

NOTES

1. The Nesting habit of Leathery Turtle
Dermochelys coriacea

The nesting habit of the Leathery turtle *Dermochelys coriacea* (Linné), does not appear to have been described by any zoologist who observed the process, for opportunities to study this animal are rare. Recently a female was discovered when she came ashore to lay. Previous observations have shown that the nesting season reaches its maximum intensity in Ceylon during May and June, after the beginning of the south-west monsoon¹. Broad beaches of fine sand, devoid of fringing reef are preferred, and as many as seven or eight nest trails sometimes occur within one kilometre of beach. Examination of freshly made nests at night showed that the turtle usually came ashore between 9 and 11 P.M. and in the present instance the animal was observed at about 9.30 P.M.

Glistening silvery in the moonlight, the turtle ascended the beach in a straight line to the sandy embankment created by the scouring action of the waves. Through this obstacle she cut her path with simultaneous jerks of her powerful fore flippers and gained the dry sand. Here, she commenced what Sinhalese fishermen term a 'sand-bath' flinging up a shower of sand over her back to a distance of about three metres by strong simultaneous jerks of her fore limbs. The upward direction of these movements differed from her usual shuffle. The turtle probably tested the density of the sand while 'sand bathing' for each jerk of her fore flippers excavated hollows which were 16 to 26 cm. deep. Her course was zig-zag and she even doubled back upon her track searching for a suitable place in which to nest. Meanwhile she was completely coated with sand, except for her eyes, which were washed by a copious flow of tears. After a satisfactory place was found, she dispelled the loose sand with a few preliminary sweeps of the flippers; a shallow

¹ Deraniyagala, P. E. P. 1930—The Testudinata of Ceylon. Ceylon J. Sci. (B) XVI. pp. 43-88, pls. 7.
19—J. N. 49058 (9/35)

cavity was next hollowed out posteriorly with a side to side movement of her carapace, facilitated by the out-stretched hind limbs and cruro-caudal fold of skin. During this operation, her fore flippers sank into the sand and apparently acted as anchors, while a cushion-like mound of sand lay heaped behind each. After these preliminaries she excavated a smaller nest hole within the crater by working the hind limbs alternately, flinging the sand to a distance of 80 cm. or more as it was brought up. When the combined depth of the crater and the nest hole was about 100 cm. and she could no longer reach the bottom of the pit, she began to lay.



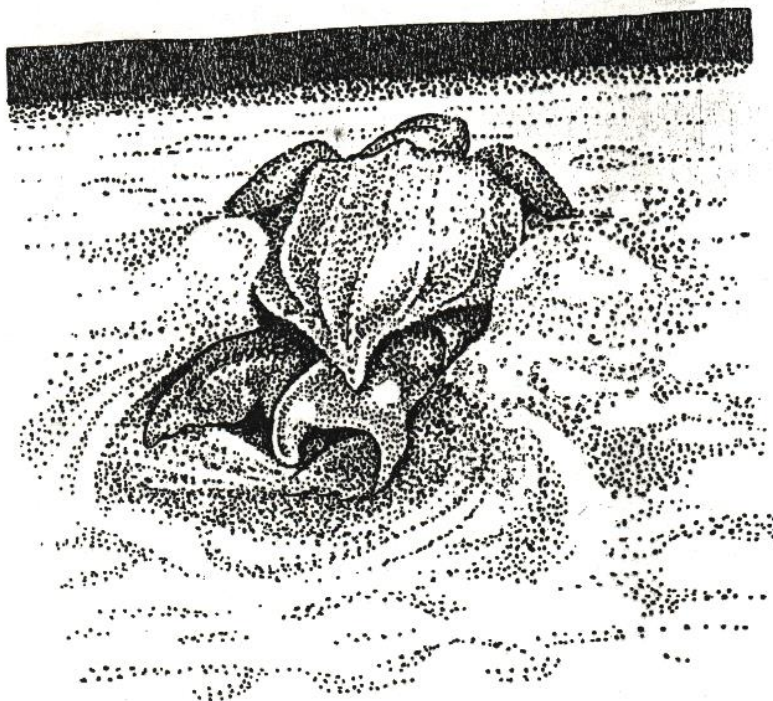
P. Deraniyagala del.

Fig. 1. *Dermochelys* laying $\times \frac{1}{16}$

Anchored by the fore limbs, the turtle sloped her body into the pit at an angle of about 35 degrees, protruded her cloaca, and then deposited the eggs in batches of two or three at a time, moving her head up and down as she strained. Her breathing was somewhat stertorous and a peculiar fishy odour was noticeable. Her eggs laid, she began to fill in the nest hole working the hind limbs alternately, each taking up a flipperful of sand which was gently placed upon the eggs¹.

¹ Two types of eggs are laid by *Dermochelys*. Normal ones containing albumen and yolk and with a diameter of 50-54 mm. usually number from 90-110 and abnormal ones which contain only albumen and are either small or variable in shape; these number 10-20 and are the last to be laid. According to egg collectors *Dermochelys* lays fewer eggs than either *Lepidochelys* or *Eretmochelys*.

This was continued until the eggs were well covered, after which the sand was pushed in rapidly. Eventually, with her fore limbs still buried, the animal demolished the brink of the nest pit by swinging her outstretched hind quarters and tail rapidly from side to side, although the carapace was stationary. During this procedure, every time a hind flipper touched the ground, it flung the sand crosswise towards its fellow with a rapid scooping movement (Fig 2).



P. Deraniyagala del.

Fig. 2. *Dermochelys* swinging her hind quarters above nest $\times \frac{1}{16}$

Although the turtle is said to be cautious in her approach to land, once oviposition commenced the animal was completely indifferent to the presence of man, noise or lights, and this indifference persisted even after she had covered up the eggs and had begun to churn up the beach all round the nest, in spite of blows (Fig. 3).



P. Deraniyagala del.

Fig. 3. *Dermochelys* showering sand with fore flippers $\times \frac{1}{17}$

When the nest was nearly covered, she moved her front limbs for the first time since oviposition commenced. Both were jerked back simultaneously, showering sand over her back and into the pit; but without visibly altering her position. She worked the front and hind limbs in turn over five minute intervals, the former always with a simultaneous jerk, the latter generally alternately. Eventually she gyrated on her plastron upon the nest area and flung up great scoopfuls of sand with her fore flippers, occasionally employing her head to push down any ridges of sand created during this process. Throughout this phase the turtle did not appear to move from the nest and it was only by comparing the animal's position with a haversack I had laid down when first she commenced to dig, that it became apparent that she had moved quite two metres during ten minutes. At this stage I struck her a sharp blow on the head with a stick and sat upon her, but undeterred she continued to churn up the sand and worked shoreward instead of towards the sea.

After a time she doubled back on her tracks and slowly and laboriously repeated the process. Finally she decided that her duty was done, and it was certainly very thorough, for after she had gone, three of us dug for an hour with our hands but were unable to locate the eggs. The departing turtle no longer showered sand with her fore limbs, but wearily made for the sea stopping after every two or three shuffles, blowing most of the time. Gradually she recovered her energy

and rested only after every ten or fifteen shuffles. She approached the wave line and there paused. The breakers were rough on the night of May 29, 1984, at Tangalla (Southern Province). When the surf reached her, she allowed herself to be washed away into the waves without exerting herself. At her first attempt she failed to get past the breakers, but as the next wave rose she hugged the ground, escaped under the wave, and was gone.

The track of *Dermochelys* is of interest. In marine *Thecophora* the nest is generally at the bend of a V formed by the ingress and egress trails of the animal. In *Dermochelys* the track roughly resembles the three sides of a rectangle of which the middle one is a long churned up area of sand in which the nest may be located anywhere. The marks left in the sand were as follows:—each time the long fore flippers shifted forward their tips cut thin arcs in the sand, and as the animal jerked herself forward, each limb impressed a wide furrow with a ridge of earth heaped along its posterior margin. The push off with the hind limbs formed an inner row of shallower furrows. As in most marine *Thecophora*, the tip of the tail ploughed a thin median furrow in the sand. The majority of tracks showed the ingress and egress trails about six to twenty metres apart, while the churned up area was generally five to ten metres long and two or three wide. In this instance, however, the turtle returned to the sea by the ingress trail, though this seldom happens.

The nesting behaviour of *Dermochelys* appears to be very intelligent for a testudinate. Young specimens in captivity are, however, less educable than marine *Thecophora*, for they never seem to realize that the sides of their tank are solid and persistently swim into them, thereby injuring their flippers and snout, which never heal owing to this habit. Marine *Thecophora*, however, soon perceive the nature of their prison walls and such injuries seldom appear and rarely last long.

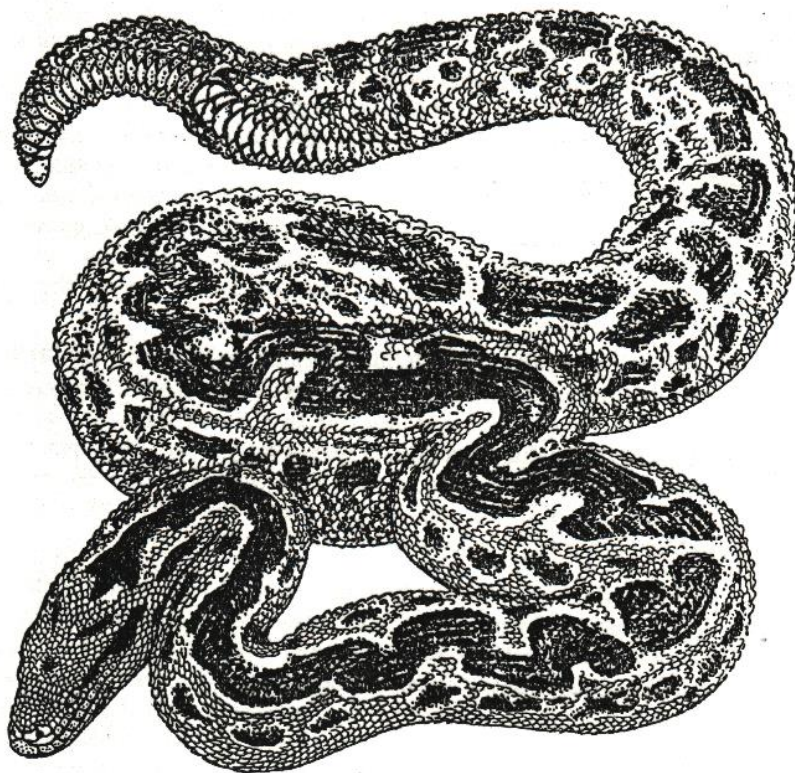
Allied to the automatic swimming habits of this turtle, is its action in continuing to churn up the sand after she had been struck, while the simultaneous jerks of the fore limbs¹ which act as if the animal were attempting to swim on land, suggests that its nesting behaviour is essentially a series of reflexes which are less controlled by intelligence than would at first appear to be the case. The sand bathing habit is probably similar and of thigmotropic origin, for it commences soon after the turtle reaches dry sand. This habit, or rather reaction, is of definite protective value to the slaty-black animal, which is soon

¹ *Dermochelys* swims by simultaneous sweeps of both fore limbs. The hind limbs are chiefly employed as balancers but occasionally are placed edge to edge and flapped up and down.

coated with sand and rendered inconspicuous upon a moon lit beach. The same habit also effectually conceals the eggs, for the odour of the turtle is evenly imparted throughout the disturbed area and thus renders it more difficult for other animals to scent out the nest hole, or determine its position by inspection and judgment.

P. E. P. DERANIYAGALA.

2. A boa new to Ceylon.



P. D. del.

Fig. 4. *Gongylophis conicus* $\times 1$

The family Boidae was hitherto thought to be represented in Ceylon by a solitary species, *Python molurus* Linné. As a collection of reptiles from Marichchukadde, presented to me by G. Pillai, keeper of the Government Bungalow there, contained a solitary *Gongylophis conicus*