

*floribunda* collected near Kumaon. Thirumalachar and Basheer Ahmad Khan<sup>1</sup> (1941) recorded the same feature in *Eriodendron anfructosum*.

During the course of embryological studies on the Araliaceae the author noticed a single case of embryo-sac reversal in *Heptapleurum penulosum* Seem, which is an interesting record for that family. The egg apparatus was situated at the chalazal end, the synergids showing prominent basal vacuoles. The antipodals are

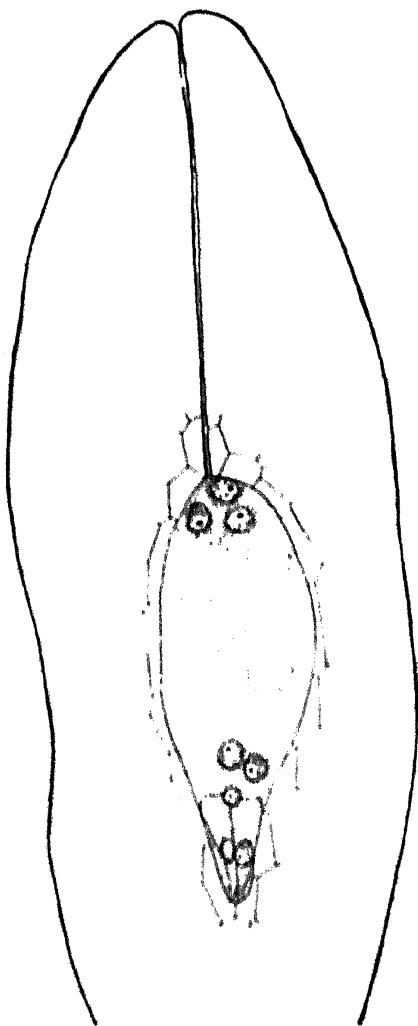


FIG. 1

Showing reversed polarity of the embryo sac. — 570

sometimes cellular, in normal cases, situated in a chalazal pouch. In the embryo-sac with reversed polarity, the egg apparatus was organised in the chalazal pouch. The three nuclei at the micropylar end remained as such without becoming cellular.

Joshi and Venkateswaralu (1935) in their account of the embryo-sac reversal in *Woodfordia floribunda* state that it was the first clear case of reversed polarity observed in an eight-nucleate embryo-sac. In *Lindlofia longiflora* where Svensson records reversed polarity, the antipodals were absent. In *Eriodendron anfructosum* also the antipodals show early degeneration. The lack of antipodals in these forms due to early degeneration which is

characteristic of the form should not preclude them from being recognised as normal eight-nucleate embryo-sacs. Only in *Atomaseo texana* appreciable numbers of embryo-sac reversals are known, and the single cases noticed in *Woodfordia*, *Eriodendron*, *Heptapleurum* and others are abnormalities probably without any significance.

Thanks are due to Dr. L. N. Rao for his guidance.

Bangalore,  
January 10, 1943.

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#### SPORE-GERMINATION OF *GANODERMA LUCIDUM* (LEYSS.) KARST.

*Ganoderma lucidum* (Leyss.) Karst. is a cosmopolitan species, growing as a saprophyte as well as a wound-parasite on a large number of hosts. After repeated attempts Coleman<sup>1</sup> in 1927 failed to germinate the spores, and believed that the failure might be due to chitinous endospore. Bose<sup>2</sup> in 1929 successfully germinated the spores in malt-extract agar medium (3 per cent. malt-extract, 2 per cent. agar and 100 c.c. dist. water, pH 6.9). Venkatarayan<sup>3</sup> subsequently in 1936 failed to germinate the spores, though he tried a number of media.

It is now found that spores germinate easily in 3 per cent. and 2 per cent. malt-extract agar medium. For this purpose sporophores were collected from Calcutta on 16th September, 7th October and 21st November 1942. The sporophore was separated from the substratum carefully without touching the hymenial surface, and was kept as a whole without sectioning, above the agar-floor of a sterilised agar plate by means of three glass rings. A number of mature brown spores was thrown on the next day in each case. The spore fall continued for two days. The spores were aseptically transferred to malt-extract agar tubes (2 per cent. malt-extract, 2.5 per cent. agar and 100 c.c. dist. water, pH 6.8), where they are growing normally; the hyphae are hyaline, branched and septed, the septa showing a good number of clamp-connections. During this period the room-temperature varied from 32° to 20° C. and the relative humidity, from 98 to 52 per cent.

It was found that in laboratory conditions the sporophores discharged spores for 1 to 2 days only. Field observations for a number of years indicate that in *Ganoderma lucidum* the spore fall is usually abundant when the colour of the hymenial surface is grey and moist, the spore fall becomes less when the colour is changed to white and it usually stops when the colour turns brownish. In a private communication to Dr. S. R. Bose dated 30th May 1932, E. J. H. Corner of the Singapore

Botanic Garden wrote that *Ganoderma* sporophores throw out spores only when they are well-grown with their tubes 1 cm. or more long. But in these specimens of *G. lucidum* the sporophores had tubes only 2-3 mm. long.

This work was carried out by me as Kirtikar Research scholar of the Calcutta University in the Botanical Laboratory of the Carmichael Medical College, under the direction of Dr. S. R. Bose, Professor of Botany.

Calcutta,  
December 18, 1942. SUBODH KUMAR SENGUPTA.

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A NOTE ON THE NESTING HABITS OF  
THE OLIVE LOGGER-HEAD TURTLE,  
*LEPIDOCHELYS OLIVACEA*  
(ESCHSCHOLTZ) AT KRUSADAI  
ISLAND\*

THREE species of turtles, namely, the Green Turtle *Chelonia mydas* (Linne), the Olive Logger-head Turtle *Lepidochelys olivacea* (Eschscholtz) and the Hawksbill Turtle *Eretmochelys imbricata* (Linne) occur in the sea around Krusadai Island. The edible Green Turtle is common but curiously enough it does not nest on the Island. The Hawksbill Turtle is very rare in its occurrence. The Olive Logger-head Turtle is just as common as the Green Turtle. There is a fishery of the Logger-head Turtle in the coastal villages of the Gulf of Manaar.

*Nesting:* That of the Logger-head Turtle alone on the sandy coast of Krusadai Island

Date	Phases of the Moon	Date on which nests were located	Number of nests
20-10-41	New Moon	18-10-41	1
4-11-41	Full Moon	2-11-41 & 7-11-41	2
19-11-41	New Moon	17-11-41	1
3-12-41	Full Moon	3-12-41	1
18-12-41	New Moon	16-12-41 & 21-12-41	3
2-1-42	Full Moon	30-12-41, 2-1-42 & 4-1-42	3
16-1-42	New Moon	16-1-42	1
1-2-42	Full Moon	1-1-42	2
15-2-42	New Moon	17-2-42	1
3-3-42	Full Moon	5-3-42	1
16-3-42	New Moon		—
1-4-42	Full Moon	1-4-42	1
15-4-42	New Moon	18-4-42	1
		Total number of	nests 18

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came under my observation. Altogether eighteen nests were examined. There seems to be a lunar periodicity in the act of oviposition as will be evident from the above table.

The nest is but a simple burrow dug out in the sand above and away from the high water-mark. The distance between the high water-mark and the burrow varies from 6 to 30 feet. The burrow is about 1½ ft. wide at the bottom and 1 ft. wide at the top and 2 ft. deep. The long axis of the burrow forms an acute angle with the surface-level axis of the ground and its blind pocket is turned away from the sea. Thanks to the maternal instinct of the mother-turtle to hide all traces of the packing of her eggs in the burrow, she bites off pieces of plants found in the neighbourhood, such as Ravana's moustache, *Spinifex squarrosus*, the herb, *Launea pinnatifida* and the Ground-Glory, *Ipomea biloba* which grow wild in the Island, and covers the top of the burrow.\* For one or two days immediately after nesting, the nest can be easily spotted by the trail of the mother-turtle and the damp soil of the now closed external orifice of the burrow. The nesting season commences in October of one year and ends in April of the following year—wide table.

*Eggs:* The number of eggs in a nest ranges from 90 to 125. The eggs are spherical and their diameter varies from 36 to 39 mm. The shell is leathery. The eggs are packed in the blind pocket of the burrow to a height of 1 ft.

*Incubation:* Eggs removed from the nests and buried in pits 1½ ft. to 2 ft. deep, dug near the Laboratory, hatch. The period of incubation is from 54 to 56 days. The embryos after hatching out remain in the nest from 4 to 6 days. Subsequent daily observations revealed that the hatched young ones worked their way upwards to the surface at the rate of 2 to 3 inches a day. Finally they reach the surface on the 4th, 5th or 6th day after hatching, and toddle towards the sea, on entering which they paddle away unaided. The axis of exit follows the slanting long axis of the burrow scooped out by the mother-turtle as well as the vertical long axis of the pit dug artificially, thus indicating that the young ones are guided only by the looseness of the sand packed.

*Economic Aspect:* Turtle-nest hunting is seldom practised and consequently, the percentage of young ones added annually to the existing stock of Logger-head Turtle population must be considerable. This perhaps partly explains the abundance of this turtle in the sea of Krusadai. In Ceylon, the eggs of this turtle are sold in fish-markets, whereas in the maritime villages near Krusadai, they are only occasionally eaten by turtle catchers and, therefore, do not extend into general consumption, another factor which doubtless contributes to

\* Deraniyagala who has observed the nesting habits of the same turtle in Ceylon does not record this detail. For other differences between his description and mine, the reader may refer to pp. 154-55 of "The Tetrapod Reptiles of Ceylon," Vol. I, by P. E. P. Deraniyagala.