlike the flying lizards (*Draco*) of southeast Asia, *Holaspis* has no striking morphological adaptations for gliding flight, which possibly explains why this ability has not been previously suspected, although it is able to flatten its body to an extraordinary degree. This ability is often used when the animal is basking in the sun on a tree trunk, and then its body may become almost circular in outline and flat as a coin. Although we have not so far been able to observe the body shape during the flight, it is a fair guess that the body is kept flat in order to increase the carrying surface during the flight. The tail of *Holaspis* is rather broad and flattened on the lower surface. Furthermore, it is provided with a row of large projecting scales on each side. These scales have been supposed to aid the animal's securing its hold when climbing on the bark (Schmidt and Inger, *Living Reptiles of the World,* 1958). This function is, however, extremely doubtful. First, the position of the enlarged scales is on the side and not on the lower surface, which would be more practical if they were to get a hold in the bark; second, *Holaspis* moves as easily downwards as upwards on the trunks; and third, when the animal is seen in profile on a trunk, it is often possible to observe that there is space between the tail and the bark, in other words, the tail is not pressed firmly against the bark. It seems therefore much more likely that during the flight the projecting scales serve to increase the carrying surface and the steering ability of the tail. Once during a flight a faint rattling noise was heard, which may have been caused by the air making vibrations in the projecting scales that are rather loose in the live animal. None of the numerous specimens collected by us has had a regenerated tail.

As far as we know, this is the first example of gliding flight in a lactertid and also the first time this ability has been demonstrated in any African lizard.—ARNE SCHIØTZ AND HELGE VOLSØE, *University College Ibadan, Nigeria, West Africa.*

BIRTH AND LITTER SIZES OF THE BLUE SPINY LIZARD *SCELOPORUS CYANOGENYS*.—A series of *Sceloporus cyanogenys* was collected on March 15, 1958, in Webb County, Texas. Seven females were gravid at the time of capture and were observed during the gestation period and birth of the young. The females were isolated from the males from the time of capture.

As the time approached for the birth of the young, the females were placed in individual observation cages to retain the small lizards and maintain accurate records for each female. These cages were periodically checked to ascertain the time of birth for each litter.

At birth, the young were surrounded by the fetal membranes which formed an oblong capsule. Measurements for four capsules were 12 × 20 mm.; 13 × 20 mm.; 13 × 21 mm.; and 14 × 20 mm. Within this membrane, the young lizard was curled up with the tail passing across the anterior end and folded back parallel to the body. The legs were also folded back parallel to the axis of the torso. Delivery was usually with the anterior end appearing first, although several were observed when the posterior portion of the lizard was presented first. The expulsion of the capsule was usually preceded by abdominal contractions which lasted from 15 to 60 seconds. Two individuals did not show any contractions, two had an average of three contractions lasting 15 seconds each, and the remaining three females varied in number and duration of the contractions.

Within 30 seconds, movements began that soon freed the head of the young lizard. After the head was through the membrane, from two to ten minutes were required for the lizard to emerge completely. One specimen was unable to rid itself of the amnion, and in fifteen minutes it had dried and effectively rendered the young lizard helpless.

The eyes were open within two minutes after birth and appeared functional immediately. After gaining their freedom, the young would remain motionless for several minutes to one hour. They would then move about the cage with agility and feed on ants and fruit flies that were placed in the cage.

During the labor and birth of the young, the adult females were sluggish and took little notice of activity outside the cage. Respiration increased. They would raise themselves with the forelegs, allowing the posterior portion of the body to remain close to the ground. The tail was curled up and around allowing the young to be born without any interference from this organ. The adult did not eat the membranes after the young had escaped, nor was any attention given to the newborn.

When first handled by the author, the young discharged clear liquid from the cloaca. In a few cases, a white solid material (presumably uric acid) was observed in the liquid.

No sexual dimorphism was observed in the young. The dorsal pattern is similar to the adults but much more vivid, more closely approximating the adult female in coloration and pattern. The ventral surface is pearly white with no dark spots. A ventrolateral patch of very light blue is present in both sexes. The dark nuchal collar varies from four to five scales in width on the lateral portions. The head