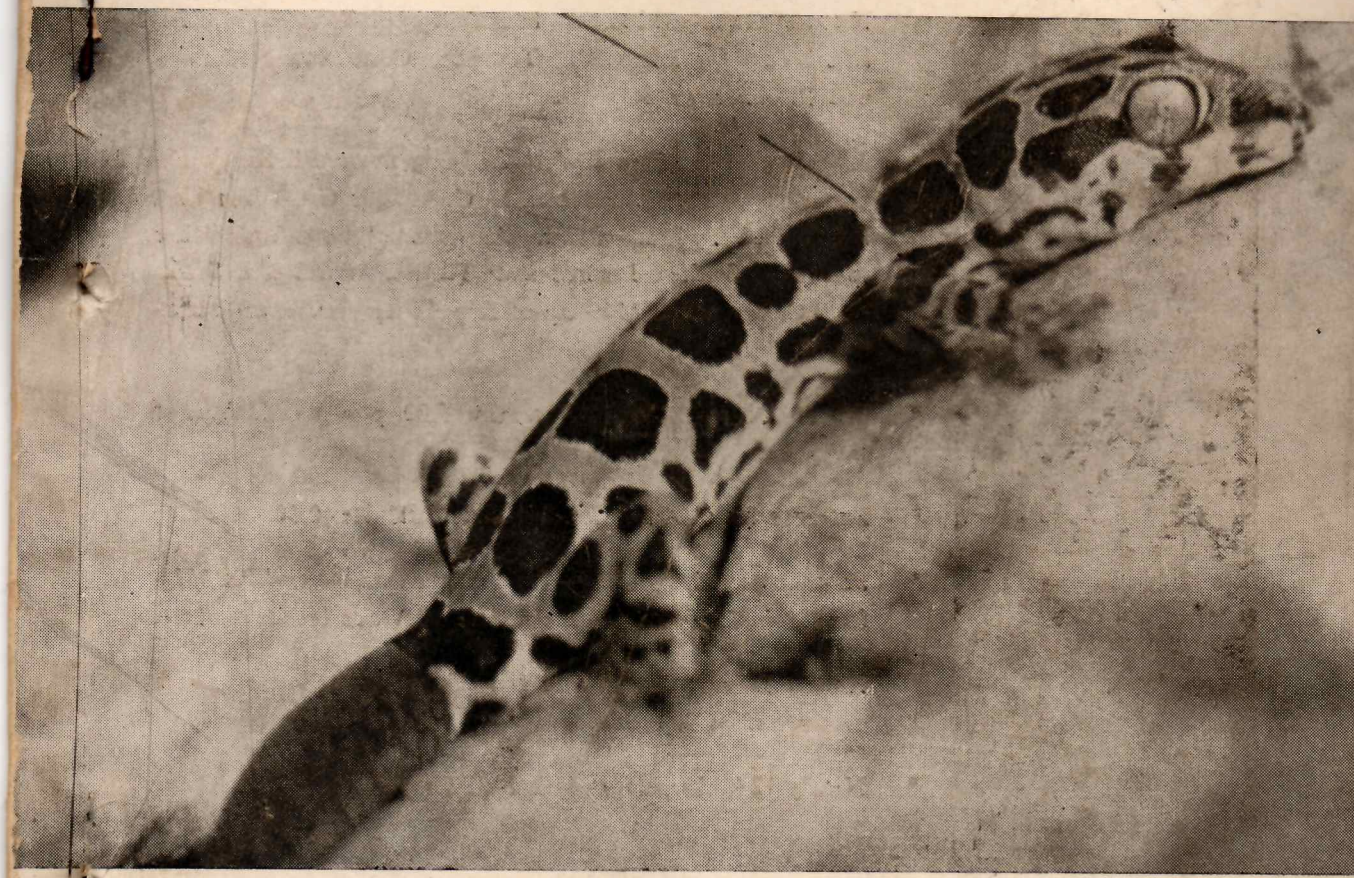
Cobra

Number 4 — Quarterly Newsletter — April-June 91



Leopard Gecko
Cyrtodactylus collegalensis
Photo by: A.J. Ganesh Prasanna

Madras Snake Park Trust
Guindy National Park - Guindy
Madras - 600 022. - India

Malaiar 3/7/92

WELCOME TO MADRAS SNAKE PARK TRUST

* The Madras Snake Park Trust was established in 1971 on a one-acre plot of forest land leased by the Govt. of Tamil Nadu at Guindy, Madras. Managed by a Trust, the MSPT is a centre for Education, Tourism, Conservation, Service and Research on Reptiles.

* A variety of live Reptiles, both Indigenous and Exotic are displayed which include Marsh Crocodile, Giant Tortoise, Reticulated Python. South American Iguana and other species of Snakes, Lizards and Turtles. Besides, a Snake Lore Centre and a Museum of Reptile specimens are maintained.

* The Park is open from 8.30 a.m. to 5.30 p.m. on all days of the year.

* **Entrance fee :** Adult Re. 1/- and Child Re. 0.50.

* Photography charges are—free for still cameras and Rs. 100/- for Video Cameras. For commercial Video contact office.

* Hourly Demonstration of a few kinds of live Reptiles with commentaries is conducted.

* Nearly 12 lakhs persons visit MSPT a year.

COBRA

Quarterly Newsletter of the Madras Snake Park Trust

CONTENTS

Annual Subscription for 4 issues of COBRA commencing from 1—1—91	Rs. 75/- Inland US $ 10/- Overseas (including postage)

MADRAS SNAKE PARK TRUST PROGRAMME FOR "INDIA TOURISM YEAR - 1991–1992"

1. Special pamphlets on common poisonous snakes and non-piosonous snakes with special legends about them to be issued at Rs. 3/- and Rs. 5/-.

2. The regular hourly reptiles demonstration now being conducted in Hindi / Tamil / English will also be extended with special tapes in several Indian languages like Kannada, Telugu, Malayalam, Bengali, Oriya, Marathi, Punjabi, Gujarati, Goanese, Urdu etc. and Foreign languages like Russian, Japanese, Spanish, German, French, Chinese, Italian etc.

Tourist groups could avail of these special demonstration at Rs. 50/- Indian and Rs. 100/- or US $ 5 for Foreign languages.

Opening of the Exhibition Building displaying—

—Reptile lore around the world.

—Myth, Mythology, Worship and other interesting facets of Reptile-lore in our Indian Culture to commemorate the India Tourism year 1991—1992.

SNAKES OF ECONOMIC IMPORTANCE IN RAJASTHAN

R.C. SHARMA

Desert Regional Station Zoological Survey of India, Jodhpur.

Many species of snakes exhibit strong predation on the numerous insect and rodent pests of agriculture in Rajasthan and thus serve as a friend of the farmer. The numerous species of snakes namely *Typhlops braminus* Daudin, *Eryx johni* (Russell), *Eryx conicus* (Schneider), *Coluber ventromaculatus* Gray, *Coluber fasciolatus* Shaw, *Sphalerosophis atriceps* (Fischer), *Sphalerosophis diadema* Schlegel, *Sphalerosophi arenarius* (Boulenger), *Ptyas mucosus* (Linnaeus), *Boiga trigonata* (Schneider), and *Echis carinatus* (Schneider) can be very well placed in this catogery.

The worm snake, *Typhlops braminus* feeds on termites, small caterpillars, crickets and other small insects which damage the agriculture crops. Most of the larger snakes mentioned above are the enemies of gerbils (*Tatera indica*, *Meriones hurrianae*, *Gerbillus gleadowi*, and *Gerbillus nanus*), field rats (*Millardia meltada*, *Golunda ellioti*, *Rattus cutchicus* and *Rattus rattus*), mice (*Mus musculus*, *Mus booduga*, *Mus cervicolor*, *Mus platythrix*), bandicoots (*Bandicota indica* and *Nesokia indica*), small to medium birds, Squirrels (*Funambulus pennanti*). The body of the victims is coiled around and pressed strongly in powerful jaws. Some times the victims are killed by powerful strokes of head. Certain larger Colubrid snakes like Royal snake, *Sphalerosophis atriceps* (Fischer); Rajatbansi or Diadem snake, *Sphalerosophis diadema* Schlegel and Red-spotted Diadem snake, *Sphalerosophis arenarius* (Boulenger) have got a special liking for gerbils (*Tatera indica*), field rats (*Millardia meltada* and *Golunda ellioti*), mice (*Mus musculus* and *Mus booduga*), sparrows and squirrels (*Funambulus pennanti*). These snakes are in abundance in or around the agriculture fields in Jodhpur, Pali, Jaisalmer and Barmer districts of Rajasthan and enter from one burrow to the other in search of field rats, gerbils and mice. All these snakes are good climbers and during night they climb on trees for capturing squirrels and nestling birds. The victims are generally killed by constriction. Saw-scaled Viper, *Echis carinatus* (Schneider) is a strong predator on desert locusts (*Schistocerca gregaria*), red ants (*Monomarius aberrans*), insects like *Chrotogonus* sp., *Schizodactylus* sp., beetles and their grubs; desert mice (*Mus booduga* and *Mus musculus*).

REPTILES OF MADHAV NATIONAL PARK

RAJIV SAXENA

Hanuman Nagar, Phalka Bazar, Gwalior-474 009 (M.P.)

The forests of Madhav National Park (77° 15'—78° 30'E and 24° 50'—25°55,N) in Shivpuri district of North Madhya Pradesh, are northern dry deciduous mixed type. Sakhya Sagar and Madhav Lake with their areas of 3.00 sq. km. and 0.49 sq. km. tespectively, are two main waterbodies situared in the central zone of the park. Two national highways (No. 3 and No. 25) divide this 165 sq. km. national park into three parts. Besides reptiles reported here, the dominant species of mammals are leopard, wild dog, sloth bear, wild boar, chital, sambar, nilgai, chinkara, hare and mongoose. About 230 species of birds have so far been counted, out of which 60 species are waterbirds including migratory and local migratory birds. Demoiselle and Common cranes, and Barheaded and Grey leg geese are common winter visitors besides a large number of ducks.

The reptiles listed here are based on my field diaries of numerous visits which were undertaken to study birds and mammals of the national park since 1984. No specific efforts has been made to study the rep iles of Madhav National Park. Whenever sighted, they were noted down. In the national parks the reptiles or any other wildlife cannot be collected. Therefore, they could not be preserved. They were identified with the help of local experts and later checked with the help of books on reptiles. My field experience was the best guide.

Crocodiles

1. Mugger or Marsh Crocodile-*Crocodylus palustris.*

They are sighted in Sakhya Sagar which was built in 1918 and an unspecified number of mugger was released into this lake. On 10.i.88, eight muggers were seen basking at different places within two hours. On 15.vi.91 a nest containing 31 eggs was found. Some eggs had already been eaten by crows. This nest was unusual because of its location. It was in a hole which was dug for tree plantation. This may be due to the fact that other areas in the periphery of Sakhya Sagar remain disturbed because of the fish poaching in the night. Out of 31 eggs, 15 successfully hatched and hatchlings were released into Sakhya Sagar.

Turtles

2. Flap Shell Turtle-*Lissemys punctata.*

Only one specimen was seen on 21.x.90, about 300 m. away from Sakhya Sagar on a *kuchcha* road in the national park. There had been heavy rains in previous four days. It could not be ascertained whether the turtle was washed away in the rains or it was making an overland jounrey.

Lizards

3. Northern House Gecko-*Hemidactylus flaviviridis.*

Seen only in the occupied and deserted buildings inside the national park.

4. Common Garden Lizard-*Calotes versicolor.*

Common in lower branches of trees in mixed forest between Sakhya Sagar and Madhav Lake. This area is wet throughou t

the year because of the leakage, and sometime deliberately making water flow from Sakhya Sagar to Madhav Lake. This portion of forest gives an impression of wet green forest rather than dry deciduous one.

5. Common Skink-*Mabuya carinata.*

6. Snake skink-*Riopa punctata.*

Only four sightings were recorded, all of which were after rains near rock crevices along roads inside the park.

7. Common Indian Monitor-*Varanus bengalensis.*

Commonly seen in the rocks where there was loamy soil around. It may be mentioned here that from the Shivpuri district towards Morena district along Chambal river, its density increases. Along Chambal river where the soil is loamy and sandy loam and termite mounds are numerous they are very common. Some of them are even found crushed on the highway. Local 'Nad' tribe kills them for various uses.

Snakes

8. Python-*Python molurus.*

Not common. After rainy season when the grasses are upto four feet high they were seen on the road in the night. In daytime their drag marks were seen on sandy road. It seems that they prefer to go on road in place of wading through the high and dense grass to move from place to place.

9. Dhaman-*Ptyas mucosus.*

10. Common Kukri Snake-*Oligodon arnensis.*

11. Checkered Keelback-*Xenochrophis piscator.*

12. Schneider's Smooth Water Snake-*Enhydris enhydris.*

This snake is frequently seen near the Sailing Boat Club Building which overlooks Sakhya Sagar. Once this "slender" snake was seen moving on the narrow wall of the building at about 14 hours.

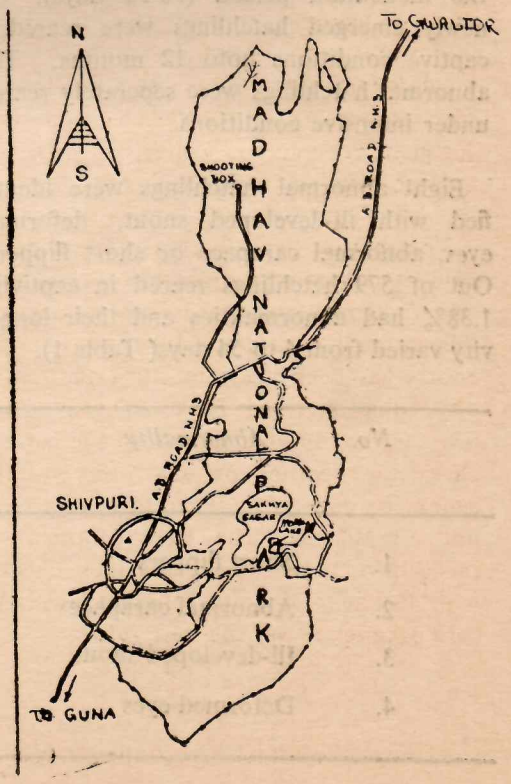
13. Common Indian Krait-*Bungarus caeruleus.*

14. Indian Cobra-*Naja naja.*

Only two sighting in the wet sandy area in the periphery of Sakhya Sagar.

15. Russel's Viper-*Vipera russelli.*

Outline Map of Madhav National Park



A NOTE ON THE ABNORMAL HATCHLINGS OF THE OLIVE RIDLEY SEA TURTLE, LEPIDOCHELYS OLIVACEA (ESCHSCHOLTZ)

M.V. SUBBA RAO, P.S. RAJA SEKHAR, K. KAMESWARA RAO and V.V. SUBBA RAO

Department of Environmental Sciences, Andhra University, Visakhapatnam - 530 003.

Abnormalities in the hatchlings either due to colour variations (albinism) or deformities have been reported in different species of sea turtles (Carr, 1952). Some such observations made in the Olive ridley hatchlings are being reported here. The studies were carried out in the UGC Research Project "Ecology and Management of Indian sea turtles" from 1984 to 1987 (Subba Rao, 1987).

During the study period, a total of 124 freshly laid nests were identified and the nests were excavated for artificial, and *in situ* natural incubation. After completing the incubation period (50-55 days), the newly emerged hatchlings were reared in captive conditions upto 12 months. The abnormal hatchlings were seperately reared under intensive conditions.

Eight abnormal hatchlings were identified with ill-developed snout, deformed eyes, abnormal carapace or short flippers. Out of 579 hatchlings reared in captivity 1.38% had abnormalities and their longevity varied from 4 to 54 days(Table 1).

Silas and Rajagopalan (1984) reported albinism and hump formation in the carapace in Olive ridley hatchlings. In the green sea turtle, *Chelonia mydas*, Fowler (1979) observed embryos with two heads. While the reasons for these abnormalities are still not known, the hump formation and deformities of the carapace are attributed to calcium deficiency in the developing embryo. These hatchlings survive for shorter periods in captivity.

Table 1. Abnormal hatchlings and their longevity in the Olive ridley sea turtle, *Lepidochelys olivacea.*

No.	*Abnormality*	*Frequency of occurrence* (%)	*Longevity of the hatchlings*
1.	Short flippers	0.51	22—54 days
2.	Abnormal carapace	0.35	18 days
3.	Ill-developed snout	0(35	10 days
4.	Deformed eyes	0.17	4 days

The authors thank the Secretary, UGC, New Delhi, for sanction of the project "Ecology and Management of the Indian sea turtles" to the senior author (MVS).

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COLLECTION AND PRESERVATION TECHNIQUES FOR REPTILES

By

D.P. SANYAL Scientist—SD

Zoological Survey of India.

The reptiles constitute an old and diverse group of vertebrate animals characterized by their dry skin which is usually covered with epidermal scales. Snakes, Lizards, turtles and crocodilians make up the main groups of reptiles. These are more or less well distributed around the world, but are most numerous in the tropics. Reptiles are not restricted to breeding in or near water, and thus make up a significant part of the fauna of arid regions.

Factors to consider in collecting

A collector should know the state laws concerning the collection of reptiles. A permit must be obtained before any collection can be done. Because of the poor reputation of some snakes Field collectors are often overenthusiastic and may frequently take more specimens than a local population can afford. Collectors therefore, should be highly conscious of the need for conservation and protection of reptiles and other animals to prevent them from becoming scarce or extinct.

Reptiles are highly seasonal in appearance and behaviour. Therefore, collectors must take advantage of periods when they are active and accessible.

Field Notes

Specimens not accompanied by data dentifying the collection locality are virtually useless to scientific investigators. The more data available for a specimen the greater its value in research. Hence keeping accurate, complete field notes is necessary. Field notes should be written in waterproof ink using only one side of each page. Several brands of waterproof ink will 'run' if alcohol is accidentally spilled on the page, hence care be used in selecting ink. Carry a small note book for on the spot data taking. Then transfer these data into the permanent field notes as soon as possible.

The following representative outline of data should be included in field notes :-

1. *Locality* should not be referred with reference to business, establishments. Use towns or mapped roadways. Distance should be estimated carefully from a good atlas to which future reference can be made. If the collecting locality is very remote then its distance should be referred with the nearest Police Station or Post Office. Elevation of the locality should also be recorded whenever possible.

2. Data—Always write out the name of the month, or indicate month by a Roman numeral, such as 8.x.1989.

3. Name(s) of all collector(s) present.

4. Time of collection.

5. Air temperature and other appropriate weather notes, are often useful to note existing cloud cover and moisture conditions, as well as general weather condition preceding the collection.

6. Species—List all species collected plus the number collected of each followed by species which may be observed but not collected. Accurate colour notes must be included, especially when collecting in regions having a poorly known herpetofauna.

7. Habitat of species collected and any significant behaviour (Courtship, defensive display, etc) observed.

8. Field number—It is useful to carry a series of numbered field tags on collecting trips. These should be printed on thick paper in permanent ink. Thread can be sown through the numbered tags. Avoid using coloured thread or thread made from synthetics such as nylon, which may be destroyed by preservatives. After threading the tag, tie a small knot in the string. Each specimen should be assigned its own number, which greatly simplifies the task of keeping associated. Testes, stomach contents, photos, tape recordings, etc. are assigned the same number to increase efficiency in future analyses. Field tags should be properly tied to specimens. On the field tag, Field collection number, Station number, Locality, date of collection, Names of collector(s) should be recorded.

Collecting Methods and Equipment

Reptiles are placed in cloth bags when captured. For poisonous snakes or large nonpoisonous specimens, bags made of stout canvas are very useful. Provide sacks with a tie string to secure the bag. Snakes are specially adept at working through weak spots in the seam of a bag or through the neck of the bags, unless it is properly tied. After collecting the specimen, it should be dropped into the bag and mouth of the bag be closed and the sack is spun around to twist the neck. This prevents specimens from escaping while the neck of the bag is being tied. The neck of the bag is doubled over and double tied.

Poisonous and nonpoisonous snakes are placed in bags as follows :-

While holding the specimens in your right hand reach all the way to the bottom of the bag, grip the specimen with your left hand through the bag, release your right hand while still holding the specimen with your left hand and twist the neck of the bag closed. Then tie the bag as per procedure stated above.

In addition to special collecting equipment mentioned below, the geology pack is one of the most useful field tools. This is used for turning rocks, removing bark, splitting open old logs, tearing up rodent burrows and doing many things too dangerous to be done by hand. High-top leather-boots and heavy leather gloves are also useful.

For arboreal (tree-dwelling) lizards and snakes collection use 22 caliber pistols with bird-shot shells. Approach within 10 feet of a specimen and then shoot at it. Specimens collected in this manner, must be preserved almost immediately to prevent spoilage.

In desert areas snakes and lizards wander at night a great deal during the early part of their breeding season. This usually occurs on those first few nights when the air temperature remains above 80° at least until after midright. At such times drive slowly (between 15 and 20 miles an hour) along paved roads in the desert using the low beams of the car for light. Specimens can be approached directly and picked up by hand under such conditions.

It is more difficult to predict where snakes will be found. Snakes that are coiled and sunning frequently give the collector sufficient time to capture them in some other manner. Many snakes will move quickly into heavy bush or seek out rodent burrows

and must be captured before they can escape. The 22 caliber pistol with bird shot is quite good, especially for poisonous specimens. Some collectors use long wooden forceps which are easily made in the field. A snake stick may be anything from a forked stick or a stick with a large screw hook in one end, to a stick with a single moveable jaw for the capture of snakes.

Preservation Techniques

The procedure for proper preservation of reptiles is as follows :-

1) killing, 2) fixing specimens, 3) labelling, 4) final preservation and storage.

1. *Killing of specimens* : It is essential that live specimens be killed in such a manner as to leave the muscles in a relaxed state. Following this, they can be fixed, or hardened, in standardized positions which enables researchers to examine them conveniently and most accurately.

Number of effective killing means are available. One widely used method of killing reptiles is that of injecting them with a 10 percent sodium pentobarbital (Nembutal) into the heart. Some workers use ether or chloroform.

If the facilities are available, the best and simplest method for killing any reptile is freezing. Place specimens in cloth bags, along with their field data, put the specimens in the freezing compartment of the refrigerator over night, remove, and thaw. Because reduced temperatures lower the metabolic rate of reptiles, the specimens simply go to 'sleep' as they coil off and are thus killed in a very humane way. The only danger with this technique is that tails, toes, legs or bodies may break should the specimens be dropped or mishandled before they are thawed. Once completely thawed, they are treated like any other specimen.

2. *Fixing specimens :*

The purpose of fixation is to preserve the actual morphological state and colour of the specimen, and to prepare the tissue for microscopic examination Hence, the fixative should kill tissues, quickly penetrate it uniformly and rapidly, prevent *postmortem* decomposition, not distort the tissue, and should prepare the tissue for staining.

The most accepted and suitable fixatives for field use are :

a) *Formalin.* It is sold commercially as a solution of approximately 40 percent formaldehyde gas in water. For purposes of dilution, commercial formalin is usually considered as 100% and can be used in 10% strength (one part formalin : 9 parts water) for fixation. Formalin may be buffered (which helps to reduce discolouration of specimens) by mixing one tablespoon of baking soda or borax with each pint of 10% formalin. Formalin, while an excellent general fixative, is highly irritating to the user's skin and (as vapour) to mucous membranes. It is not uncommon for users to develop strong allergies to formalin.

b) FAA (Formalin-alcohol-acetic acid)—prepared by mixing 10 parts commercial formalin, 50 parts of 95% alcohol, 40 parts water and 2 parts glacial acetic acid. FAA penetrates tissue far better than formalin alone, and has less tendency to cause cell distortion. The rapid tissue penetration can also be an aid to preserving valuable specimens found dead and perhaps totally decomposed. The disadvantages of FAA are the need to mix several components, and the necessary alcohol and acetic may not be available in certain localities. If FAA is to be used extensively in hot regions, it is recommended that the acetic acid be added just prior to actual use, as it quickly evaporates from the solution. Containers may be cooled by wrapping them in wet rags

and shading them to retard evaporation of acetic acid.

c) *Alcohol*—If neither formalin nor FAA are available, alcohol may be used as a fixative. (78%)

It is always preferable to introduce fixative into the body cavity as specimens (particularly large reptiles) can decompose internally if simply placed in fixative. Enough fixative should be injected to fill but not distend the animal. If a hypodermic syringe is not available, use a very sharp scalpel or razor blade and cut small slits on the left ventral surface of the body. These cuts should measure 1 to 2 inches in length, should penetrate into the body cavity, and should be about one inch apart. Tails of lizards and snakes should be slit lengthwise and placed belly-up in fixative. Spread the sides of the slits to admit fixative more easily. Avoid cutting the anal plates of snakes and lizards and femoral pores of lizards.

Once the animal is injected or slit, it is most conveniently fixed by placing it (after proper positioning) between pieces of white paper or cotton toweling moistened liberally with fixative. This can be done in shallow, covered plastic or rustproof metal pans or tray. Avoid coloured towels, as the colours dissolve in the fixative and stain the specimen. All specimens should be allowed to remain in fixative for 24 hours.

When specimens captured in the field are too large for standard museum containers they should be skinned and preserved. Record colour notes and note the snout to vent and tail length (in mm). Then skin by making a long ventral incision to the side of the mid-line. Leave the head and tail attached to the skin, severing these from the carcass (avoid cutting the anal-plate), and then inject head and tail (evert hemipenis if male) with fixative. With boids, sever the hind part just ahead of the bony, vestigial pelvic elements. The skin may now be preserved by covering the flesh side with cloth or absorbent paper, rolling loosely and immersing in fixative, or rubbing with borax or arsenical soap, rolling and drying. In this latter instance, it is best to preserve the head and tail separately in liquid. If the specimen is a male, testis should also be preserved. Reproductive condition of female should be noted (i.e. number of ova present, size of the largest ovum etc). Embryos, especially those of poorly known species should be preserved in liquid, it is preferrable to do this by preserving the entire oviduct rather than by removing embryos.

3. *Labelling*. Two types of labels may be used. The typical label measures $\frac{1}{4}$ by $\frac{3}{4}$ inch and has either the collector's field number or the museum acquisition number. In either case, this number refers to a complete set of field data. The second label bears all of the field data on one side and the taxonomic information on the other. This label is preferred in small collections where a filing system or other mathod of recording data is not maintained. The label is attached around the neck of a snake or around the hind limb or waist of a lizard. Labels should be made of waterproof paper and tied to the specimens with light weight, but strong, string.

4. *Final Preservation and Storage*. Small and medium-sized reptiles may be kept in six percent formalin; large specimens should remain in 10% formalin. Because of formalin's very disagreeable nature, most workers prefer to transfer specimens from formalin to alcohol. 70% ethyl alcohol or 95% rectified spirit is suitable. Specimens should be transferred from formalin to alcohol by placing the specimens in a jar of clear water and let stand for 24 hours. Seal specimens in airtight museum jars, along with their field data. Specimens should be

kept in the dark to retard colour loss. Check museum specimens at least twice a year and replace any fluid that has been lost as a result of evaporation.

Each specimen retained in the collection should be assigned a catalogue number (in addition to field number). Reptile eggs may be catalogued with a single tag designating one clutch or lot. This number should be entered in a permanent catalogue (using waterproof ink), along with the species name, locality, collector(s) name, date, sex. As a cross-reference, it is useful to maintain a card file (by taxonomic family) in which a single card is used for each species. On this card may be entered numbers from the catalogue that apply to these species. It is convenient to place a label bearing species name, catalogue numbers and locality data with each container. These should be written in permanent ink on heavy durable paper.

Reproduced from

Paper presented at

"Training Programme on Snakes and Human Welfare", Zoological Survey of India, Desert Regional Station, Jodhpur.

Courtesy : Officer-in-Charge
Zoological Survey of India,
Jodhpur.

CONTRIBUTIONS ON REPTILES INVITED

COBRA solicits papers on snakes. lizards, turtles and crocodiles for *quick* publication.

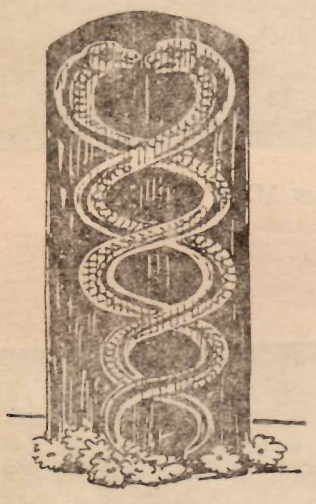
Papers may be on any aspect : Ecology, Biology, Natural History or Conservation.

Faunal and Behavioural aspects are also welcome.

Snake-lore, Myths and interesting personal observations are also accepted for publication under Miscellaneous Notes.

Contributions not exceeding 7 typed pages may be sent to Dr. R.S. Pillai, Editor, COBRA, Madras Snake Park Trust, Guindy National Park, Madras-600 022.

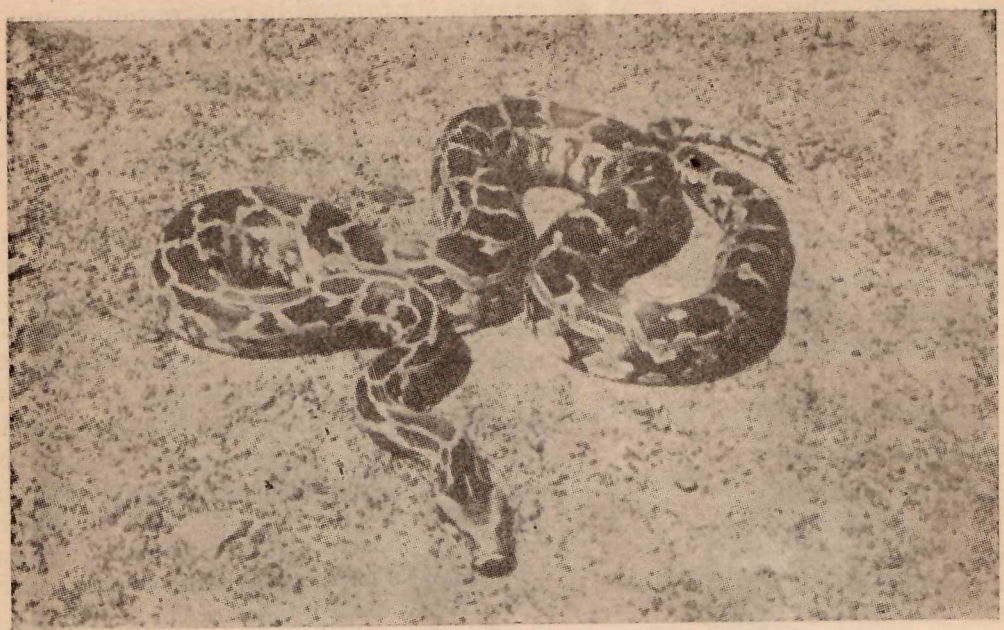
NAGERCOIL AND NAGAPATTINAM



The story is being told that while harvesting the crops, the sickle of a farmer hit a granite stone, and to the shock of all, blood oozed from the stone. Expert counselling established that the stone was Vasuki, the Serpent King. Soon a temple was set up on the spot for the Serpent King which today stands as a very famous one at Nagercoil. The township named as Nager coil (meaning, Temple of the Serpent) itself is indicative of the popularity of the temple there. Nagercoil is situated at a distance of about twelve miles from Kanyakumari. It is said that there are many serpents living around the temple. Strangely enough, within a radius of one mile from the temple there has not been any fatal case of snakebite. Every visitor to the temple takes a pinch of earth from the temple as the *prasad.* It is said that still the earth in that place has never diminished in quantity Near the shrine of the serpent-god, there are also temples enshrining Lord Krishna and Lord Shiva.

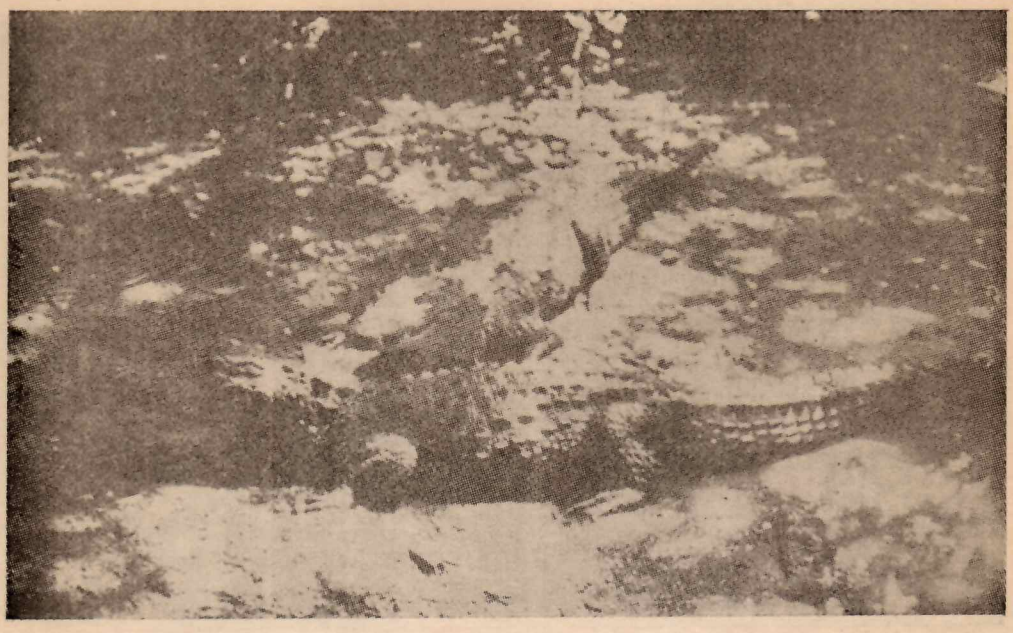
While talking of Nagercoil, one might be reminded of another temple at Nagapattinam near Tanjore. Though the temple is dedicated to Lord Vishnu and is considered to be one of the one hundred and eight sacred places of Vaishnavites, the place acquired sanctity when the Serpent-God, that is, Nagaraja, did penance there to propitiate the lord. It is this legendary story that gave the place the name, Nagapattinam. In this temple, there is an idol of goddess Neelayathakshi which is said to have been brought from the region of the Nile river in Egypt.

K. Krishna Murari Rao.

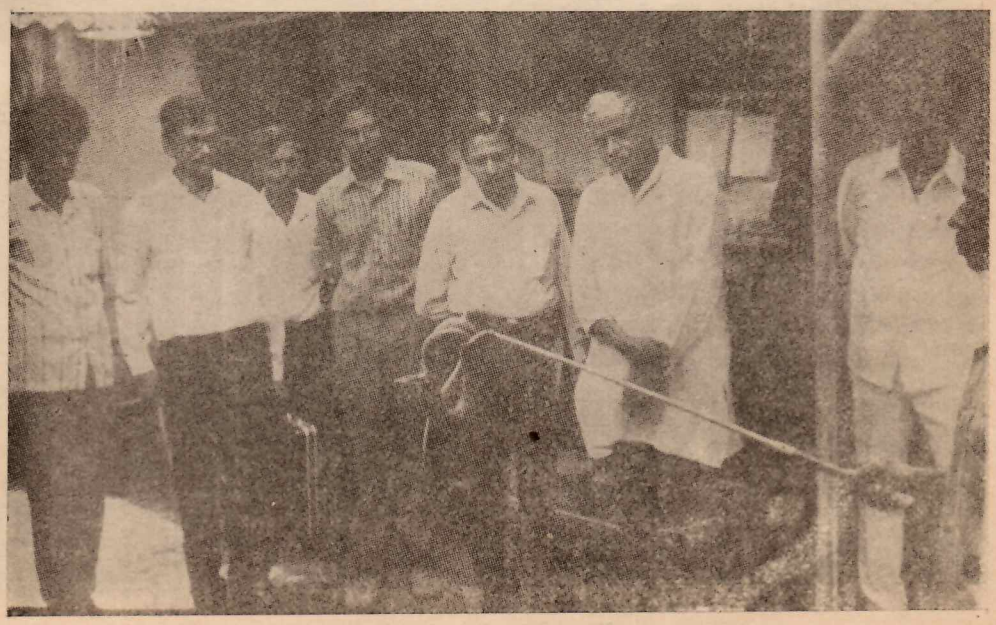


Indian *Python molurus hatched at* MSPT

Educational Programme Conducted by MSPT at Bharat Scout Madras-20.



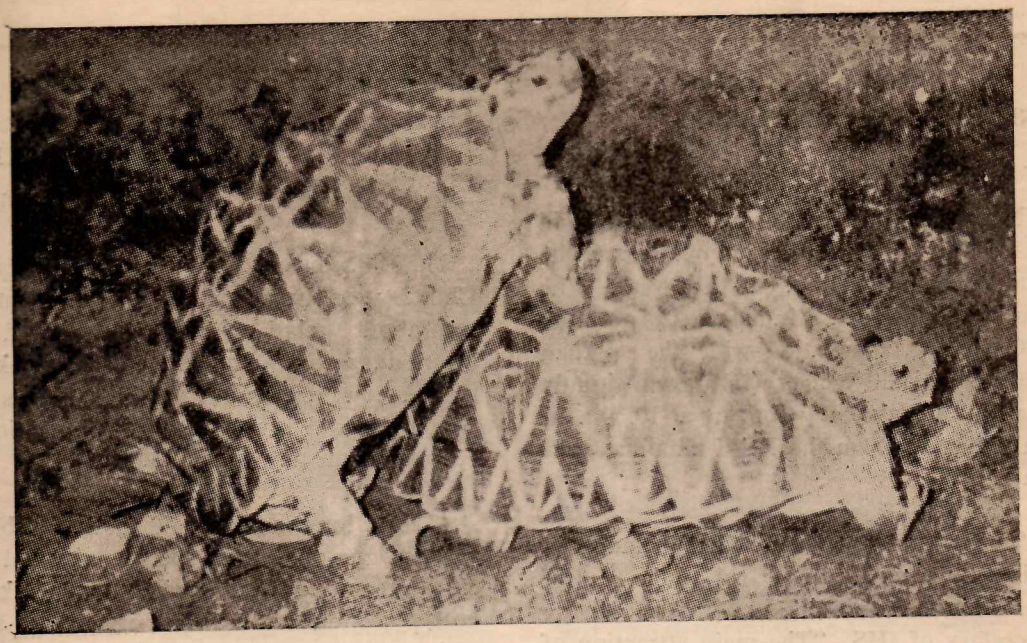
Marsh crocodile



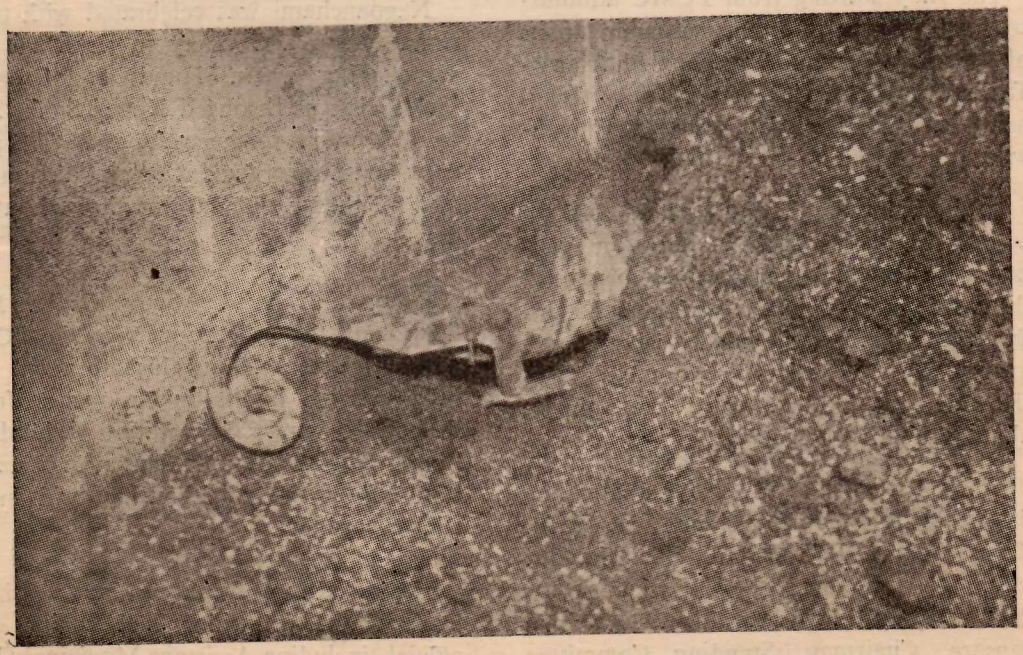
Jaggat Pharma visit to MSPT on 28-6-91

Girl Students handling the Indian python baby

Russell's viper babies



Star tortoises mating



Chamaeleon digging nest

REPTILE NEWS IN PRESS

INFORMATION ON SNAKE

— Maharashtra Herald, 25.7.90.

Naagpanchami the festival of snakes will be celebrated in a different manner at the Pimpri Chinchwad area this year. The Pimpri Chinchwad Municipal Corporation (PCMC) in association with the Indian Herpetological Society (IHS) will jointly organise a snake rally starting at 10.30 a.m. on Thursday from the PCM administrative building.

"School students have been included in this rally specially to get rid of the fear of snakes in their mind" said Mr. Anil Khaire Secretary of IHS. "The main attraction of the rally will be the 28 feet long replica of the cobra and a tableau with live snakes", he said.

The rally starting from PCMC administrative building will go through main streets of Pimpri Camp-Pimpri Waghire-Bhatnagar-Tanaji Nagar and Chinchwad before terminating at the Chaphekar statue at Chinchwad.

At the Jnana Pradhodhini School of Nigdi a slide show along with a lecture on fascinating world of snakes has been organised the same evening. Mr. Nilimkumar Khaire through his talk, will impart scientific information about snakes to the masses. The IHS aims at eradication of superstitions about snakes.

Many school students will be attending the lecture and the slide show. Mr. Sadha Kate, Mayor PCMC Dr. Navinchandra Jain, Commissioner Mr. Dinkar Datir Patil, Deputy Mayor and Mr. Azambhai Pansare, Chairman, Standing Committee will also be present.

MASSIVE RESPONSE TO SNAKE RALLY

—Indian Express, 27.7.90 Pune, July 26.

The first ever snake rally in Pimpri-Chinchwad, imparting scientific information about snakes, normally considered as 'more dangerous among the reptiles' evoked spontaneous response from the residents of twin industrial township on the auspicious Nagpanchami day today.

A 28 ft. long model of the Indian Cobra, various non-poisonous species exhibited at close range and a tableau with live snakes, both poisonous and non-poisonous were the main attractions of the rally jointly organised by the Indian Herpetological Society (IHS) here and the Pimpri-Chinchwad Municipal Corporation (PCMC).

Nagpanchami was celebrated with traditional pomp and gaiety in the Pune and surrounding areas. Hundreds of enthusiastic citizens thronged Katraj Snake Park to offer poojas to the snake god. The park crew had also organised special damonstration for the visiting citizens throughout the day.

Pimpri-Chinchwad Mayor Sadba Kate flagged off the procession from the PCMC administrative building this morning. The rally was led by 'lezim' troops of Jnana Prabodhini and Corporation school of Pimple Saudagar among the scores of nature lovers from the neighbouring twin industrial township.

Mayor Kate, Deputy Mayor Dinkar Datir Patil, councillor and senior civic officials including Assistant Municipal Commissioner S.L. Shelke, garden superinten-

dent S. Bhondave, PCMC education officer Padmaker Vispute also assisted the IHS volunteers to exhibit different species of non-poisonous snakes to hundreds of curious onlookers, especially the children. Various non-poisonous snakes like dhaman, trinkets, racers and earth boas were exhibited by the IHS volunteers during the procession. The Indian Cobras and some other poisonous snakes were also exhibited on a tableau.

IHS president and also the director of the Katraj Snake Park Neelimkumar Khaire, IHS treasurer Anil Khaire, Nitin Moghe of Friends of Animals, members of WILD, Pune, members of the Chinchwad unit of the Youth Congress (I) led by Mrs. Sharad Gavade and students of different schools in the township participated in the rally.

Many citizens offered poojas to the snake god as the procession passed through Pimpri Camp, Pimpri Waghere and Tanaji Nagar areas before culminating near the Chapekar status in Chinchwad.

A side show on fascinating world of snakes by Mr. Neelimkumar Khaire was also organised at Matru Mandir Jnana Prabodhini in Nigdi, News Editor of daily 'Skal' Mr. Kishore Kulkarni was the chief guest on the occasion.

Speaking to newspersons on the occasion, Mr. Khaire anounced that the first 'Sarpa Parishad', a convention of herpetologists and snake experts in Maharashtra, will be held September next.

CALL TO PRESERVE SNAKE POPULATION :

Maharashtra Heral—27-7-90.

"Thou shalt not kill snakes" was the theme of a colourful procession taken out to mark the auspicious Naagpanchami day in Pimpri-Chinchwad area on Thursday.

The procession led by a giant size cut out of a King Cobra and 12 live snakes, accompanied by school children participated in the procession taken out from PCMC building to Chapekhar state at Chinchwad.

Following the message that snakes were friends of human beings and not their enemies issued out by the Indian Herpetology Society, women dressed in traditional Maharashtrian sarees performed the puja of the replica along the routes.

Volunteers carrying the snakes even allowed some of the brave among the women to fondle them. The procession which had started off late, had resulted in the organisers cutting short the original programme planned out by them.

IHS president Neelim Kumar Khaire, the first man to demonstrate staying with snakes in a glass house for 72 hours more than a a decade ago, speaking at the concluding function said "I am talking to you as a representative of snakes".

He made an impassioned plea to preserve the snake to maintain the eclogical balance. He explained to the audience not to believe pseudo god-men who promised to cure people of snake bite.

He reminded them that 85 per cent of the snakes are non-poisonous. They would never attack a person directly unless they feel that you mean harm to them, he said. A slide show was organised thereafter.

The IHS secretary Anil Khaire said that a symposium on snakes will be held in the last week of September at Pune in which some 30 associations are expected to send in their representatives.

The theme of the conference would be to bring the herpetologists together to impart

the knowledge of snake breeding and conservancy to laymen and those who make their livelihood on snakes.

In the long run, he said that the society also plans to bring out books in Marathi on herpetology and set up a snake bite treatment centre in Pune. Mr. Kishor Kulkarni, news editor of Sakal was the chief guest at the function.

ANCIENT REPTILE REMAINS FOUND IN AP RIVER VALLEY

Hindu 12-9-89

From Our Staff Reporter
HYDERABAD, Sept. 11.

A fossilised skeleton of a pre-historic reptile, measuring two metres from tail to head, has been found in the valley of the Pranahita, a tributary of the Godavari, near Kataram village on the Warangal-Mahadevpur road in Karimnagar district.

According to the Geological Survey of India (GSI), whose experts found the skeleton buried three feet deep, such complete structures of an extinct species are never known to have been found anywhere so far. The GSI has been working in the valley for the past 12 years and has stumbled upon such complete skeletons twice this year, both of rhynchosaurs.

The 'very fragile skeleton, with a twisted vertebral column, a claw grip, and inverted phalanges in one limb suggesting that the animal might have died in agony', was brought carefully to the regional palaeontological laboratories of the GSI in Hyderabad. The 2,000-odd bones of this lizard-type animal are being cleaned and assembled for preservation purposes, a GSI official said.

The official said that GSI experts had come across isolated fossilised fragmented parts of pre-historic dinosaurs, say a bone, a tooth or a jaw, on earlier occasions, but this was the first time that they had found a complete skeleton. It is possible that more such complete structures will be found in the red clay of the upper triassic maleri formation in the area. These gigantic animals and reptiles might have existed in the area even before man's life began on the earth.

The skeleton was found by a field party consisting of Dr. C.V.N.K. Rao. Mr. G. Vijaya saradhi, Dr. T.T. Nath, and Mr. N. Swamy. The skeleton was brought to the laboratories in a capsule of plaster of paris under the guidance of Dr. D.C. Das Sarma, Director Palaeontology Division.

A second specimen of rhynchosaurs, nearly complete, was extracted subsequently from a nearby locality. A complete video recording was done on the extraction of this specimen.

The GSI official said that the scholars were now busy giving shape to the skeletons. They are yet to work out the age of the animal and the period to which it belonged.

SNAKE OILS

Indian Express Monday January, 14, 1991

What is special about snake oils ? According to the findings of a study reported in *Experimentia* Texas A & M University biologist Paul Weldon has found that the Western diamomdback rattle snakes produce a lipid from a class of compounds that can kill bacteria, fungi and even some kinds of tumours.

The compound, a glycerol monoether is present in the secretions from the glands in the snakes' tails and is the first to be found in the reptiles. It was identified by a team of researchers including Weldon, H.A. Lloyd of the National Heart, Lung and

Blood Institute, and M.S. Blum of the University of Georgia.

This glycerol monoether is similar to the glycerol monoethers found in sponges and brown algae. The lipids in sponges and brown alge are toxic to streptococal bacteria, and derivatives of glycerol monoethers have been used in cancer drugs.

The natural role of the snake's secretions is yet unknown, but the researchers plan to test whether they repel predators.

AGONY OF AN ANIMAL

Thanjavur Hindu, 25-5-1990

Visitors to the Turtle corner at the Point Calimere sanctuary are shocked at the plight of the four-year-old turtle Raja, kept in a cement tank in the turtle hatchery and feel that the Society for the Prevention of Cruelty to Animals should take up the matter with the authorities.

The Forest authorities who are otherwise doing an excellent job in maintaining a turtle corner where six medium-sized sea turtles (Olive ridley species) especially for the sake of children, have inexplicably confined Raja, the biggest turtle, measuring three feet long and two feet broad, inside a small cement tank. The turtle was hatched in the Forest Department hatchery about four years. ago, and is reared by the department. The authorites are feeding it fish daily, and water is changed with great difficulty daily by bringing about 50 buckets from the sea.

Six other medium-sized turtles which are two-years-old are in a big tank, where they are able to move about freely. But the tank in which the biggest of them all, Raja, weighing about 45 kgs is kept very small for the present size of the turtle. The turtle is not ven in a position to take a turn easily. While it is fluttering its flippers, the wings hit against the wall of the tank on either side, inflicting minor injuries. All the time, the huge turtle has to live touching the two walls of the small tank, and a swim for it is unthinkable as the tank is hardly four feet long. During summer noons, the tank and water become so hot that life for the poor animal becomes miserable.

The wildlife authorities here had submitted a proposal last year for construction of a big pond near the hatchery at a cost of about Rs. 10,000. Although the money had been sanctioned, it is yet to be released.

New species of snakes found

By A Staff Reporter, Pune, June 20.

Scientists of the Indian Herpetological Society (IHS) here have discovered four new species of snakes, including the Khandala Coral Snake, a poisonous species, in the Pune region.

The names of the newly-found species have been confirmed after specieswise scale count and morphometry as the Streaked Kukri Snake. Travancore Wolf Snake, Spot bellied Polydont Snake and Khandala Coral Snake, said the IHS chairman. Mr. Neelimkumar Khaire, in a press release here this evening.

The herpetological section of the Zoological Survey of India has also approved and confirmed the newly-founded snake species discovered as part of research and survey programmes by the IHS during 1985 to 1989. said Mr. Khaire. The project was undertaken by Mr. Anil Khaire. Mr. Satish Ghahtpande and Ms. Smita Joshi.

Among the newly-founded snakes, the Khandala Coral Snake is poisonous snake. The snake with dark black spots, surrounded by white lining on both flanks grows upto two ft. There is also an arrow mark on its head. Poison of this snake affects on

nervous system of the victim. Its habitat ranges between Khandala to Sinhagad.

The Spot-bellied Polydont Snake has prominent black spots on his back with white marking on his head. It gtows upto 1.5 ft.

The Tranvancore Wolf Snake is a dark brown creature with whitish cross bands on the body. It has head distinct from the neck with projected eyes.

This was named as Travancore Wolf Snake since its first recorded site was in vicinity of Travancore.

The yellowish brown snake with streaks along the flanks has been named as Streaked Kukri Snake. The snake which grows up to 1.5 ft. also has dark brown arrow marks on its head.

NEWS FROM MADRAS SNAKE PARK TRUST

1. National workshop on "Perspectives on Aquatic Entomology" 15 — 27 April 1991.

The Madras Snake Park Trust participated in this workshop conducted by the P.G. & Research Department of Zoology, Loyola College (Autonomous) Madras on 15.4.91 to 27.4.91. Dr. T.N. Ananthakrishnan—an entomologist of international fame delivered a talk on Insect fauna of Western Ghats and their diversity. Dr. T.K. Raghunatha Rao, Former Professor of Zoology, Loyola College, Madras gave his experience on Aquatic Insect Research.

2. Bharat Scout camp at Theosophical Society, Adyar, Madras.

As desired by the Theosophical Society and Bharat Scout camp Chief Mr. Venkatraman, the Madras Snake Park Trust conducted an educational programme partaining to reptiles from 15-4-91 to 16.4.91. Mr. A.N. Jagannatha Rao, Hony Secretary, gave a talk for creating an awareness about 'Conservation of Reptile'. Video show on Conservation aspect of reptile was also presented. Quiz programme was conducted and prizes given away.

3. Colour change studies in Chamaeleon.

Shri. C. Pitchaiah submitted M.Sc. dissertation entitled "Colour change due to external stimuli in the Indian Chamaeleon, *Chamaeleo zeylanicus*" under the guidance of Prof. Mrs. V. Vijayalakshmi. M.Sc., M.Phil, Department of Zoology, Presidency College (Autonomous), Madras, in May 1991. Th-study was undertaken at M.S.P.T. and coordinated by Shri. A.N. Jagannatha Rao Hony Secretary and Dr. R.S. Pillai, Research Officer, Madras Snake Park Trust.

IMPORTANT VISITOR TO MSPT

The snake Park has provided a lot of information regarding their various application in different field.

The Library is well maintained with collective informations.

The Record on chamae lon is very interesting and needs to be enouraged.

The informationleon mythology of Snakes is interesting.

I am thankful to Dr. Jagannatha Rao & convey my best wishes to the Snake Park.

Sd.....

28.6.91

K.L.K. Paranjothy,
Works manager,
Juggat Pharma Private Limited
Bangalore-560 027.

CURRENT AND PROPOSED RESEARCH PROJECTS AT MADRAS SNAKE PARK TRUST

1, Status, distribution and Ecology of Reptiles pertaining to Tamil Nadu by Mr. V. Kalaiarasan M.Sc., M. Phil. for his Ph.D. Programme under the guidance of Dr. R. Kanakasabai, M.Sc., M.Phil, Ph.D. Prof. and Head, Dept. of Zoology A.V.C. College Mayiladuthurai and field guidance of Dr. M.V. Rajendran M.A. Ph.D.

This project is being co-ordinated by Mr. A.N. Jagannatha Rao, Hony. Secretary of Madras Snake Park Trust, and Dr. R.S. Pillai, Research Officer, MSPT.

2. Studies on chamaeleon by Mr.R. Aengals M.Sc., Mr. B. Rathinasabapathy M.Sc., M.Phil and Mr. P. Tamilarasan, M.Sc., Under the guidance of Dr. R.S. Pillai M.Sc., Ph.D., Dr.M.V. Rajendran M.A.Ph.D. Dr. G. Durairaj, M.Sc., Ph.D., Dr. R. Kanakasabai M.Sc., Ph.D., Mr. M. Krishnan M.A.. B.L., and Jagannatha Rao is the co-ordinator of theproject.

3. A research project on "Rodent contro using harmless Reptiles" is being under' taken by Mr. T. Raveendra Babu M.Sc.-M.Phil. B.Ed. at MSPT under the guidance of Dr. P. Vivek Raja M.Sc. Ph.D., Senior lecturer of Zoology Govt. Arts College, Madras-35 coordinated by Shri. A.N. Jagannatha Rao Hony. Secretary and Dr. R.S. Pillai Research officer, MSPT.

4. Studies on Turtles and Tortoises by Mr. R. Aengals M.Sc., Mr. B. Rathinasabapathy M.Sc., M. Phil and Mr. P. Tamilarasan M.Sc., M. Phil., under the guidance of Dr. R.S. Pillai, M.Sc., Ph.D., and being co-ordinated by Mr. A.N. Jagannatha Rao.

5. Relationship between Morphology and Habits of Reptiles to be proposed soon. by Mrs. R. Chitra B.Sc.

SURPLUS REPTILES AVAILABLE AT MADRAS SNAKE PARK TRUST IN EXCHANGE

(Subject to Approval by The Government)

Lizard

1. South American Iguana (*Iguana iguana*)

Snakes

2. Indian Python (*Python molurus*) (Babies and Sub-adults)
3. Reticulated Python (*Python reticulatus*) (Single specimen not pair)

Turtles, tortoises and Crocodiles

4. Pond turtle (*Melanochelys trijuga*)
5. Star Tortoise (*Geochelone elegans*)
6. Marsh Crocodile (*Crocodylus palustris*) (4 year old)

WANTED IN EXCHANGE

Snakes

1. Black Cobra (*Naja naja oxiana*)
2. *King Cobra* (*Ophiophagus hannah*)
3. Banded Krait (*Bungarus fasciatus*)
4. The Indian Egg-Eating Snake (*Elachistodon westermanni*)
5. Flying Snake (*Chrysopelea ornata*)

Monitor Lizards

5. Desert Monitor (*Varanus griseus*)
6. Yellow Monitor (*Varanus flavescens*)
7. Water Monitor (*Varanus salvator*)
8. Common Indian Monitor (*Varanus bengalensis*)

Turtle

9. River turtle (*Hardella thurgi*) and

   Fresh water turtle—any species.

Crocodile

10. Estuarine Crocodile (*Crocodylus porosus*) (Juveniles and sub adults)
11. Preserved specimens of 5 species of Sea turtees

    a) Leather back turtle (*Dermochelys coriacea*)

    b) Green turtle (*Chelonia mydas*).

    c) Logger Head turtle (*Caretta caretta*

    d) Olive Ridley turtle (*Lepidochelys olivacea*)

    e) Hawksbill (*Eretmochelys imbricata*)

An Appeal

The Madras Snake Park Trust has obtained, with the help of the Govt. of Tamil Nadu, an extent of 2.5 acres of land on the old Mahabalipuram Road on the outskirts of the city of Madras to establish an elaborate Reptilium on modern scientific lines to promote Tourism, Conservation, Education, Service and Research on Reptiles.

The proposed layout and estimates of the various units are shown on the next page. The total cost of the project is estimated around Rs. 125 lakhs or 60,000 $ (US).

The MSPT now seeks financial contributions from various organisations and individuals to fulfil this ambitious future programme unit/block-wise.

Grants and donations are exempted by the Income tax authorities under 80G vide Ref No. DITE/1146(34)/78 dated 1-4-89 to 31-3-92.

Generous contributions are solicited. Contributions may be sent to "The Madras Snake Park Trust" Guindy National Park—Guindy, Madras-600 022 India.

Trustees of the Madras Snake Park Trust, Madras-600 022.

DETAILS OF COST OF CONSTRUCTION AND DISPLAY

Building 1 and 2 (3 floor)

Each floor has 40' × 40' area and will house Rooms, Mess, Recreational area for Research students, each building 12 students.

Cost per floor Rs. 4 lakhs or $ 20000. Total cost of building 12 lakhs or $ 60000.

Building No. 3 and 4 (3 floor)

Each floor has 70' × 40' area and will house Research Division, i.e. Library, Laboratory etc.

Cost per floor Rs. 7 lakhs or $ 35000. Total cost of each building Rs. 21 lakhs or $ 105000.

Plt No. 5 and 6 (1000 sq.ft.)

Specially designed, natural setting with pond etc., to house 3 species of Indian Crocodiles.

Cost Rs. 1,00.000 or $ 5000.

Plt No. 7

This will house exotic reptiles like Iguanas, etc., in 500 sq. ft. area.

Cost Rs. 50 000 or $ 2,500.

Plt No. 8 and 9 (area 1000 sq. ft.)

Skunks, Chamaeleons, Monitors etc., will be exhibited in these enclosures in specially designed habitats.

Cost Rs. 1,00,000 or $ 5000.

Plt No. 10 and 11 (area 1000 sq. ft.)

Specially landscaped to display land tortoises, marine turtles and fresh water terrapins.

Cost Rs. 1,00,000 or $ 5000.

Plt No. 12 (Area 500 sq.ft.)

Giant tortoise of Seychelles, Komodo dragon etc., will be procured and displaye

Cost Rs. 50,000 or $ 2500.

Building No. 13 and 14 (area 1000 sq.ft.)

Different poisonous and non-poisono snakes of India will be exhibited in specia ly designed habitats. King Cobra will find special habitat cooled by air cooler.

Cost Rs. 1,00,000 or $ 5000

Building No. 15 and 16.

Indian snake lore and myths which a in plenty will be elegantly brought out a made interesting and attactive for touris Simple hall 40' × 40' with a sloping roof.

Cost Rs. 4 lakhs or $ 20,000 — ea building.

Building No. 17 (Demonstration shed 3000 sq.ft.)

To educate the public on reptiles. Hou display of live reptiles with commentaries English, Tamil and Hindi. Tapes in Indian languages and choice of 6 Forei languages will be available for large grou for a special fee.

Cost Rs. 7,00,000 or $ 35,000.

Building No. 18 and 19.

40' × 40' to house preserved specime of Indian and exotic reptiles for Resea purposes. Sloping roof.

Cost Rs. 4 lakhs or $ 20,000 each buildi

Building No. 20.

This is a 3-storyed building. The ground floor to be used by visitors as a Rest-shed. The second floor for the Administrative Office of the Madras Snake Park Trust. 3rd floor for Guest house.

Each floor is 70' × 40'. Cost Rs. 7 lakhs or $ 35000. Total cost of the building would be 21 lakhs or $ 105000.

Building No. 21.

3 floors each of 70' × 40'. To house an auditorium, a conference hall and a records room.

Each floor costs Rs. 7 lakhs or $35000 and the total cost of building Rs. 21 lakhs or $ 105000.

Building No. 22 and 23.

These are quarters for watchman, on either side with 300 sq. ft area.

Cost Rs. 75,000/- or $ 3500. The 2 units cost Rs. 1,50,000 or $ 7,000.

Building No. 24 and 26

Open wells of 6' diameter each costing Rs. 25,000/- or $ 1250. Together they cost Rs. 50,000/- or $ 2500.

Building No. 25

General store Room of 20' × 10'.

Costing Rs. 50,000 or $2500.

Building No. 27 and 31

Large underground storage tanks to hold water, each 15,000 litres capacity.

Cost Rs. 50,000/- or $2500/ each. 2 sumps together would be Rs. 1,00,000 or $5000.

Building No. 28 and 30

10' × 10' rooms for electric meters and water pumps, each room Rs. 25,000/- or $1250.

Cost of 2 rooms Rs. 50,000 or $2500.

Building No. 29

10' × 10' Security room. Cost Rs. 25,000/- or $1250.

No. 32 and 33

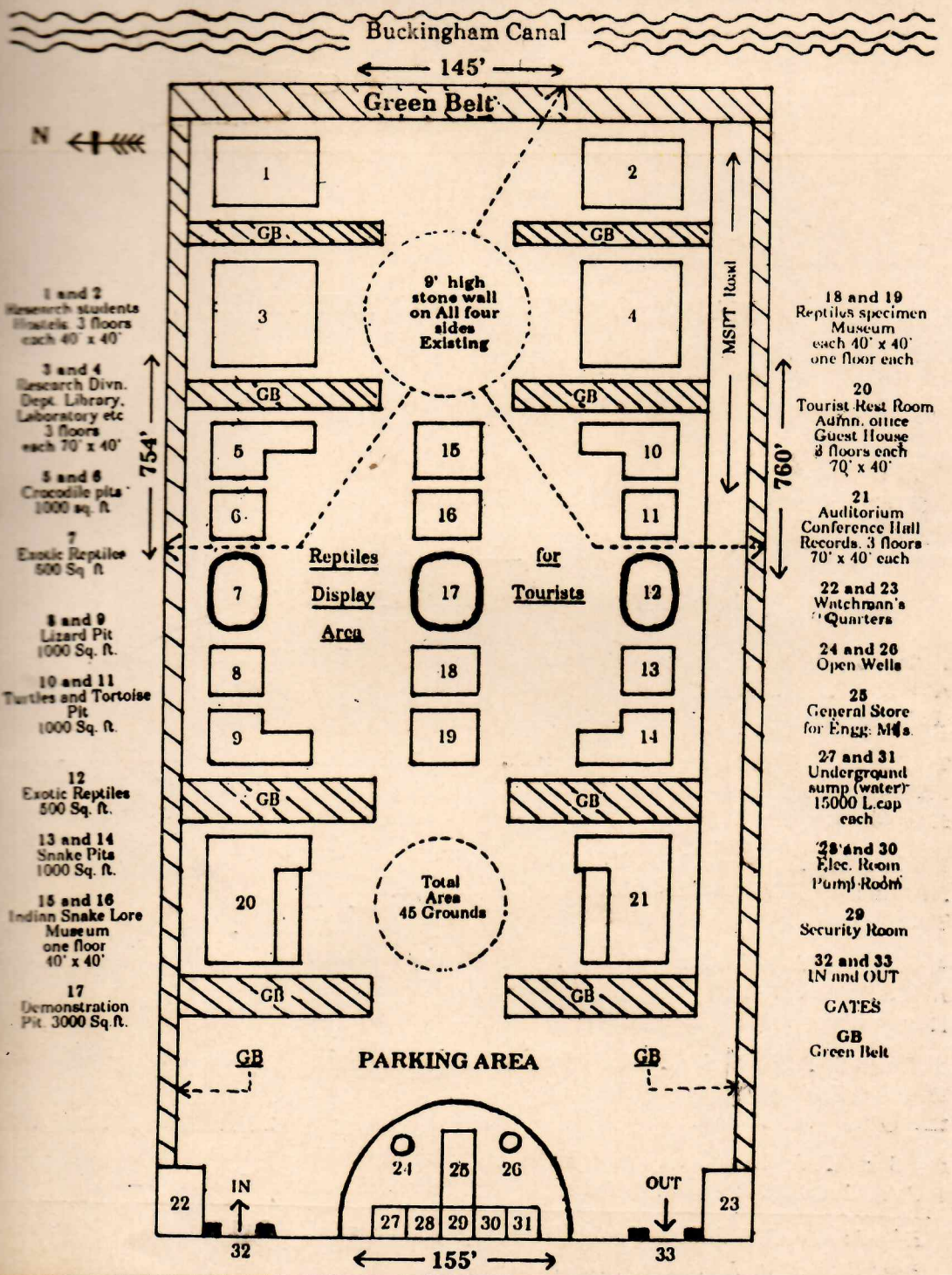
IN and OUT gates Each cost Rs. 10,000/- or $500. Cost of 2 gates Rs. 20,000/- or $1,000.

All costs are worked out on present exchange rate of US $ = 18.50 as on date 1.9.1990.

ALL GRANTS WILL BE DISPLAYED ON A MARBLE SLAB ON THE RESPECTIVE FLOOR/BUILDING.

———

Proposed Layout of Madras Snake Park Trust at Kottivakkam, Madras



To Adyar Madras ← Old Mahabalipuram Road → To Mahabalipuram

(NOT TO SCALE) SEP 1990

MAJOR OBJECTIVES OF THE TRUST

1. To dispel blind fear of snakes in people
2. To highlight the usefulness of reptiles in controlling rodents and pests.
3. Efforts towards conservation of reptiles.
4. To promote Tourism.
5. To promote scientific Treatment of Snake bites.
6. To conduct Research on the Eco-biology of Reptiles.

TRUSTEES OF MADRAS SNAKE PARK TRUST

1. Shri S. Meenakshisundaram, M.A.,B.L., Advocate, Labour Law Consultant, Trustee & Chairman.

2. Shri A. N. Jagannatha Rao, B.E., Industrialist and Retd. Engineer, Trustee & Hony Secretary.

3. Shri M. Krishnan, M.A.,B.L., Artist, Photographer, Writer and Naturalist - Trustee

4. Dr. M.V. Rajendran, M.A., Ph.D., Retd. Prof. and Head, Dept of Zoology, Herpetologist and Trustee.

5. Dr. R.S. Pillai, M.Sc., Ph.D., Retd. Jt. Director, Zoological Survey of India, Scientific Officer and Trustee.

6. Shri P.V. Laxminarayana, B.Com., F.C.A., Chartered Accountant, Trustee.

7. The Wildlife Warden, Forest Dept. Govt. of Tamil Nadu, Ex. Officio, Trustee.

8. Dr. K.V. Lakshminarayana, M.Sc., Ph.D., Officer-In-charge, Zoological Survey of India, Southern Regional Station, Madras. Ex-Officio Trustee

9. Shri P. Kannan, M.Sc., Regional Dy. Director, Wildlife Preservation, Southern Region, Madras. Ex-Officio Trustee.

10. Dr. G. Durairaj, M.Sc., Ph.D., Prof. and Head, Dept. of Zoology, Madras University. Ex-Officio Trustee.

11. Shri S.M. Sankaralingam, B.Sc., B.L. Director, Tourism Dept. Govt, of Tamil Nadu, Ex-Officio Trustee.

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