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Nehru Zoological Park
Hyderabad 500044

~~Wildlife~~
Wildlife

Health

January, 1983

VOL. I NO. I



(Half yearly Journal of I. Z. V. A. dedicated to the
profession of zoo & wild life medicine)

(Half yearly journal of IZVA dedicated to the profession
of Zoo and Wild Life medicine)

FOR PRIVATE CIRCULATION ONLY

Vol.I.

January 1983

No.I.

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Cover Drawing, Sambar Stag (Cervus Unicolor) Drawing by
Dr. Mir. Gowher Ali Khan.

THE SECOND OPINION

(Editor's Page)

The Alipure Zoo of Calcutta and the Madras Zoo of Tamilnadu have celebrated their centenary with the usual pomp and show a few years back. Now it is the Trivandrum Zoo (The Third Oldest Zoo) of the Southern most state of our country which will be completing 100 th year of its existance shortly. But alas! no where there existed a platform at which the Indian Zoo Veterinarians could have assembled to exchange their ideas, to learn and to disseminate the experience, which they have gathered while working with the Zoo and wildlife medicine for the last so many years. It is only the first two courses of HEALTH CARE AND DISEASE MANAGEMENT IN ZOOS AND IN FREE LIVING STATE, arranged by the Director, INDIAN VETERINARY RESEARCH INSTITUTE: IZATHNAGAR U.P. that the idea to form an association of Indian Zoo Veterinarians got into the minds of the trainees who attended the course of the year 1978 - 1979.

Later on, this seed got germinated when Dr. J.H. desai Director, National Zoological Park, Delhi invited all the Zoo Veterinarians and a few forest officials for a work shop on " CAPTURE METHODS BY TRANQUILISING GUN " in the month of January 1982. For the first time here on 27.1.82 Twenty five Zoo Vets, were fortunate to meet, not only to say Hello, to each other, but to enquire about the health of their DUMB WILD FRIENDS which are in their charge. Out of such seven after-noons which the zoo Vets has spend at Delhi Zoological Park attending to the guest lecturers, delivered by Dr. H. WIESNER, Technical Director, and chief Zoo Veterinarian of MUNICH ZOO, West Berlin, one afternoon was totally earmarked for informal discussion. And this discussion covered various problems such as health and hygiene, feeding and breeding, parasitic control and vaccination of the captive wild life, including the formation of an ASSOCIATION OF OUR OWN.

On 30.1.1982 the birth of INDIAN ZOO VETERINARIANS ASSOCIATION was happily announced, making Dr. R.K. Lahiri (The renowned Indian Zoo Veterinarian, who at present holding the prestagious position of Director, Padmaja Naidu Himalayan Zoological Park, Darjeeling) The president, in whose care, we think the "young baby" born after a very long gap, will be safe and healthy.

Now in your hands is the forst issue of the journal of our associiation, WILD LIFE HEALTH. Read it carefully and send your valuable suggestions so that it can go on improving day by day.


EDITOR.

(Dr. Mir Gowher Ali Khan)

TRANQUILISATION OF ZOO ANIMALS WITH PHENOTHIAZINE

GROUP OF SEDATIVES.

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Dr. C.K. Mondal and Dr. D.G. Wakode.

Tranquilisation of Wild Animals is an indispensable part of work for the Zoo Vets. various drugs are being tried in many Zoos with varied success. After discovery of KETAMINE HYDROCHLORIDE (Ketlar/ Vetalar by Parke & Davis.) PHENCYCLIDINE HYDROCHLORIDE (Sernylan by Parke & Davis) M.99 (Etorphine by Reekitt and colman) etc., a major success is achieved in the field of tranquilisation of wild animals.

Succinyl choline chloride a potent muscle relaxant has been found to be an effective immobilising agent for Zoo animals, although risk of respiratory failure exists with the use of this drug. The peculiarity of this drug is, that its dose varies in different species of animals. On an average, a cat requires 1 mg/Kg. B.W. a dog requires 1 mg/5Kg. B.W., and a cow requires 1 mg/50Kg. B.W. The reason for such a wide variation in dosage is due to different concentration of the Enzyme - cholinesterase and Pseudo cholinesterase in different animals. In order to solve such a large variation in dosage and to minimise the side effects instead of a single drug, various combinations of tranquilising drugs are being preferred by the Zoo Vets.....

One of such example is a mixture of chlorpromazine Hydrochloride (LARGACTIL by May & Baker) and KETALAR, by the Zoo Vets. of Delhi Zoological Park. The dosage of largactil and ketalar in this combination is 2 mg/ Kg. B.W. and 1 mg/ Kg B.W. respectively. The body weight of the animal taken into consideration, in most of cases is Estimated Body weight. The following are the Three cases in which tranquilisation by this mixture gave encouraging results.

-
1. Senior Technical Assistant, Delhi Zoological Park.
 2. Veterinary Officer, Delhi Zoological Park.

Sl. No.	Species.	Estimated body Weight.	Dose of Largactil and Ketalar.	Method of Administration.
1.	Bonnet Monkey.	5 Kgs.	10 mg +	Intra Muscular.
2.	Rhesus Monkey.	10 Kgs.	20 mg. +	-do-
3.	Wolf.	25 Kgs.	50 mg +	By Flying Syringe.
			20 mg.	

SUMMARY

A combination of LARGACTIL AND KETLAR, in the dose of 2 mg/ Kg. B.W. and 1-2 mg/Kg B.W., respectively tried for tranquilising 2 Non-human primates and one wolf, at the Delhi Zoological Park, is found very encouraging.

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VETS ARE MORE FURRY.

From the University of Cambridge leaflet, on procedure at the degree ceremony " Among the hoods worn by degree candidates in the senate house is BACHELOR OF VETERINARY MEDICINE Similar to the hood of bachelor of MEDICINE, but with MORE FUR. "

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~~3. Asdell, S.A. (1961) ... Pattern of Mammalian reproduction. Second edition. Cornell University Press, Ithaca, New York. P.P. 580.~~

4. Prater S.H. (1971) .. The book of Indian Animals III edition 1971 - B.N.H.S. Bombay. PP. 272 - 273.

5. Walker, E.P. (1964) .. Mammals of the world Vol. II. The JOHN HOPKINS press. Baltimore. PP. 1421.

NO DISARMAMENT FOR SUCH WEAPONS

Vitamin C plays an important part in many aspects of our bodies wonderful immune system. Recent research indicates Vitamin C may enhance the bodies production of interferon, prostaglandins, T - Lymphocytes and immune globulins -- weapons in the bodies self defence arsenal.

THE SHAMEFUL RETAILING.

Booming international prices for ivory and Rhino horn have led to indiscriminate killing that is endangering the elephant and driving the Rhino into extinction - Raw ivory now retails for \$ 74 (Rs. 592) a Kilo - While Rhino horn is \$ 1,000 (Rs. 8,000) a Kilo wholesale.

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A ZOO HOSPITAL --- How It Works ?

1	2
Dr. Mir Gowher Ali Khan	Dr. Saber Ali.
3	4
Dr. Dattatri Rao.	T. Ramakrishna.
and	I.F.S.,
.....	

A Zoo Veterinarian is an important person in a Zoo Management, but his right place was given to him only a few decades ago. Many Indian Zoos used to take the services of the Vets. who were found working with domestic animals found about their Zoos, or if a Zoo happens to be a Major one, on the request, the Director, Animal Husbandry Department, used to depute a Vet. once in a week or so to take care of the Zoo livestock. More surprising was the fact that in few cases the " Zoo Management " itself was reported to be treating the sick animals. Not because there was a dearth of Veterinarians but because they could not give a second thought to employ a Zoo Vet. One may think such were the conditions of the Indian Zoos only -- No where is a written record that in London Zoo the Head Keepers were extending the Veterinary aid to their sick animals. It is only on 1st October, 1951 that the Zoo employed a full time residential Vet. Dr. Oliver Graham Jones. The more alarming and dis-heartening is the position that even today in our country, there are still few Zoos which do not have a full time Zoo Vet.

It is fortunate indeed for the Nehru Zoological Park, Hyderabad to have the services of one full time Zoo Vet and Veterinary livestock Inspector, right from the inception i.e. March 1964. Later on a post of Veterinary Compounder was also sanctioned and the health care and disease management was given in the hands of the above staff. In February 1969 the post of the Veterinary Officer was up graded to the post of Assistant - Director, (A.H.) and another Veterinary Officer deputed from the department of Animal Husbandry to fill up the post, thus fallen vacant,. Due to ever increasing day to day work one more V.L.I. and Veterinary Compounder were posted making the staff position as follows:

- | | | |
|-------------------------------|-----|---|
| 1. Assistant Director | ... | One. |
| 2. Veterinary Officer | ... | One. |
| 3. Vety. Livestock Inspector. | ... | Two (Now designated as Junior Veterinary Officers.) |
| 4. Veterinary Compounders | ... | Two (Now designated as Veterinary Assistants.) |

-
- | | |
|----------------------------|-------------------------------|
| 1. Deputy Director, (A.H.) | 2. Assistant Director, (A.H.) |
| 3. Veterinary Officer. | 4. Curator. |

OF
NEHRU ZOOLOGICAL PARK, HYDERABAD (A. P.)

Author No. I who has worked at the Veterinary Hospital, Nehru Zoological Park, Hyderabad in the capacity of Veterinary Officer and as well as Assistant Director (A.H.) since March, 1964 is deputed again by the Department of Animal Husbandry to the Forests Department, Andhra -- Pradesh as Deputy Director, (A.H.) and is made responsible to look after the technical work of the Nehru Zoological Park, Hyderabad, Indra Gandhi Zoological Park, Vishakapatnam, (14) Wild Life Sancturaries and a few deer parks in the State.

VETERINARY HOSPITAL.

The Hospital complex comprises of a three rooms building with two large halls, ten roomy and well ventilated cubicles for In-patients, a postmortem room and long row of close observation cages serving, as Qurentine. In the hospital building there is a small laboratory where the Stool, Blood samples, Urine etc., are examined for immediate diagnosis and treatment. Pathological specimens and material is also send to Veterinary Biological Research Institute, Hyderabad and Veterinary College, Rajender-Nagar, Hyderabad for confirmation and final diagnosis. One of the halls serve as an operation room, where minor operations, ~~XXXXXXXX~~ are done.

In Veterinary practice great importance is attached to the prophylatic treatment of the animals, may be domestic or wild. But this aspects requires more attention when the question of keeping wild animals in captivity arises. Domestic livestock can be handled with much ease and safety but controlling of wild animals for recording the body temperature, auscultating the lungs or administrating medicines and vaccines, parenterally is difficult, rather ha_rardous both to the patients as well as to the Zoo workers. Hence better results can be obtained if a regular prophylatic programme for prevention of diseases is chalked out and sincerely followed.

PROPHYLACTIC MEASURES.

Here, at the Nehru Zoological Park, Hyderabad a Prophylactic Schedule for the prevention of Helminthic (Both ecto and endo Parasites) bacterial and viral diseases is formulated for all the species of the wild animals, Birds etc. The items of work are listed below:

- a) Sanitation and hygiene of animal cages, enclosures etc.,
- b) Checking of animals feed, fodder etc,
- c) Application of bleaching powder to the water of wet moats.
- d) Parasitic control.
- e) Vaccination programme.

a) Sanitation and H ygiene:

Every day all the animal houses are cleaned with phenyle/Dettol solution. In addition to this a particular day is allotted in a week for thorough scrubbing and cleaning the floor, roofing walls, chain-link etc., of the animal houses with disinfectant solution. Likewise a day in a month is allotted for cleaning the enclosures, which is done by sweeping the

enclosures, removing the pebbles, dried leaves etc., cutting the over grown vegetation and trimming the bushes and branches of the trees, if required. The water of the wet moats is removed by hand pumps or drained out, the moats are scrubbed well with bleaching powder and quicklime, and then are refilled with fresh water.

b) Application of Bleaching Powder:

Water if polluted becomes a major source of infection hence clean and fresh water is provided to all the animals and birds in the animal houses. But a majority of animals are exhibited in moated enclosures hence there is every likely hood of the animals getting infection through the moist stagnant water. So in order to minimise the infect on, the water of the wet moats, ponds etc., are treated with bleaching powder once in a month. The application is repeated more than once if found necessary.

c) Feed and Fodder (Nutrition)

As stale and bad food is also a major source of infection for various diseases, hence different kinds of food stuffs and fodder which are received at the Zoo feed stores is inspected by the Assistant Director // Veterinary Officer daily. The fruits, Vegetables and pieces of beef are washed in dilute solution (1%) of pottasium permanganate, then fed to the Zoo livestock.

Good and nutritious diet is required for growth, maintenance of normal health and for breeding prupose. Hence the diet of all the animals and birds is supplemented with vitamins and minerals. Special care is taken to provide vitamin A and calcium to the carnivorous animals as the Beef is deficient in Vitamin A. and poor in calcium. During condition of strain and stress, for example, inclement weather, shifting and for new arrivals vitamin and minerals along with broad spectrum are given in feed and drinking water of the Zoo animals and birds.

d) Parasitic Control:

The modern methods of displaying the Zoo animals in big open enclosures, with lots of greenary is advantageous on one hand in making them live a long life with multiplication of their progeny, but on the other hand it becomes a breeding ground for ectoparasite such as lice, ticks and mites. To keep the ectoparasite under control regular spraying with acricides such as sumithion, Malathion is taken by the Zoo staff. The animal houses and the enclosures are treated with these acraicides. Postoban is some times sprayed on the animals.

Endoparasites are also oneof the causes for unthriftiness of the aniamls. Hence to check the Helminthic infestation the excreta of all the species of will animals and birds are screened under the microscope once in a month and the Zoo livestock is dewormed quarterly. Whenever the infestation in a particular animal is found to be heavy, it is dewormed again.

e) Vaccination Programme:

Preventive Vaccination is another safe step to keep the animals free from most of the bacterial and viral diseases. This item of prophylactic work is still in the preliminary states, mostly due to risk involved in

capturing the animals especially the deer and the antelope. But this difficulty is solved in case of carnivorous animals, as squeeze cages are available. In Nehru Zoological Park, Hyderabad few species of hoofed and horned animals, large felids, canids and birds are vaccinated successfully ~~successfully~~ against Rinderpest, Foot and Mouth disease, Feline and Canine distemper and Duck cholera respectively.

DISEASE MANAGEMENT.

Assistant Director, (A.H.) is the incharge of the Zoo Hospital. He is assisted by one Veterinary Officer, Two Junior Veterinary Officers, and Two Veterinary Assistants. To have a better reporting system about the condition of the livestock, the officers and staff take daily rounds of the Zoo and check the health, hygiene and nutrition of the animals, birds etc.,

A) Treatment of Zoo Livestock:

On an average 10-12 animals are treated daily. Mostly the animals are treated at their respective cages and enclosures. Majority of the cases are given medicines in drinking water and food. When injection is to be given the carnivorous animals are taken in squeeze cage, where as the hoofed and horned animals are controlled by means of ropes or they are kept in wooden crates. In a few cases Rinderpest vaccine is given by projectile syringe. Gentamycin is also given to a wild ass through this method. Latest Broader spectrum antibiotics, Vitamins, Minerals and other life saving drugs are used in the Zoo medicine practice. Many helminthic, bacterial and viral diseases are recorded and treated successfully at the Zoo Hospital. Among the Non-infectious diseases diarrhoea, dysentery, gastritis, pneumonia wounds and fractures and the common ailments, for which the animals and birds are mostly treated.

Animal Husbandry officers from the Veterinary Biological and Research Institute, Hyderabad and professors of College of Veterinary Science and Animal Husbandry, Rajendernagar, Hyderabad are consulted from time to time in serious and complicated cases.

B) Casualties Among the Zoo Animals:

Casualties among the Zoo animals can broadly be listed as follows:

- i) Specific infection such as Helminthic, Bacterial and Viral Diseases.
- ii) Non-specific causes. This includes systemic diseases mostly of non infectious type.
- iii) Accidents.

i) Specific Infection:

The Nehru Zoological Park has recorded the out breaks of Rinderpest in Gaur and Indian Antelope, Foot and Mouth disease in Gaur, Sambar, and spotted deer and feline distemper in large felids (on clinical signs-virus is not isolated) The Zoo has lost seven gaurs and one Indian Antelope (White) due to Rinderpest, one Male gaur and two spotted deer due to Foot and mouth disease, and a good number of large felids due to feline distemper. Among blood borne Trypanosomiasis is very common in large cats such as Tiger, diseases

Indian Lion and Puma. This is being treated successfully with Antrycide Prosalt/-Berenil. Trapanosomiasis is also recorded in a jackal. In ungulates and carnivorous animals no casualty is recorded due to any major bacterial diseases, any how a case of Psteurellosis in an African Lion cub is recorded. Few Non-human primates have died of tuberculosis and amoebiasis. The most common infection recorded in birds and water ducks is pasteurellosis. Fortunately birds responds well to the broad spectrum antibiotics in drinking water, hence the infection can be controlled easily without much losses. Tuberculosis though not common is recorded in an Emu. A fairly good number of Magpie, White throated and White crested Laughing thrushes have succumbed to Microfilariasis.

ii) Casualties due to Non-Specific Causes:

Enteritis is the most common cause of death in hoofed and horned animals, in Big and small cats, as well as in birds. Pneumonia is another common cause usually associated with gastro enteritis. One Tigress and one female Guanaco have died of Pyometra. Chronic Nephritis has resulted in the death of one Indian Lion and one Black Panther. Death due to tumors is not common.

iii) Accidents:

About 25-30 percent of the casualties are due to accidents, resulting in punctured wounds, fractures, haemorrhages, shock and death. This is usually observed in rutting season in species which are kept in herds and open enclosures. This is common in deer and antelope. Not observed in large cats.

POST MORTEM AND CARCASS DISPOSAL.

A detailed postmortem examination is carried out on all the dead animals and birds at the Zoo Hospital. If an animal or a bird is suspected to have died of any contagious disease, the research officers from the local Veterinary Biological Research Institute, and The College of Veterinary Science and Animal Husbandry are called for postmortem and consulted. The cause of death is established and all necessary precautionary measures are adopted to prevent spread of infection.

Unless otherwise required the carcasses are usually buried deep in quick lime. However skins of big cats and exotic animals are taken out for taxidermy work, first ensuring that they carried no contagious diseases.

BREEDING.

Breeding is the ultimate goal of conservation. To breed in captivity, the wild animals require good and balanced food, plenty of space least disturbances and finally compatibility among both the sexes.

The Nehru Zoological Park has a good breeding record to its credit perhaps because of all these facilities. The Zoo has bred almost all species of big cats including exotic cats such as puma and Jaguar. Among ungulates the Zoo has bred all species of deer and antelopes that were / are in exhibit. Some of the endangered animals in this category includes thanin deer (cervus eldi), one horned Indian Rhinoceros, Indian Gaur, and exotic animals like Hippopotamus, Giraffe and Zebra.

NEWS CORNER
A four day symposium on "MILESTONES IN BIOLOGICAL SCIENCES" was held in the department of Zoology, Utkal University, Bhubaneswar, Orissa from 21st to 24 Feb. 1982 on occasion of 25th Annual Meeting of Zoological Society of Orissa. One of the topics of the symposium was "Studies on Wild Life of India". During the last 25 years, Dr. H.N. Acharjyo participated in the symposium. IZVA Member

A three day international symposium on primates was organised in the Zoology department of the Jodhpur University faculty of Science, Rajasthan from 17 - 19 Feb. 1982 to commemorate late Dr. S.C. Mukhya, a young and promising primatologist who died on Dec. 16, 1980. The symposium was sponsored by the Department of Environment Government of India, Jodhpur University, Government of Rajasthan, the primatological Society of India in collaboration with UGC, CSIR, ICMR, INSA, Ministry of Agriculture, Government of India, and Desert Wild Life Protection Society. A symposium on "International Cat Symposium" was held at Caesar, Kleberg Wild Life Research Institute, Texas, U.S.A. and I University, Kings - Ville, U.S.A. from October 4 - 7, 1982. Papers on different aspects of cat biology such as status, Reproductive Biology, Behaviour, Predator - Prey Relationships, Habitat requirements and Management of cats were presented in the symposium.

An International symposium on Antler development in Cervidae was held at CAESAR KLEBERG WILD LIFE RESEARCH INSTITUTE, TEXAS A & I, UNIVERSITY, KINGS VILLE, TEXAS, U.S.A. from September 23 - 25th 1981. Papers on different aspects of Antler development, Nutrition, Endocrinology, Breeding and Genetics, Life Cycle, Diseases and Wild Life Management were presented. IZVA Member Dr. L.N. Acharjyo's paper on antler development in sambar deer was accepted.

An International symposium on management of Rhinoceros in captivity was held at LONDON ZOO from 26th to 27th August, 1982. This was organised by the Association of the International Union of Directors of Zoological Gardens, with the Co-operation of the Zoological Society of London. Zoos Keeping Indian Rhinoceros, Black Rhinoceros, White Rhinoceros were invited for presentation of papers. IZVA Member Dr. Mir Gowher Ali Khan's paper on Breeding of Great Indian Rhinoceros in Nehru Zoological Park, Hyderabad was accepted.

IZVA Member Dr. L.N. Acharjyo attended the first IUCN/SSC Snake specialist group meeting as a delegate from Orissa. The meeting was attended by delegates from many states of India, Various Research organisations and also by foreign delegates. During the meeting held between 8th to 12th November 1982 at Madras delegates presented several papers on Snake status, Conservation programmes etc., Dr. L.N. Acharjyo presented a paper on the Role of Indian Zoos in Snake Conservation.

He was chosen as a member of the committee to draft research projects involving Indian Python and the King Cobra. The other paper of interest to Zoo Veterinarians was one by Dr. Stephen Ambu on "Helminth infections in Malayan Snakes!"

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Shop

An International workshop on the management of elephants in the Wild and in captivity was organised by the Forest Department of West Bengal in collaboration with the IUCN/SSC Asian elephant Specialist Group at Jaladpara Wild Life sanctuary from 10th to 17th December, 1982.

The Prime Minister Indra Gandhi also sent her good wishes. The 80 delegates representing Bangladesh, Bhutan, Kenya, Malaysia, Srilanka, and Indian States holding elephants participated in the workshop. IZVA Members Dr. V. Krishan Murthy, Dr. J.V. Cheran, Dr. R.K. Majumdar and Dr. Mir Gowher Ali Khan were the participants from the Veterinarians side. Dr. V. Krishan Murthy presented papers on elephant diseases and diets. Dr. Cheran presented a paper on tranquilisation of elephants using Rompun drug and Dr. Majumdar presented a paper on diets of elephants in captivity. Mr. J.C. Daniel, chairman, Asian elephant group of IUCN and Natural resources presided over the valedictory function. In this valedictory function several resolutions were passed. One of the resolution is for tranquilising the elephants when they are to be captured and translocated.

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A New wildlife sanctuary encompassing several reserved forests in Chittoor and Cuddapah districts is in the process of notification and when it comes into being, it will be the 15th sanctuary in the state of Andhra Pradesh.

The Sanctuary will cover 506 Sq. miles. This will be named after the lord of seven hills, who presides over the SESHACHALA HILLS. Mouse deer, Sambar, Barking deer, Sloth bears, Wild dogs, wolves, and jackals are residents of the forests. Number of Tigers and panthers also prowl there. Mr. Pushpa Kumar, Conservator of Wild Life, Andhra Pradesh, Hyderabad who visited this area some time ago, came across as many as sixty species of fauna here.

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A ZOO VETS TREASURE.

To pick up a sick wild animal from its herd, secure it safely, diagnose the disease correctly and to treat it successfully is more than a ~~XXX~~ SOLOMON'S TREASURE FOR A ZOO VET.

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INDIAN ZOO VETERINARIANS ASSOCIATION.

INDIAN ZOO VETERINARIANS
ASSOCIATION.

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The objective of the Indian Zoo Veterinarians Association are:

1. To advance programme for preventive medicine, husbandry and scientific research in the field of veterinary medicine dealing with wild animals in captivity and in free state.
2. To Provide a forum for the presentation and discussion of problems related to the health care and disease management of the wildlife.
3. To publish and distribute scientific information related and pertaining to the veterinary medicine dealing with captive wild animals.

I Z V A O F F I C I A L S :

DR. S.D. SHARMA.

Honorary Life Member and
Chief Patron.

DR. R.K. LAHIRI.

PRESIDENT.

DR. L.N. ACHARJYO

VICE PRESIDENT.

DR. V. KRISHNA MURTHY

VICE PRESIDENT.

DR. MIR GOWHER ALI KHAN.

SECRETARY CUM TREASURER.

DR. R.K. PARMAHANS.

JOINT SECRETARY.

ANY ZOO VETERINARIAN WORKING WITH THE ZOO&WILD LIFE MEDICINE IS WELCOME TO JOIN THE ASSOCIATION. THE MEMBERSHIP IS ALSO OPEN TO OTHER VETERINARIANS INTERESTED IN WELFARE OF WILDLIFE.

Annual Membership Fee will be Rs. 20-00.

Membership fee along with the application

should be sent to :

DR. MIR GOWHER ALI KHAN
DEPUTY DIRECTOR (A.H.)
NEHRU ZOOLOGICAL PARK.
HYDERABAD (A.P.) 500 264.

LIST OF MEMBERS OF INDIAN ZOO VETERINARIANS ASSOCIATION

(Established - January 1982)

- | | |
|------------------------------|--|
| 1. Dr. B.M. Arora | Scientist-2 (Wild Life)
Wild Life Section, Indian
Veterinary Research Institute,
Izathnagar, Dist. Barailly. U.P. |
| 2. Dr. (Lt.Col.) B.R. Shetty | Officer Commanding
44, Military Veterinary Hospital,
New Delhi. |
| 3. Dr. C.J. Chandra. | Veterinary Officer,
Museum and Zoo, Trivandrum,
695001 - Kerala. |
| 4. Dr. B.L. Mathur. | Veterinary Assistant Surgeon,
E - 173 Ramesh Marg, "C" Scheme
Jaipur - Rajasthan. |
| 5. Dr. C.K. Mondal. | Senior Technical Assistant,
Delhi Zoological Park,
Sunder Nagar, New Delhi - 3. |
| 6. Dr. D.G. Wakode. | Veterinary Officer,
Delhi Zoological Park,
Sunder Nagar, New Delhi - 3. |
| 7. Dr. H.K. Gairola. | Veterinary Officer,
Kanpur Zoo,
Utter pradesh. |
| 8. Dr. K. Srenivasan. | Assistant Director,
Sri. Chamrajendra Zoological
Garden, Mysore -10. Karnataca. |
| 9. Dr. K.K. Bhattacharya. | Veterinary Assistant Surgeon,
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| 10. Dr. L.N. Acharjyo. | Veterinary Officer,
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| 11. Dr. M.V. Wani. | Deputy Superintendent (Veterinary)
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| 12. Dr. M.M. Sharma. | Veterinarian (Small Animals
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| 13. Dr. M.M. Barua. | Veterinary Officer,
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| 14. Dr. S.D. Sharma. | Veterinarian (Small Animals
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New Delhi - 110017. |
| 15. Dr. P.P. Tongaonkar. | Deputy Garden Superintendent,
Pune Municipal Corporation, Pune. |

16. Dr. R.K. Parmahans. Deputy Director,
Prince of Wales Zoological Garden.
Lucknow. U.P.
17. Dr. R.N. Gupta. Development Officer,
Gwalior Zoo, Gandhi Park,
Gwalior. U.P.
18. Dr. Rej Bahadur. Veterinary Surgeon,
Mini Zoo Pinjore. Haryana.
19. Dr. Vinod Sharma. Veterinary Surgeon,
M.C. Zoological Park,
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Chathir, Chandigarh-22. Punjab.
20. Dr. V. Krishna Murthy. Forest Veterinary Officer,
(Deputy Director),
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Tamilnadu- 641018.
21. Dr. Mir Gowher Ali Khan. Deputy Director, (A.H.)
Nehru Zoological Park,
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22. Dr. S.A. Chede. Assistant Professor & Superinten-
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Edited, Printed & Published by Dr. Mir Gowher Ali Khan on behalf of
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Wildlife Health

July, 1983

VOL. I No. - 2



Half Yearly Journal of IZVA Dedicated To The
Profession of Zoo & Wild Life Medicine

WILD LIFE HEALTH

(Half Yearly Journal of IZVA dedicated to the profession of Zoo - and wild life Medicine)

FOR PRIVATE CIRCULATION ONLY

VOL. I.

JULY 1983

NO: II.

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THE SECOND OPINION (Editorial)

If a Veterinarian working with the domestic animals is posted to a Zoo Hospital to take care of the health and disease problem of the Wild Animals., I am sure he will feel like a fish, exactly not out of water but a fish thrown in a new pond, the environment of which will be quite embarrassing in the sense that the Zoo animals are not like his pet dogs and Pussy Cats, nor they look to him as familiar as his cows and Buffaloës. He is helpless when a lion roars at him if he wants to record his body temperature or to auscultate his lungs. He is taken aback when a Black Buck limping with the right hind leg jumps off the fence of the enclosure and fractures the other healthy leg, simply because the VET., entered in the enclosure to secure and examine the Black Buck by himself. He feels the pinch when trying to give a shot of Tetracycline to a Panther, gets his skin and muscles lacerated by the sharp nails of the big cat, and is hospitalised to get himself shots of Tetanus Toxoid and Penicilline, in addition to minor surgery.

Hence it is wise to get him trained and equipped well with knowledge of Zoo and Wild animal Medicine, then make him responsible to look after the Zoo livestock. This can be achieved as follows:-

- 1) To start again the three months Certificate Course in "Health Care and Disease Management of Wild animals in Captivity and in Free State" by the Prestigious National Institute of INDIAN VETERINARY RESEARCH INSTITUTE IZATHNAGAR.
- 2) To start few Courses of "Wild Life and Zoo animal Medicine" in the B.V.SC., course of various Veterinary College of the country.
- 3) By deputing the Zoo Veterinarian to an A Class Zoo, to work under a senior Zoo VET. for a few months.

Paul
EDITOR.

(The Delay in bringing out this issue is highly regretted)

LIST OF HELMINTHIC AND INFECTIOUS DISEASES
RECORDED IN THE WILD ANIMALS OF
THE NEHRU ZOOLOGICAL PARK HYD.

1. DR. MIR GOWHER ALI KHAN. 2. DR. SABIR ALI, & DR. DATTATRI RAO.

The Zoo Veterinary Hospital of the Nehru Zoological Park, Hyderabad is established right from the inception of the Zoo Park, i.e., in the Year, 1964. One Assistant Director (A.H) one Veterinary Officer, two Junior Veterinary Officers and two Live Stock Inspectors are on the Staff list.

It is a full fledged hospital with a Pathological Laboratory attached to it. The Staff is keen in diagnosing and treating the various diseases of varied a species of wild animals of the park, day in and day out. For serious and complicated Cases the Research Officers of V.B.R.I. Hyderabad and of the Veterinary College Rajendarnagar, are often consulted. Their valuable suggestions and Laboratory findings of Helminthic, Protozoal, bacterial, viral and other non-infectious diseases has assisted in the correct Diagonosis and Treatment of the Wild Animals of this Park.

Taking advantage of these Research findings, including the Laboratory work done by the authors at the Pathological Laboratory of the Zoo Hospital, a list of "Infection and Helminthic diseases" for over a period of 15 years i.e., from 1965, to 1980, encountered in the various species of the Zoo Animals is listed and presented as below. The Author's are hopeful that the information given in this Article will serve as a Guide line in understanding the Patterns of Wild Life diseases especially met with in the Indian Fauna, kept in the Zoo and Deer Parks, of the country.

HELMINTHIC DISEASES

A. ASCARIASIS

I. CARNIVOROUS ANIMALS.

- | | |
|-----------------|----------------------------|
| 1. Tiger | (Panthera Tigers) |
| 2. African Lion | (Panthera leo) |
| 3. Indian Lion | (Panthera leo persica) |
| 4. Puma | (Felis concolop) |
| 5. Jaguar | (Panthera onca) |
| 6. Cheetah | (Acinonyx jubatus) |
| 7. Panther | (Panthera pardus) |
| 8. Raccoon | (Nyctereutes procyonoides) |

2. HERBIVOROUS ANIMALS

- | | |
|-------------------|--------------------------|
| 1. Giraffee | (Giraffa Camelopardalis) |
| 2. American Bison | (Bison bison) |
| 3. Bos Gaur | (Bos gaurus) |

4. Eland (Tauretragus oryx)
5. Oryx (Oryx beisa)
6. White Southern Rhinos. (Ceratotherium simum simum)

3. BIRDS

1. Ostrich (Struthio Camelus)
2. Emu (Dromaius nevhollandiac)
3. Double Wattled Cassin's (Casarius e. altijugris)
4. Rhea (Rhea americana)
5. Pheasants (Phasianus sp.)

B. ANCHYLOSTOMIASIS

CARNIVOROUS SPECIES

1. Tiger (Panthera tigris)
2. African Lion (Panthera leo)
3. Indian Lion (Panthera leo persica)
4. Panther (Panthera pardus)
5. Puma (Felis concolor)
6. Jaguar (Panthera onca)
7. Cheetah (Acinonyx jubatus)
8. Clouded Leopard (Neofelis nebulosa)
9. Coyote (Canis latrans)
10. Small Indian civet (Viverricula indica)
11. Pine Martin
12. Grey Fox (Urocyon cinereoargenteus)
13. Jackal (Canis spp)

C. STRONGYLOSIS

I. HERBIVOROUS ANIMALS

1. Indian Rhinoceros (Rhinoceros unicornis)
2. White Rhinoceros (Ceratotherium simum simum)
3. Hippopotamus (Hippopotamus amphibius)
4. Zebra (Hippotigris spp)
5. Giraffe (Giraffe camelopardilis)
6. Indian Elephant (Elephas maxima)
7. American Bison (Bison bison)
8. Oryx (Oryx beisa)
9. Eland (Tauretragus oryx)
10. Fallow Deer (Dama dama)
11. Bes gaur (Bes gaurus)
12. Red Kangaroo (Macropus rufus)

13. Bennets Walley	(Petrogale sp)
14. Barbary sheep	(Ovis areus)
15. Mouflan Sheep	(Ovis Musimen)
16. Samber Deer	(Cervan unīceler)
17. Chital	(Axis axix)
18. Nilgai	(Beselaphus tragocamelus)
19. Gnu Or WildeBeest	(Connechaetes taurinus)
20. Indian Gazelle	(Gazelle gazella)
21. Black Buck	(Antilepe cervicapra)
22. Four herved Antilope	(Textracerus quadricornis)
23. Great Indian Squirrel	(Ratufa indica)
24. Camel	(Camelus sp)
25. Persian Gazelle	(
26. Hog Deer	(Axis percinus)
.. Eland	(Tauretragus oryx)
.. Fallow Deer	(Dama dama)
.. Bes gaur	(Bes gaurus)
.. Red Kangaroo	(Macropus rufus)

D. TRICHURIS INFESTATION

HERBIVOROUS ANIMALS.

1. Giraffe	(Giraffa cameleopardallis)
2. Black Buck	(Antilope cervicapra)
3. Camel	(Camelus sp.)
4. Fallow Deer	(Dama Dama)
5. Samber deer	(Cervus uniceler)
6. Indian Elephant	(Elephas maximus)

E. HAEMONCHUS CONTARTUS INFESTATION

1. Four Horned Antilope	(Tetracerus quadricernis)
-------------------------	---------------------------

F. MICROFILARIASIS

BIRDS

The white threated laughing Thrush	(Garrulax albegularis)
------------------------------------	------------------------

2. ~~The White Crested Laughing Thrush~~ (Garrulax leucolophus)
3. The straited laughing Thrush (Grammatoptila straita)
4. The Red Billed Blue Nagpie (Cissa flavirestris)
5. The Green Magpie (Cissa Chinensis)
6. The Blue Heades Himalayan Jay
7. Gold Fronted Chloropsis (Chloropsis aurifrons)
8. The Indian Rose Finch (Carpodacus erythrinus)
9. The black Headed Sibia
10. Red and Blue Macaw (Anoderhynchus hyacinthinus)
11. The Indian Necklace Laughing Thrush (Garrulax moniligera)

G. TRICHOMONIASIS

- (T. gallinae) (Molopsittious undulatus)
- I. Budgeri gars

H. TOXOPLASMOSIS

- (T. Gondii)
1. Black Headed Munias (Lonclura malacca linn)
 2. White Threated Munias. (Lonclura malabarica Linn)

I. TAPE WORM INFESTATION

CARNIVORUS ANIMAL

- i) D. latum Infestation
1. Clouded Leopard. (P. nebulosa)
 2. Jaguar. (Panthera onca)
 3. African Lion. (Panthera lee)
 4. Panther (Panthera Pardus)

ii) D. Caninum Infestation

1. Jaguar (Panthera onca)

HERBIVOROUS ANIMALS

- MoNEIZA sp. (Bes gaurus)

BIRDS

(Species could not be identified)

(BIRDS)

(Species could not be identified)

- 1. Flamingo (Lesser) (Phoeniconaias minor)
- 2. Macaw sp. (Anoderhynchus hyacinthinus)
- 3. White cockatoo (Cacatua sp.)
- 4. Blue Magpie (Cissa flavirostris)
- 5. Domestic Pigeons (Columbia livia)

J. HYDATIDIOSIS

Herbivorous Animals

- 1. Great Indian Squirrel. (Ratufa Indica)
- 2. Giraffe (Giraffa Camelopardails)
- 3. Eland (Tauretragus oryx)
- 4. Oryx (Oryx beisa)
- 5. American Bison (Bison bison)
- 6. Camel (Camelus sp.)
- 7. Black Buck (Antilope cervicapra)

K. AMPHISTOMIASIS

- 1. Indian Rhinoceros (Rhinoceros unicornis)
- 2. Zebra (Hipptigris sp.)
- 3. Indian Elephant (Elephas maxima)
- 4. American Bison (Bison bison)
- 5. Oryx (cryx beisa)
- 6. Barbary sheep (BIRDS) (Ovis Arcus)
- 7. Samber deer (Species could not be identified) (cervus unicolor)
- 8. Camel (Camelus sp.)
- 9. Bosgaur (Lesser) (Bos gaurus)
- 10. White southern Rhino (Ceratotyerium Simum simum)

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J. HYDATIDIOSIS
Herbivorous Animals

- 1. Great Indian Squirrel. (Ratufa Indica)
- 2. Giraffe (Giraffa Camelopardails)
- 3. Eland (Tauretragus oryx)
- 4. Oryx (Oryx beisa)
- 5. American Bison (Bison bison)
- 6. Camel (Camelus sp.)
- 7. Black Buck (Antilope cervicapra)

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- 2. Zebra (Hipptigris sp.)
- 2. Indian Elephant (Elephas maxima)
- 4. American Bison (Bison bison)
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- 6. Barbary sheep (BIRDS) (Ovis Arcus)
- 7. Samber Deer (Species could not be identified) (cervus unicolor)
- 8. Camel (Lesser) (Camelus sp.)
- 9. Bosgaur (Bos gaurus)
- 10. White southern Rhino (Ceratotyerium Simum simum)

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L. BALANTIDIOSIS

- | | |
|------------------------------|-----------------------------|
| 1. Clouded Leopard | (Felis nebulosa) |
| 2. Indian Lion | (Panthera leo persica) |
| 3. Indian Rhinoceros | (Rhinoceros unicornis) |
| 4. White Southern Rhinoceros | (ceratotherium simum simum) |
| 5. Indian Elephant | (Elephas maximus) |
| 6. Camel | (Camelus sp.) |
| 7. Black Buck | (Antilope Cervicapra) |

M. COCCIDIOSIS

- | | |
|------------------------|--------------------------|
| 1. African lion | (Panthera leo) |
| 2. Panther | (Pantheri pardus) |
| 3. Hippopotamus | (Hippopotamus amphibius) |
| 4. Barbary sheep | (Ovis aereus) |
| 5. Gnu or wild beest | (Cannoheates Taurinus) |
| 6. Black headed munias | (Lonclura malacca linn) |
| 7. Spotted Munias | (Lonclura Punctulata) |
| 8. Red Munias | (Estrilda amandara) |
| 9. Pea fowl | (Pavo cristatus) |

N. TRYPANOSOMIASIS (T. EVANSI)

- | | |
|----------------|------------------------|
| 1. Tiger | (Panthera Tigris) |
| 2. White Tiger | |
| 3. Puma | (Felis concolor) |
| 4. Indian Lion | (Panthera leo persica) |

O. MALARIA (Plasmodium sp.)

- | | |
|-------------------|-------------------------|
| 1. Cannaries | (Serinus canarius) |
| 2. Crowned cranes | (Balearica sp.) |
| 3. Red Spur Owl | |
| 4. Flamingo | (Phoenicopterus roseus) |

5. Starling (Lamprotornis sp.)
6. Greater Indian Hill Myna (Gracula religiosa)
7. Bar headed Goose (Anser indicus)
8. Common Teal
9. Great Horned Owl

P. ASPERGELLOSIS

1. White pea fowl (Coturnix coturnix)

II. BACTERIAL DISEASES

(Bacterial infections such as wounds, abscesses etc. due to Streptococci and staphylococci are omitted here)

a) PASTEURELLOSIS

1. African Lion Cub (Panthera leo B. Multocida)
2. Green magpie (Cissa chinensis)
3. Spotted dove (Streptopelia chinensis)
4. Potagonian cormore
5. The Red Nilled Blue Magpie (Cissa flavirostris)
6. The White Crested laughing thrush (Garrulax leucolophus)
7. Red Brested parakeet.
8. The white throated laughing thrush (Garrulax aboulgaris)
9. The straited laughing thrush (Grammatoptila straita)

b) SALMONELLOSIS

1. Ostrich (Struthio camelus)

c) TUBERCLULOSIS

1. Emu (Dromaius novaehollandiac)

d) CLOSTRIDIUM INFECTION

1. Gharial (Gavialis gangeticus)

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III. VIRAL DISEASES

CARNIVOROUS ANIMALS:

a) Feline Distemper.

(on clinical, symptoms, virus could not be isolated)

1. White Tiger (Panthera tigris)
2. Tiger (Panthera tigris)
3. Puma (-do-)
4. Panther (Felix concolor)
5. Binturong (Panthera pardus)
6. Ratal (Arctictis Binturong)
7. Golden Cat (Mehlivora Capensis)
8. Leopard Cat (Felis-(Profelis) Temminicki)
9. otter (Felis bengalensis)
- (Mellivora sp.)

HERBIVOROUS ANIMALS

a) Foot and Mouth Disease.

1. Bos guar (Bos Gaurus)
2. Cheetal (Axix axix)
3. Sambar deer (Cervus unicolor)
4. American Bison (Bison bison)

b) RINDERPEST:

1. Bas Gaur (Boe Gaurus)
2. Black Buck (Antelope Cervicapra)

HELMINTHIC AND INFECTIOUS DISEASES

RECORDED IN NON-HUMAN PRIMATES :

a) ASGARIASIS:

1. Capuchin Monkey (Cebus capucinus)
2. Moustache Guenon (Ceropithecus cephus)
3. Lion tailed macaqa (M. silenus)
4. Rhesus macaqa (Macaca Mullata)

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8. Leopard Cat
9. otter

HERBIVOROUS ANIMALS

a) Foot and Mouth Disease.

1. Bos guar (Bos Gaurus)
2. Cheetal (Axix axix)
3. Sambar deer (Cervus unicolor)
4. American Bison (Bison bison)

b) RINDERPEST:

1. Bas Gaur (Boe Gaurus)
2. Black Buck (Antelope Cervicapra)

STRONGYLOSIS

- | | |
|------------------------|------------------------|
| Chimpanzee | (Pan troglodytes) |
| 1. Olive Baboon | (Chaeropithecus sp.) |
| 2. Sacred baboon | (Papio hamadryas) |
| 3. Gelada Baboon | (Theropithecus gelada) |
| 4. Capuchin Monkey | (Cebus capucinus) |
| 5. Lion Tailed macqa | (Cebus capucinus) |
| 6. Rhesus macaqa | (Macaca Mullata) |
| 7. Red crowned mangaby | (Cerocebus torquatus) |
| 8. Mona monkey | (C. Mona) |

TRICHURIS INFESTATION

- | | |
|------------------------|-------------------------------|
| 1. Sacred Baboon | (Papio hamadryas) |
| 2. Chacma baboon | (Papio ursinus) |
| 3. Olive baboon | (Chaeropithecus sp.) |
| 4. Lion tailed maca qa | (M. Silenus) |
| 5. Pig tailed Macaqa | (Macaca nemestrina) |
| 6. Rhesum macaqa | (M. Mullata) |
| 7. Vervet Monkey | (C. aethiops pygeryt hrus) |
| 8. Diana Monkey | (Cynocephalus Cercopitherous) |
| 9. Drill Monkey | (mandrillus leucolienus) |
| 10. Chimpanzee | (Pantroglodytes) |

d) BALANTIDIOSIS:

- | | |
|------------------|-----------------------------------|
| 1. Drill | (Mandrillus leucohoeus) |
| 2. Diana Monkey | (cynocephallus cercocephitherous) |
| 3. Mandrill | (Mandrillus sphinx) |
| 4. Mona Monkey | (C. Mona) |
| 5. Olive baboon | (Chaeropithecus sp.) |
| 6. Spider Monkey | (Atelas geoffroyi) |

e) AMOEBIASIS

- | | |
|------------------------|-----------------------|
| 1. Spider Monkey | (Atelas geoffroyi) |
| 2. Olive baboon | (Chaeropithecus sp.) |
| 3. Red crowned Managby | (Cerocebus torquatus) |
| 4. Mandrill | (Mandrillus sphinx) |
| 5. Mona | (cynocephalum mona) |
| 6. Chimpanzee | (Pantroglodytex) |

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1. Olive baboon
 2. Lion tailed macaca
 3. Pig tailed macaca
 4. Rhesus macaca
 5. Sacred baboon
 6. Diana Monkey
 7. Drill Monkey
 8. Chimpanzee

1. Drill
 2. Diana Monkey
 3. Mandrill

1. Spider Monkey
 2. Olive baboon
 3. Red crowned Managby
 4. Mandrill
 5. Mona
 6. Chimpanzee

HEALTH PROBLEMS OF CAPTIVE CROCODILES

B.C.Choudhury , Research Assistant
Crocodile Conservation Project, Nehru Zoological Park
Hyderabad 500 264.

Three species of crocodiles are found in India. Commonest of them is the mugger crocodile, Crocodylus palustris , found in fresh water habitats all over India except extreme north and the deserts. The saltwater crocodile or estuarine crocodile, Crocodylus porosus inhabits the estuaries (where the rivers empty into the sea) fringed with mangrove vegetations. Sunderban in West Bengal, Bhitarkanika in Orissa and the Andaman and Nicobar Islands are the last remaining habitat for this species. The unique long snouted Gharial, Gavialis gangeticus is found only in the northern rivers of the country as well as in Mahanadi in Orissa. No other species of the 21 that are found all over the world are found in India. Alligators are found in U.S and China and not in India.

By 1970 the three species of Indian crocodiles were threatened with extinction. The number of wild gharials in the country had reduced to just about seventy individuals. The saltwater crocodile had become so rare that finding one in the wild was almost impossible. The mugger was fast depleting in number everywhere. Concerned with this , Government of India initiated a Crocodile Conservation Project in 1975 through the Forest Departments of many states. These projects ensured the survival of Indian crocodiles by adopting a strategy of protection of wild crocodiles and their habitats, collection of wild laid crocodile eggs for captive hatching and rearing to a safe size of 1.2m (at this size crocodiles have no predators) and releasing these stock in a bid to increase the wild population.

In 1975 only three crocodile rearing stations became operational , but by 1980 as many as twenty rearing stations spread out all over the country had already produced over 7000 crocodiles excluding about 2000 already released in wild habitats.

Naturally, all these rearing stations with livestock faced many health problems. Crocodiles being a new animal for most veterinarians posed further problems on this field. This paper is only a compilation of health problems confronted in many rearing stations and should be reviewed accordingly.

Adult crocodiles are hardy but young ones upto an age of three years are vulnerable to health problems. A high percentage of mortalities take place during the first year of their life of which the first six months are particularly more disease prone.

Being ectothermic (their body temperature varies with the environmental temperature) and aquatic, crocodiles unlike fish, need plenty of water and land to live and sunshine to bask. Most rearing stations ignore the provision of these basics and such small mismanagement results in various health problems.

Metabolism, appetite, digestion, growths and the immunity system of crocodilians are dependant on the temperature in which they are reared. An analysis of health problems in captive crocodilians may reveal that pathogens responsible for many diseases usually take opportunity to invade the immunity depressed animals kept in a suboptimal temperature regime. Thus, good maintenance and a proper hygiene regime would prevent almost 90 % of health problems.

Identifying a sick crocodile is very difficult for a person who is not aware of the normal behaviour of a crocodile in captivity. However, as a rule the sick animal remains isolated and is reluctant to go into water. The healthy sign of a gleaming eye is lost and the sick animal more or less remains listless. Such individuals are to be separated into quarantine or special sickness management pools, in all aspects similar to rearing pools but built away from the main rearing pools. The sick crocodiles environment must match ~~that~~ in wild and the rearing pools as closely as possible with respect to temperature, humidity, food, photoperiod and lack of disturbance .

For convenience health problems encountered with crocodiles from hatchling size to adults in various rearing stations (and referred to the author) has been compiled and is systematically arranged.

1. UMBILICAL ABSCESS (Infection of unabsorbed yolksac);

This is the first problem faced by many rearing stations. A problem common with premature hatchlings that hatch out with a large mass of unabsorbed yolksac and a distended belly. Infection reaches the area through wounds in this area or through the umbilical cord. Sometimes the yolkmass solidifies and blocks the intestinal passage. Removal of the unabsorbed liquid yolkmass by a sterile hypodermic syringe one or two days after hatching helps. Keeping the hatchling in normal saline

2. PROBLEMS OF THE ALIMENTARY TRACT:

Symptoms of the gastric trouble (protozoan infection in particular) includes wet haemorrhagic or mucous ladden stools, weight loss and listlessness, convulsion and death follows. Post mortem reveals extensive damage in the gut, liver and other internal organs. Though cases like this are difficult to isolate from larger sample size , inactive individuals are isolated and treated. Metronidazole (250-275mg/kg of body weight a single dose) for two weeks helps. Entamoeba sp. has been found to be the pathogen in many cases.

Bacterial enteritis (showing heavy inflammation of intestine or stomach) is also usually encountered in stocks upto two years of age and is the cause of large scale mortality in many rearing stations. Symptoms include passage of haemorrhagic stool, refusal to go to water, dehydration and paralysis of both limbs or one, eyes partly or totally closed, arching of spine and raising of head and tail in convulsion etc. Antibiotics such as Chloromphenicol drugs help in disappearance of symptoms but does not completely eradicate the bacteria. Salmonella, Pseudomonas and Aeromonas have been known to be the causative agents. Since these bacterias are also found in healthy animals it appears that secondary bacterial infection combined with one or a number of predisposing factors causes the disease. These may be an injury on the mouth, malnutrition, stress such as low environmental temperature and overcrowding.

Several rearing complexes reported crocodiles infested with Coccidiosis. Intestine and liver inflammation were ~~evident~~ evident on necropsy.

Ascaris infestation is also known to have been reported from some rearing stations. An ideal quarterly deworming regime helps in preventing and overcoming the problem. Drugs such as Thiabendazole 50mg/Kg body weight, 2 doses for 2 to 3 weeks or Mebendazole 10mg/Kg B.W in the same doses and time can help. Drugs can be mixed with food.

A disease of the mouth is mouth canker characterised by swellings on the base of the teeth sockets with cheesy encrustations , usually light yellow in coloration. Gradually this yellow coloration patches spreads to the whole of buccal cavity and smells foul. Capture of food and feeding by the victim becomes difficult. This fungal infection responds

to treatments like cleaning of infected areas with 10% solution of Acriflavin and application of Multifungin. Overcrowding and unhygienic pool condition usually brings this problem.

Mouth rot or Ulcerative stomatitis has also been reported from some complexes. Symptoms begin with reluctance to feed. Small petechial haemorrhages appears on the mucous membrane of the mouth. Mouth is kept open and cheesy yellow to white masses coat the mucosa. This is more evident along the rows of teeth. Infection spreads to the jaw and to the nasal openings with swellings. Eyes are also affected. Once these caseous material is swallowed or aspirated intestine and lungs get affected. Death usually takes place due to spread of bacteria into the blood (septicaemia) or pneumonia. Treatment includes cleaning of the infected areas with hydrogen peroxide or direct application of Gentamycin. Antibiotics (Gentamycin 2.5mg/kg.B.W every 72hour by I/M) helps. Vitamin C at a dosage of 25mg/Kg daily orally or by injection may also be given.

3. PROBLEMS OF THE RESPIRATORY TRACT:

Respiratory diseases in crocodilians are common during the winter months - particularly during the extreme winter. Symptoms include sneezing, watery eyes, streaming nasal passage, rapid breathing, parched and dry buccal cavity, loss of equilibrium in swimming and death. Necropsy reveals congested lungs and inflamed trachea. Isolation of sick individuals and treatment with Ampicillin or Chloromycetin with Vit.C helps. Additional care includes keeping the victims in an warm 24°C to 28°C environment. Care should be taken to see that the water temperature in the rearing pools does not go below 20°C.

Pasteurella and Stephylococcus are also known to be the pathogen responsible for respiratory problems in crocodilians.

Symptoms as described earlier also occur in cases of mycotic pneumonia - causative agents of which are Candida, Aspergillus and Mucor. Such mycotic problems may start primarily as an skin infection and the stressed animal may fall victim to secondary respiratory problems.

A marshy and wet rearing pool surrounding with no proper sunlight and dry surrounding gives ample environment for fungal growth. Care should be taken to remedy this environment to prevent mycotic health problems.

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4. NUTRITIONAL DISEASES:

A major cause of captive crocodile mortality is improper diet. Crocodiles are carnivores and feed on anything they can capture; from small insects, amphibians, reptiles and birds to small mammals. The only exception to this rule is gharial being a specialised fish-eater. Since captured prey is swallowed straight with chitin, scales, hair, feather and bone, a higher percentage of calcium is consumed as well as many other vitamins and trace elements in this natural diet. In captivity no thought is given to this and in most rearing stations only a single species of cheap fish or raw red meat (beef) is given as diet. Considerations always seems to favour low cost of food than to health of crocodiles. Naturally most health problems arise out of this.

a) Metabolic bone disease (Hunchbacks)

Calcium and vitamin D deficiency causes conditions such as hunchbacks, archedbacks, bent limbs and tail. Once such deformity develops (where the skeletal systems are involved) it remains a permanent deformity. Ideally in the diet of growing animals (carnivores) the calcium to phosphorous ratio should be 1.65-2 : 1 and 1.0-1.2 : 1 for adults. When only lean skeletal meat (beef) and viscera of animals are given as a diet the ratio of calcium to phosphorous becomes as high as 1 : 6 to 1:40. Such calcium deficiencies develop the symptoms mentioned above.

The victims can be treated with injections of calcium gluconate 2 to 3 times a week. Oral supplementation of calcium and vitamin D and changing of the diet to a mixed variety consisting of fish with scales, birds with feathers and other whole animals like frogs, toads and rats also help.

b) Visceral Gout :

A disorder in which Uric acid salts are deposited (as white crystalline forms) at a variety of visceral tissues - particularly in liver, heart and kidney. An excessive protein diet is considered to be the main reason. Vitamin A deficiency may also be a reason as also dehydration. Sometime kidney failure is also evident in this disease.

c) Sodium Chloride deficiency:

Crocodiles that inhabit in a saline medium in nature (like the saltwater crocodile) when reared in an ambient freshwater medium and kept on a diet of freshwater fish and dead meat continue to excrete out their bodysalt through the saltgland secretions as they would have done in nature to excrete out excess salt. Such animals in captivity develop a parched and dry skin and their teeth turn sideways. A small amount of salt added in their diet helps to rectify this problem.

d) Vitamin deficiency:

Hypovitaminosis A causes eye disease (closed eye), B1 causes nervous disorders, vitamin B2 may cause limb paralysis. Vitamin C Ascorbic acid deficiency causes stomatitis (inflammation of mucous membrane).

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As mentioned before Vitamin D deficiency causes metabolic bone disease. However, a word of caution is that Vitamin D increases demineralisation of bone in the absence of dietary calcium. Thus no vitamin D should be given in the diet unless accompanied by calcium. Hypovitaminosis K causes gum bleeding. All these can be remedied either by oral or I/M injection supplementation of concerned deficient vitamins.

Viscerixanth:

Steatitis: This being a major problem of vitamin E deficiency particularly with young crocodiles fed with oil laden all fish diet is being dealt separately. Such diet do not allow vitamin E to function and cause what is known as Brown Fat disease. Body fat deposits turn brown in color (inflamed). On necropsy yellow to brown pigmented nodular lesions are seen throughout the subcutaneous and thoracic abdominal cavity. Abdominal organs are found to be in a solid mass of discolored tissues. Usual symptoms of victims are spasmodic body convulsions. Adequate level of vitamin E should be given to remedy this problem as vitamin E has an antioxidant property.

OTHER PROBLEMS:

Injuries are more common with stocks above 3 to 4 year old. Usually injuries are caused due to fights while feeding and protecting basking area. Injuries caused during feeding are always breakage of lower or upper jaws whereas other injuries are invariably on the hindlimb or dorsal base of the tail. Such injuries usually heal by themselves on a cleaner water pool but in dirty water and on a dehydrated conditions results in subcutaneous absces. Injuries therefore should be treated urgently with aerosol or antibiotic spray. Absces can be drained out by capturing the animal.

Injured animals, sick animals and new animals develop a stress condition when handled often. Symptoms of stress includes tremor, slow or absence of righting reflexes. Administration of oral glucose at the rate of 3 gm/Kg B.W and removal of stress conditions with availability of natural sunlight helps.

In several rearing stations Clastridium has been isolated from liver samples taken from dead specimens. But, it is not known if they were the pathogens. Similarly, no viral disease has been reported from any place. However, a poxlike virus has been reported from caiman crocodiles reared in U.S.A.

SOME USEFUL BOOKS ON REPTILE DISEASES:

1. Principal Diseases of Lower Vertebrates Vol 3 Diseases of Reptiles by H.N.Reichenbeck-Klinke & E.Elkan. T.P.H.Ltd Hong Kong Publ. 1965.
2. Reptilian Diseases; Recognition and Treatment. By J.S.Dobbs. Ralph Curtis Books, Florida Publ, U.S.A. 1973.
3. Husbandry, Medicine and Surgery in Captive Reptiles. By F.L.Fryc. V.M Publishing Inc. Kansas, U.S.A. 1975.
4. Reproductive Biology and Diseases of Reptiles. Ed J.B.Murphy & J.T.Collins. S.S.A.R Publication. 1980. Available Publ Secretary, Dept. of Zoology, Miami University, Oxford, Ohio 45056.
5. The Comparative Pathology of Zoo Animals. Ed Montali and Nigaki. Smithsonian Institute Press, Washington D.C, 1980
6. Diseases of Reptilia Vol I and II by Jackson and Cooper, Academic Press.
7. The Care of Reptiles and Amphibians in Captivity. By Christopher Maltison Blandford Press 1982. Dist Sterling Publisher Co Inc. U.S.A.
8. The Care and Breeding of Captive Reptiles. Ed Tamson, Millichamp, Lucas and Millwood. 1980 British Herpetological Society, London.

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CLINICAL NOTES

Dr. C.K. MONDAL
(Senior Technical Assistant, National Zoological Park,
New Delhi)

(1)

In the Year 1969 a Cow Elephant showed recurring complaint of Oedematous Swelling of the abdomen and the legs. The blood Examined under the Microscope was found positive for Microfilaria infection. The genus of this Microfilaria was identified to be INDOFILARIA, by the Head of the Department of MATHURA Veterinary College. A Twenty one day's Course of treatment with HETRAZAN (cyanamid) rendered her blood free from Microfilarial infection.

(2)

A male Tiger had a complaint of Casual Bleeding from the mouth. The exact cause could not be ascertained, as it was not possible to handle the animal with out Tranquilising or Anaesthetising it. Hence antibiotics, Vitamins C, B, and K, including Calcium preparations were given both orally and Parenterally, besides cleaning the mouth with light $KMNO_4$ solution and application of BOROGLYCERINE by means of a Hypodermic Syringe.

No improvement was seen. The animals appetite remained normal for a few days initially, but became poor, later on. And the animal died of emaciation and weakness after a long illness. On conducting Post Mortem the Cause of death was found to be extensive Ulceration at the base of the tongue. The tissue was send to the I.V.R.I. IZATHNAGAR for histopathological examination where it was found to be SQUAMOUS CELLED CARCINOMA.

(3)

Long standing cases of Impaction of Intestines with Calculi and foreign bodies resulting in Colicky pains have been reported from Members of Equidae Family such as Horse, Mule and Asses. Here is such a case in a captive Zebra.

Sudden onset of Colicky Pains in a Female Zebra, in one after noon and its unfortunate death in the next morning inspite of all possible Veterinary help, was a sad incident which took place in Delhi Zoological Park.

Autopsy revealed an ENTEROLITH, wieghing as much as 1 Kilo Five Hundered Grammes, in one of the loopse of the large intestines.

(1)

A symposium titled "GAME HARVEST MANAGEMENT" is going to be held at CAESAR KLEBERG WILD LIFE RESEARCH INSTITUTE, TEXAS A and I UNIVERSITY, U.S.A. from October, 3rd to 6th 1983. The only paper from India is from Dr. S.M. MOHNUT, Department of Zoology Jodhpur University, titled Conservation and Management of Black Buck and Gazelle. The paper has been accepted for Presentation.

(2)

A Seminar Titled, ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT was held at Bhubaneshwar on 4th and 5th June, 1983. The Seminar was organised by Orissa Environmental Society and Nature and Wild Life Conservation Society of Orrissa in collaboration with Forest Department of Orissa.

The seminar was sponsored by the Government of Orissa, Department of Science, Technology and Environment and Government of India, Department of Environment, Department of Science and Technology.

(3)

The Assam State Zoo, GAUHATI is going to celebrate the Silver Jubilee ceremony from 7th October, 1983, to 9th October, 1983., in a befitting manner. The Zoo authorities are busy in making it a grand success.

(4)

"Two ANIMAL GROOMS" The American Bison and Giraffe were presented to the Nehru Zoological Park, Hyderabad, Andhra Pradesh by his Excellency Mr. Harry G. Barns, Ambassador of the United States of America on 9th July, 1983. Hoharable Minister for Forest, Sri JANA REDDY received the gifts on behalf of the Government of Andhra Pradesh.

This was in exchange of a Baby Elephant MAREE presented to the children of HONOLOLU, by Prime Minister, Mrs., Indira Gandhi during her tour to the united States of America in the month of August 1982.

(5)

For the first time in the country, a meeting of the Directors Superintendents of Indian Zoological Parks was held at the National Zoological Park, New Delhi in the last week of May, 1983. Various problems pertaining to the Zoo management were discussed.

(6)

The Nehru Zoological Park Hyderabad A.P., has recorded the first birth of a baby Hippopotamus some where in the month of February 1983. The staff was anxious, when they found that the baby though struggled hard, could not get hold of the mother's Teat for few mouthfulls of rich colostrum for a full period of (48) Hours.

Both the mother and the baby are doing well now.

(7)

The Nandan Kanan Biological Park Orrissa is going to have a Lion Safari in near future. The work on this project is in full swing.

(8)

When a full term pregnant wild Ass was seen rolling on the ground and straining from time to time in the morning of 2nd May '83. the zoo vets of the Nehru Zoological Park, Hyderabad were hopeful to get a healthy baby ass this time. (The female ass aborted a two months foetus previously) But when she did not brought out "Any - Thing even after a very long time(labour) a team of professors from the veterinary college Rajindernagar were consulted. The team headed by Prof. Dr. Bhim Reddy (Obstetrics & Gyaenocology) and Prof. Dr. Narsimha Rao (Surgery) Marvelleously took out the baby from the Mother Ass's Woumb in the way in which the great Roman Emperor CAESAR was born.

* * * * *

DR. R. Krishnamurthy, Editor, Indian Veterinary Journal Honoured.

At a glittering function at Hotel Ashoka, Madras, Dr. R. Krishnamurthi was honoured on his 81st birthday. Mr. K. Chockalingam, IAS Chief Secretary, Govt. of Tamil Nadu, Mr. A. Venkatraman IAS. Secretary Agric. Department. Govt. of TN. Dr. O.N.Singh, Animal Husb. Commissioner Govt. of India and President of Indian Vet. Assoc., Dr. G.M. Srikantiah, Vice-President IVA, Dr. Bajurbarua, Sec. IVA and Dr. V.S. Alwar, Assoc Editor, IVJ and large number of veterinarians from Tamil Nadu and other States were present at the function. Rich tributes were paid Dr. R. Krishnamurthi for the yeomen Service rendered to the profession through the IVJ. A portrait of Dr. Krishnamurthi was unveiled.

Speaking on the occassion Dr. O.N.Singh, said that the Head-quarter of the Indian Vet. Journal would be at Madras only which was greeted with thundering applause by the vets present at the function. Dr. Krishnamurthy thanked each and everyone for the great honour bestowed upon him.

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CASUALTIES AMONG RHINOCEROSSES IN
NEHRU ZOOLOGICAL PARK. HYDERABAD ANDHRA PRADESH

1) DR. SABIR ALI.
Asst. Director (A.H.)
Nehru Zoological Park. Hyd.

2) T. RAM KRISHNA.
I.F.S. Curator,
Nehru Zoological Park. Hyd.

In the month of August 1983, Three Adult Indian Rhinoceroses, (Rhinoceroses Unicornis) Two males and one female died with in a period of fortnight, one after another, having an illness of 8 - 10 days. One while African Rhinoceros (Ceratotherium simum simum) also died after ailing for a period of 10 days i.e., from 20-9-83 to 30-9-83.

I. THE SYMPTOMS: were as follows:-

1. The early signs were dragging of both the hind feet, shivering at trunk and fore limbs, intermittent fits and recumbancy which lasted till death.

2. The body temperature during the course in the morning was 36.5°C to 37.5°C. Evening had a range of 38°C to 39°C.

3. Grinding of teeth present.

4. Increased in the rate of respiration was observed 17 to 50 per minute (The normal range is 13-14 P.M.)

5. Petrichae of visible mucous membrane seen.

6. Mucoid lachrymation and nasal discharge present.

7. Passing of dung and urine was normal.

8. Gradual loss of condition appetite usually remained good. Later it became slow.

9. Few days before death dehydration was seen. In white African Rhino Oedematous swelling of the dependent parts were observed.

II. TREATMENT:

Broader spectrum antibiotics, Vitamins, Corticosteroids, other stimulant drugs, electrolytes and saline, were given both orally and parenterally.

III. INVESTIGATIONS:

1. Blood Smears were found negative for any blood protozoan of bacterial infection.

2. Faeces was found positive for tape worms ova.

3. Urine Analysis report was normal.

IV. POST MORTEM FINDINGS:

a. Indian Rhinoceroses: 1. Severe gastro enteritis was present in all the three cases.

ii) Heavy infestation of tape worms (*Maplocephala* sp) in the large intestine was observed.

iii) In one male the lungs were found Tuberculous.

iv) Liver: Showed Congestion.

v) Spleen was not affected.

b. White African Rhino: i) Severe Hepatitis was seen.

ii) Slight gastro enteritis was present.

THE DISEASE IS UNDER INVESTIGATION.

NEW LIST OF I.Z.V.A MEMBERS

~~LIST OF NEW MEMBERS OF INDIAN ZOO VETERINARY ASSOCIATION~~

(Established - January 1982)

Name	Address
31. DR. R.K. LAHIRI	Director, Padmaja Naidu Himalayan Zoological Park, Darjeeling, West Bengal.
32. DR. MOHAMMED YOUNUS.	"MASTER FEEDS" H.No. 19-4-274/8, Miralam Tank, Road, Hyderabad-500 264. A.P.
33. DR. MIR DILDAR ALI KHAN.	H.No. 22-6-951, Irani Galli, Hyderabad-500264.A.P.
34. DR. SANJWAN RAY.	Senior Research Assistant, Alipur Zoo, Calcutta-27, West Bengal.
35. DR. D.P. SAMANTO.	Chief Veterinary Officer, Ali Pur Zoo Calcutta-27, West Bengal.
36. DR. VISHVA RAJ.	Regional Joint Director (A.H.) Animal Husbandary Department, Hyderabad. A.P.
37. DR. W. PAKYNTAIN.	Veterinary Assistant Surgeon, Vaccine Depot, GARIKHANA, <u>SHILLONG, 193002, MEGHALAYA.</u>
38. DR. SYED FAIQ ALI.	Junior Veterinary Officer, Ranga Reddy District, Hyderabad. A.P.
39. DR. A.K. MOHANTY.	Veterinary Officer Nandankanan Biological Park, P.O. Barang, District Cuttak, Orissa.
40. DR. MOHD. AZMATHULLAH.	Deputy Director, (A.H.) Nehru Zoological Park, Hyderabad. 500 264. A.P.

INDIAN ZOO VETERINARIANS ASSOCIATION

INDIAN ZOO VETERINARIANS
ASSOCIATION

The Objective of the Indian
Zoo Veterinarians Association are:

1. To advance programme for preven-
tive medicine, husbandry and
scientific research in the field of
Veterinary medicine dealing with
wild animals in captivity and in
free state.
2. To Provide a forum for the
presentation and discussion of
problems related to the health care
and disease management of the
Wild Life.
3. To publish and distributed
scientific information related and
pertaining to the Veterinary
medicine dealing with captive
wild animals.

I Z V A O F F I C I A L S :

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Membership fee along with the application

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DEPUTY DIRECTOR (A.H.) RETIRED.
NEHRU ZOOLOGICAL PARK.
HYDERABAD (A.P.) 500 264.

